Federal Aviation Administration







Final Environmental Impact Statement
SpaceX Texas Launch Site

Volume II - Appendices
May 2014

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FINAL ENVIRONMENTAL IMPACT STATEMENT
SPACEX TEXAS LAUNCH SITE

VOLUME II

APPENDICES

MAY 2014

Prepared by:

Federal Aviation Administration

Office of Commercial Space Transportation

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Appendix A
Public Involvement

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APPENDIX A – PUBLIC INVOLVEMENT

The FAA adheres to the CEQ Regulations for Implementing the Procedural Provisions of NEPA, 40 CFR § 1506.6, which directs agencies to make diligent efforts to involve the public in preparing and implementing their NEPA procedures. Public involvement is a fundamental part of the EIS development process and promotes better decision making.

1.0 SCOPING

Scoping for the development of the EIS began with the publication of the Notice of Intent (NOI) in the *Federal Register* on April 10, 2012 (FAA 2012; Exhibit A-1). In the NOI, the FAA invited the participation of Federal, State, and local agencies, Native American tribes, environmental groups, citizens, and other interested parties to assist in determining the scope and significant issues to be evaluated in the EIS.

1.1 AGENCY SCOPING MEETING

An agency scoping meeting was conducted on May 15, 2012, from 9:00 a.m. to 11:00 a.m., at the Brownsville Economic Development Council Board Room, 301 Mexico Boulevard, Suite F-1, Brownsville, Texas. The FAA invited the following agencies to the meeting: USACE; USFWS; NOAA; EPA, Region 6; TGLO; and THC. During this meeting, the FAA gave a brief presentation of the Proposed Action and had an open discussion with agencies regarding issues and concerns. Following the agency scoping meeting, a site visit was conducted to introduce the agencies to the proposed vertical launch area and control center area.

1.2 PUBLIC SCOPING MEETING

The public scoping meeting was held on May 15, 2012, from 5:00 p.m. to 8:00 p.m., at the ITEC Center, located at 301 Mexico Boulevard Suite G-1, Brownsville, Texas. The FAA provided several notifications of its intent to prepare an EIS and conduct scoping. The flyers and newspaper advertisements announced the FAA's intent to prepare an EIS; the date, times, and location for the public scoping meeting; and the various ways for the public to provide comments. Exhibit A-2 shows the newspapers and publication dates for the advertisements for the scoping meeting. The published advertisements are shown in Exhibit A-3, Exhibit A-4, and Exhibit A-5. Exhibit A-6 shows the flyers (English and Spanish).

The factsheet handed out at the scoping meeting is shown in Exhibit A-7. The posters displayed at the scoping meeting are shown in Exhibit A-8.

1.3 SCOPING COMMENTS

Exhibit A-9 contains the agency comments that were received during the scoping period.

2.0 DRAFT EIS PUBLIC COMMENT PERIOD

A Notice of Availability (NOA) was published in the *Federal Register* (76 FR 23629-23630) on April 19, 2013 (FAA 2013a; Exhibit A-10). The NOA described the Proposed Action, provided the public hearing date and time, informed the public on how to obtain a copy of the Draft EIS, and initiated the public

comment period. Copies of the Draft EIS were distributed the week of April 8, 2013. Advertisements were placed in the following newspapers a week before the public hearing for three consecutive days: The Brownsville Herald, Valley Morning Star, and El Bravo (in Spanish). The advertisements summarized the Proposed Action, provided public hearing date and time, informed the public on how to obtain a copy of the Draft EIS, and described the five ways to submit public comments.

Two other methods were used to announce the NOA and comment period for the Draft EIS. SpaceX posted flyers at the following locations:

- Main utility pole at each entrance of Boca Chica Village
- Residences in Boca Chica Village
- Main Public Library Public Bulletin Board
- Southmost Library Public Bulletin Board
- ITEC Center

Exhibit A-11 shows the newspapers and publication dates for the advertisements for the public hearing. The published advertisements are shown in Exhibit A-12, Exhibit A-13, and Exhibit A-14. Exhibit A-15 shows the flyers (English and Spanish).The FAA also mailed notification letters, e-mails and CDs containing the Draft EIS to individuals; Federal, State, and local agencies; elected officials; and various interest groups that were part of the mailing list compiled during the scoping period. In addition, the FAA mailed CDs of the Draft EIS to the following American Indian tribes: the Chairman of the Apache Tribe of Oklahoma, the Chairman of the Comanche Nation of Oklahoma, the THPO of the Kiowa Tribe of Oklahoma, the President of the Mescalero Apache Tribe, and the President of the Tonkawa Tribe of Oklahoma.

2.1 AGENCY MEETING AND PUBLIC HEARING

On May 7, 2013, from 10:00 a.m. to 12:00 p.m., the FAA conducted an agency meeting at the Brownsville Economic Development Council Boardroom, located at 301 Mexico Blvd., Suite F-1, Brownsville, TX. The agency meeting was attended by representatives from the EPA Region 6, TPWD, USFWS, USACE, TGLO, NPS, ACHP, NASA, and THC.

The FAA held a public hearing in an open house format, followed by a short presentation, and a public comment portion in Brownsville, TX on May 7, 2013. The open house consisted of a sign in table, poster stations, and comment tables. Poster displays located throughout the open house provided information on the Proposed Action, Licensing and Permitting Process, Environmental Effects for Water and Biological Resources, Environmental Effects for Noise and Compatible Land Use and Visual and Cultural Resources, SpaceX information, and the Public Involvement in the Draft EIS. In addition to poster displays, factsheets were provided, a video of a Falcon 9 launch was provided by SpaceX, and copies of the meeting posters and factsheets were available on the FAA website:

http://www.faa.gov/about/office_org/headquarters_offices/ast/environmental/nepa_docs/review/documents_progress/spacex_texas_launch_site_environmental_impact_statement/

The factsheet handed out at the public hearing is shown in Exhibit A-16. The posters displayed at the public hearing are shown in Exhibit A-17.

Attendees were encouraged to write their comments using a comment form on the back of the factsheets that were provided or to provide verbal comments to a court reporter. A total of 539 individuals signed in at the hearing, including Federal and State elected officials, the media, city government agencies, local community planning groups, and local school representatives.

2.2 DRAFT EIS PUBLIC COMMENTS

The Draft EIS was made available for review by all stakeholders, including Federal, State, and local government agencies, special interest groups, and private citizens interested in the Proposed Action. The Draft EIS public comment period allows the public to consider the analysis provided in the Draft EIS and ask questions or provide comments to FAA. The public was provided several ways to comment on the Draft EIS: 1) Provide written or verbal comments at the public hearing; 2) Submit comments via email to faaspacexeis@cardnotec.com; 3) Fax your comments to (410) 990-0455; or 4) Mail written comments to Ms. Stacey M. Zee, Environmental Specialist, Federal Aviation Administration, SpaceX EIS, c/o Cardno TEC Inc. - 275 West Street—Suite 110, Annapolis, MD 21401.

On May 20, 2013, the EPA Region 6 requested a 21-day extension of the review period ending Monday, June 24, 2013. On June 11, 2013, the FAA published a formal notice of the comment period extension in the *Federal Register* (78 FR 35087) and informed agencies and public stakeholders (FAA 2013b; Exhibit A-18). The postcards that were sent to all individuals for notification of the extension of the comment period are shown in Exhibit A-19.

During the public comment period, the FAA received a total of 337 comments. Comments were received from 4 Federal agencies, 3 State agencies, 7 local agencies, 5 elected officials, 24 non-government agencies, and 294 individuals. All comments received during the Draft EIS comment period between April 19, 2013 and June 24, 2013 are included in Volume III of this EIS. Please refer to the Section A.3 for the FAA responses to public comments.

3.0 DRAFT EIS COMMENT RESPONSES

APPROACH TO COMMENT RESPONSE PRESENTATION

The FAA assessed and considered public and agency comments on the Draft EIS both individually and collectively. Due to the large number of comments (letters, e-mails, comment forms, public hearing transcripts) that were received and the similarity of many comments, the FAA elected to categorize and group similar comments for response. This enabled the FAA to efficiently prepare responses to similar comments and reduce repetition in this comment response section. The basic steps in FAA's approach are outlined below:

- The FAA read all comments received on the Draft EIS (letters, e-mails, comment forms, and the transcript of oral comments received during the public hearing) and identified discrete excerpts within each comment. All comments are available in Volume III, *Comments on the Draft EIS*, which can be found on the compact disk that accompanies this EIS or at the FAA website: http://www.faa.gov/about/office_org/headquarters_offices/ast/environmental/nepa_docs/review/documents_progress/spacex_texas_launch_site_environmental_impact_statement/

- The FAA prepared an alpha-numeric code (Comment Number) for each comment. The code consists of a letter indicating the group of the commenter (A is Agency, E is Elected Officials, N is for Non-government Organizations, P is for Individual); and a number for the commenter.
- The FAA categorized the comment excerpts according to the topics addressed. For example, many comments expressed general support or opposition to the project, while other comments were more specific and pertained to issues such as noise, visual resources, biological resources, etc.
- Frequently, more than one commenter submitted identical or similar comments addressing the same issue. In these cases, the FAA grouped the comment excerpts and summarized their content.
- Where detailed substantive comments were received, this EIS presents the comment excerpts verbatim as stated by the commenters. Where comment excerpts have been grouped and summarized, the FAA made every effort to capture the essence of each excerpt included in the summary.
- Subject matter experts in each of the issues/topics addressed by the commenters (e.g., noise, cultural resources, biological resources, etc.) reviewed each comment excerpt and/or summary and prepared responses. Responses were then reviewed by the FAA to ensure technical and scientific accuracy, clarity, consistency, and responsiveness.
- Where comments led to modifications in the EIS, the response briefly describes the change and identifies the section of the EIS where the change can be found.

HOW TO USE THIS COMMENT RESPONSE SECTION

To find a comment and the FAA response, locate the name of the commenter (agency, elected official, non-governmental organization, or public individual) in the index below and review the column entitled "Location of Comments/Responses." The index shows the section number of this Appendix where the response appears for each comment excerpt. Each of the comment excerpts are identified on the original comments available in Volume III, of this EIS, which can be found on the compact disk that accompanies this EIS or on the FAA website:

http://www.faa.gov/about/office_org/headquarters_offices/ast/environmental/nepa_docs/review/documents_progress/spacex_texas_launch_site_environmental_impact_statement/

Detailed and substantive comments from agencies, elected officials, and non-governmental organizations are marked with brackets in Volume III that identify the comment excerpts to which the FAA has responded in this comment response section. To find a full comment letter in Volume III see the column titled "Commenter Number."

INDEX OF DRAFT EIS COMMENTERS

Agencies

Date Received	Commenter(s)	Commenter Number	Comment(s)/ Response(s) Number
6/12/2013	United States Environmental Protection Agency, Region 6	A-01	3.25.1, 3.13.6, 3.2.2, 3.13.12, 3.4.7, 3.13.2, 3.4.6, 3.13.7, 3.13.8, 3.13.9, 3.12.1, 3.17.1, 3.11.8, 3.13.13
6/3/2013	United States Department of the Interior	A-02	3.1.1
6/3/2013	United States Fish and Wildlife Service		3.4.6, 3.22.1, 3.14.1, 3.14.2, 3.13.3, 3.14.3, 3.14.4, 3.8.1, 3.14.5, 3.11.2, 3.11.1, 3.14.6, 3.14.7, 3.22.1, 3.14.8, 3.14.9, 3.9.1, 3.15.1
6/3/2013	National Park Service		3.11.2, 3.11.1, 3.21.1, 3.4.5, 3.11.6, 3.10.1, 3.8.1, 3.13.5, 3.14.6, 3.4.1, 3.11.3, 3.18.1, 3.18.3, 3.22.1 , 3.18.2, 3.15.2, 3.15.3, 3.14.1, 3.13.1, 3.15.4, 3.4.2, 3.4.3, 3.13.3, 3.4.4, 3.9.2, 3.11.4, 3.11.5, 3.11.7, 3.9.3, 3.9.4, 3.9.5, 3.14.8, 3.21.2, 3.21.3, 3.22.2, 3.22.3, 3.22.5, 3.22.6, 3.22.7, 3.22.8
6/17/2013	Department of the Army, United States Corps of Engineers, Galveston District	A-03	3.3.1, 3.4.6, 3.13.6, 3.13.10
6/20/2013	United States Department of State - Bureau of Western Hemisphere Affairs on behalf of Secretaría de Medio Ambiente y Recursos Naturales	A-04	3.20.1, 3.20.2, 3.20.3, 3.20.4, 3.20.5, 3.20.6, 3.20.7, 3.20.8
6/21/2013	Secretary of State, State of Texas	A-05	3.1.1
6/18/2013	Texas General Land Office	A-06	3.7.4, 3.14.9, 3.22.1
6/21/2013	Texas Parks and Wildlife	A-07	3.14.5, 3.14.1, 3.4.8, 3.13.11, 3.22.1, 3.14.9, 3.13.15, 3.7.3, 3.10.1, 3.22.9, 3.14.11, 3.14.7, 3.14.12, 3.22.10
5/7/2013	City of Brownsville, City Manager	A-08	3.1.1
5/7/2013	Brownsville Metropolitan Planning Organization	A-09	3.1.1
5/7/2013	Brownsville South Padre Island International Airport	A-10	n/a
5/7/2013	Brownsville South Padre Island International Airport	A-11	3.1.1
5/7/2013	Brownsville South Padre Island International Airport	A-12	3.1.1

Date Received	Commenter(s)	Commenter Number	Comment(s)/ Response(s) Number
5/7/2013	Port of Brownsville	A-13	3.1.1
5/7/2013	Brownsville & Rio Grande International Railroad	A-14	3.1.1, 3.16.1, 3.13.3

Elected Officials

Date Received	Commenter(s)	Commenter Number	Comment(s)/ Response(s) Number
5/7/2013	Vela, Filemon	E-01	3.1.1
5/7/2013	Perry, Rick	E-02	3.1.1, 3.4.5
5/7/2013	Sepulveda, Pete Jr.	E-03	3.1.1
5/7/2013	City Commission of the City of Port Isabel, Cameron County, Texas	E-04	3.1.1
6/24/2013	Tetreau-Kalifa, Jessica	E-05	3.1.1, 3.16.1

Non-governmental Organizations

Date Received	Commenter(s)	Commenter Number	Comment(s)/ Response(s) Number
5/31/2013	Aircraft Owners and Pilots Association	N-01	3.23.1
5/7/2013	Asociacion de Empresarios Mexicanos - Brownsville/South Padre Island Chapter	N-02	3.1.1
5/7/2013	Brownsville Economic Development Council	N-03	3.1.1
5/7/2013	Brownsville Economic Development Council	N-04	3.1.1, 3.16.1
5/21/2013	Brownsville Economic Development Council	N-05	3.1.1, 3.16.1
5/7/2013	Cameron County Regional Mobility Authority	N-06	3.1.1
6/24/2013	Civil War Trust	N-07	3.11.7, 3.8.1, 3.11.1, 3.11.2, 3.4.6
5/7/2013	Commemorative Air Force	N-08	3.1.1
5/30/2013	Frontera Audubon Society	N-09	3.14.6, 3.14.8, 3.14.3, 3.15.4, 3.14.1, 3.22.1, 3.22.4, 3.21.1, 3.2.1
6/3/2013	Frontera Audubon Society	N-10	n/a
5/23/2013	Greater Brownsville Incentives Corporation	N-11	3.1.1, 3.16.1
5/31/2013	Gulf of Mexico Turtle Island Restoration Project	N-12	3.14.6

Date Received	Commenter(s)	Commenter Number	Comment(s)/ Response(s) Number
4/17/2013	Jean-Michel Cousteau's Ocean Futures Society	N-13	3.2.1, 3.7.1, 3.22.1
6/3/2013	Lone Star Chapter Sierra Club	N-14	3.12.2
6/24/2013	Lone Star Chapter Sierra Club	N-15	3.14.6, 3.14.8, 3.14.3, 3.13.4, 3.13.12, 3.15.4, 3.7.1, 3.14.5, 3.15.1, 3.6.2, 3.22.1,
6/24/2013	Lower Laguna Madre Foundation	N-16	3.4.6, 3.13.12, 3.15.4, 3.22.1, 3.14.1, 3.15.1, 3.6.1, 3.8.2, 3.14.6, 3.14.7, 3.14.3, 3.18.2, 3.22.4, 3.21.1, 3.2.1
5/10/2013	Palo Alto National Park Committee	N-17	3.4.8, 3.11.1, 3.1.1
5/7/2013	Rio Grande Valley Partnership	N-18	3.1.1
5/31/2013	Sea Turtle Restoration Project	N-19	3.14.6
5/7/2013	Spaceport Development Corporation of Cameron County, Texas	N-20	3.1.1
5/7/2013	Surfrider Foundation	N-21	n/a
5/7/2013	Surfrider Foundation	N-22	3.15.3, 3.7.1
5/7/2013	United Way of Southern Cameron County	N-23	3.1.1
5/7/2013	Workforce Solutions Cameron	N-24	3.1.1

Public Individuals

Date Received	Commenter(s)	Commenter Number	Comment(s)/ Response(s) Number
5/7/2013	Abete, Jesus "Chuy"	P-26	3.2.1
5/23/2013	Aguilar, Yessica	P-68	3.1.1
5/7/2013	Alvarez, Juan	P-69	3.1.1, 3.16.1
5/7/2013	Alvarez, Julian	P-50	3.1.1
5/23/2013	Araujo, Tiffany	P-70	3.1.1
5/7/2013	Ayala, Mariano "Bean"	P-41	3.1.1
5/7/2013	Barrera, Ricardo	P-45	3.1.1
5/7/2013	Belleperche, David	P-71	3.1.1
5/21/2013	Benavides, Aldo	P-72	3.1.1
5/7/2013	Benavides, Sophia	P-19	3.1.1
5/24/2013	Benson, Gabrielle	P-73	3.1.1
5/7/2013	Bernard, David S.	P-74	3.1.1, 3.16.1
5/7/2013	Berry, Reginald and Sylvia	P-75	n/a
5/7/2013	Betancourt, Blanca C.	P-76	3.1.1
5/14/2013	Blanco, Jorge	P-77	3.1.1

Date Received	Commenter(s)	Commenter Number	Comment(s)/ Response(s) Number
5/20/2013	Braga, Glatira G.	P-78	3.1.1
5/7/2013	Brown, Andrew	P-79	3.1.1, 3.16.1, 3.13.3
5/7/2013	Brown, Kara	P-80	3.1.1, 3.16.1, 3.13.3
5/7/2013	Brown, Larry	P-02	3.1.1
5/7/2013	Brown, Larry	P-66	3.1.1
5/7/2013	Burchfield, Patrick	P-13	3.1.1
5/30/2013	Burke, Nancy E.	P-81	3.1.1
5/7/2013	Burkes, Brad	P-67	3.1.1
5/7/2013	Burton, Angela	P-18	3.1.1
6/7/2013	C., John Paul	P-82	3.1.1
8/3/2013	Carlotta	P-83	3.1.1
5/24/2013	Carrizales, Aileen	P-84	3.1.1
5/7/2013	Castañeda, Rosa	P-51	3.1.1
5/24/2013	Castillo, David	P-85	3.1.1
5/7/2013	Castro, Alejandro	P-65	3.1.1
5/7/2013	Cepeda, Karina	P-86	3.1.1, 3.16.1, 3.13.3
5/20/2013	Cervantes Leal, Rosemary	P-87	3.1.1
5/7/2013	Chapa, Miguel	P-88	3.1.1, 3.16.1, 3.13.3
6/10/2013	Chapa, Rodolfo	P-89	3.1.1, 3.16.1
5/22/2013	Chaparro, Anna	P-90	3.1.1
5/7/2013	Chapman, Jim	P-22	3.14.6, 3.14.8, 3.14.3, 3.14.4, 3.14.1, 3.22.1, 3.21.1, 3.22.4
5/7/2013	Chavez Vasquez, Estella	P-04	3.1.1
5/24/2013	Chavez, Abigail	P-91	3.1.1
5/7/2013	Chavin, Rosie	P-92	3.1.1, 3.16.1, 3.13.3
5/7/2013	Cisneros, Al	P-21	3.1.1
5/24/2013	Clarissa	P-93	3.1.1, 3.4.5
5/7/2013	Clark, Anthony	P-49	31.1
5/7/2013	Coarz, Bertha	P-94	3.1.1
5/7/2013	Cohen, Matthew	P-39	3.1.1
5/7/2013	Colley, Scarlet	P-05	3.2.1, 3.14.9
5/7/2013	Colvin, Larry	P-95	3.1.1, 3.16.1
5/24/2013	Cordova, German	P-96	3.1.1
5/7/2013	Cortez, Marisela	P-34	3.1.1
5/23/2013	Cross, Lauren	P-97	3.1.1
5/8/2013	Crum, Scot Louis	P-98	3.1.1
5/7/2013	Cuellar, Andres	P-29	3.1.1
5/7/2013	Dan	P-36	3.1.1
5/7/2013	Dartez, Louis	P-28	3.1.1
3/7/2013	Dartt, Ashley E.	P-99	3.1.1, 3.16.1, 3.13.3

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5/7/2013	de la Garza, Alicia	P-42	3.1.1, 3.16.1
5/7/2013	De la Garza, Juan	P-100	3.1.1
5/20/2013	De los Santos, Victor	P-101	3.1.1
6/3/2013	Deetan, Giuseppe	P-102	3.1.1
6/4/2013	Deetan, Giuseppe	P-103	3.1.1
5/7/2013	DeHoyos, Sylvia	P-104	3.1.1
5/23/2013	Diaz, Catherine	P-105	3.1.1
5/7/2013	Dubourdieu, Patrick	P-55	3.1.1
5/7/2013	Dubourdieu, Patrick	P-106	3.1.1
5/7/2013	Dubourdieu, Philippe	P-56	3.1.1
5/7/2013	Dubourdieu, Philippe	P-107	3.1.1
5/7/2013	Edelstein, Zachary	P-108	3.1.1
4/30/2013	Elizando, Gilberto	P-109	3.1.1, 3.16.1, 3.13.3
5/7/2013	Espinoza-Gonzales, Martha P.	P-110	3.1.1, 3.16.1
5/7/2013	Estrada, Frank	P-52	3.1.1
5/7/2013	Evans, Joanne	P-43	3.1.1
6/2/2013	Everitt, Raymond	P-111	3.1.1, 3.22.1, 3.22.10
5/22/2013	Eymard, David	P-112	3.1.1
6/19/2013	Fisher	P-113	3.2.1
5/7/2013	Fisher, Dutch	P-16	3.1.1, 3.14.6
5/23/2013	Flores, Maria Lisette	P-114	3.1.1
5/7/2013	Ford, Anthony	P-07	3.1.1
5/7/2013	Foster, William	P-115	3.1.1, 3.16.1, 3.13.3
6/1/2013	Frascella, Carole M.	P-116	3.2.1, 3.14.6
5/24/2013	Frias, Jose Angel III	P-117	3.1.1
5/7/2013	Fuentes, Jaime Jr.	P-118	3.1.1
6/4/2013	G., Letty	P-119	n/a
5/7/2013	Galvan, Hector	P-01	3.1.1, 3.16.1
6/24/2013	Garcia, George A.	P-120	3.1.1, 3.20.1
5/23/2013	Garcia, Gina	P-121	3.1.1
5/7/2013	Garcia, Jessica	P-122	3.1.1, 3.16.1, 3.13.3
5/8/2013	Garcia, Juan Andres	P-123	3.1.1
5/16/2013	Garcia, Juan Andres	P-124	3.1.1
5/7/2013	Garcia, Melissa	P-125	3.1.1
5/24/2013	Garcia, Rene	P-126	3.1.1
5/7/2013	Garcia, Sylvia K.	P-127	3.1.1
5/7/2013	Garcia, Teressa	P-128	3.1.1
5/7/2013	Garza, Devian	P-129	3.1.1
5/7/2013	Garza, Ixhel	P-130	3.1.1
5/7/2013	Garza, Jose L.	P-131	3.1.1
5/7/2013	Garza, Ovidio	P-37	3.1.1

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5/9/2013	Glover, Heather	P-132	3.1.1
5/23/2013	Gonzalez, Julia	P-133	3.1.1
5/23/2013	Gonzalez, Julia	P-134	3.1.1
5/7/2013	Gonzalez, Rolando Jr.	P-135	3.1.1, 3.16.1, 3.13.3
5/23/2013	Gonzalez, Saira	P-136	3.1.1
5/23/2013	Gonzalez, Vanessa	P-137	3.1.1
5/20/2013	Gonzalez, Yliana	P-138	3.1.1
5/7/2013	Gowen, Rosie	P-32	3.1.1
5/7/2013	Graf, Keith	P-12	3.1.1
5/24/2013	Granja, Fabian	P-139	3.1.1, 3.7.1
5/7/2013	Grove, Craig	P-140	n/a
5/18/2013	Guajardo, Manuel G., Office and Clinical Staff	P-141	3.1.1
5/7/2013	Gudino, Chuckie D.	P-142	3.1.1, 3.16.1
5/7/2013	Guerrero, Jo Ann	P-143	3.1.1
5/13/2013	Guevara, Gil	P-144	3.2.1, 3.7.1, 3.15.1, 3.15.3, 3.9.5
6/17/2013	Gulley, Irene	P-145	3.1.1
6/4/2013	Guty	P-146	3.2.1
6/4/2013	Guzman, Maria	P-147	3.2.1, 3.22.1
5/8/2013	Hernandez, Jose	P-148	3.1.1
5/7/2013	Hernandez, Maribel	P-149	3.2.1, 3.12.2, 3.24.1, 3.7.1
5/8/2013	Herrera, Jose	P-150	3.1.1
5/7/2013	Hilts, Christopher E.	P-151	3.1.1
5/7/2013	Hilts, Cristian N.	P-152	3.1.1
5/7/2013	Hilts, Kathryn L.	P-153	3.1.1
5/7/2013	Hinojosa, Jesus	P-30	3.1.1
5/7/2013	Holtzman, Larry	P-154	3.1.1
5/7/2013	Hood, Gayle	P-155	3.1.1
5/24/2013	Huerta, Carlos	P-156	3.1.1
5/7/2013	Hughston, David	P-157	3.1.1
5/23/2013	Inskeep, Jonathan	P-158	3.1.1
5/30/2013	Isbar, R.	P-159	n/a
6/24/2013	James	P-160	3.14.3, 3.15.2, 3.15.3, 3.15.4
5/7/2013	Janine	P-31	3.1.1
5/24/2013	Jauregui, Linda	P-161	3.1.1
5/19/2013	Jen	P-162	3.1.1
5/7/2013	Jenet, Frederick	P-10	3.1.1
5/7/2013	Jenet, Frederick A.	P-163	3.1.1
5/7/2013	Jimenez, Erick	P-164	3.1.1
6/1/2013	Johnston, Tony	P-165	3.1.1

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5/8/2013	Kantack Alcantara, Ramona	P-166	3.1.1
5/29/2013	Kee, J.B.	P-167	3.1.1
5/7/2013	Knopp, Anthony	P-168	3.1.1
6/24/2013	La Rue, Donna	P-169	3.2.1, 3.22.1
5/7/2013	Lehmann, Anthony C. Jr.	P-170	3.1.1
5/29/2013	Lindale Medical	P-171	3.1.1
6/3/2013	Long, Norm and Melinda	P-172	3.1.1
5/21/2013	Lopez, Christa F.	P-173	3.1.1
5/23/2013	Lopez, Kayla T.	P-174	3.1.1
6/11/2013	Lopez, Michelle	P-175	3.1.1
5/21/2013	Lopez, Nina	P-176	3.1.1
5/7/2013	Lopez, Rosendo	P-24	3.1.1
5/7/2013	Lopez, Velia	P-177	3.1.1, 3.16.1, 3.13.3
5/7/2013	Lynch, John	P-40	3.1.1
5/7/2013	Macias, Claudia	P-178	3.1.1
5/13/2013	Maldonado, Jacqueline	P-179	3.1.1
5/16/2013	Martinez, Abigail	P-180	3.1.1
5/7/2013	Martinez, Alma	P-181	3.1.1, 3.16.1, 3.13.3
5/12/2013	Martinez, Andrea	P-182	3.1.1
5/7/2013	Martinez, Gerardo	P-58	3.1.1
5/7/2013	Martinez, Jose Guadalupe	P-06	3.1.1
5/7/2013	Martinez, Jose Guadalupe	P-183	3.1.1
5/21/2013	Martinez, Lizette	P-184	3.1.1
5/7/2013	Martinez, Tony	P-11	3.1.1
5/20/2013	Masso, Steven	P-185	3.1.1
5/7/2013	Mata, Adriana L.	P-186	3.1.1
5/7/2013	Mata, Alberto	P-09	3.1.1
6/25/2013	McConnaughey, Gale and Mary	P-187	3.2.1, 3.22.1, 3.15.1, 3.24.1, 3.9.5
5/20/2013	McCormick, Melanie L.	P-188	3.1.1
5/23/2013	Medina, Vanessa	P-189	3.1.1
5/23/2013	Melchor, Dylan	P-190	3.1.1
5/16/2013	Menchaca, Hector	P-191	3.1.1
5/7/2013	Mendez, Candido A.	P-192	3.1.1, 3.16.1
4/16/2013	Mills, James	P-193	3.2.1, 3.11.3
5/20/2013	Milum, Shannon	P-194	3.1.1
5/7/2013	Moore, Mark	P-03	3.1.1
5/23/2013	Morales, Brianna	P-195	3.1.1
6/4/2013	Morales, Kimberly	P-196	3.2.1, 3.7.1
5/7/2013	Morfitt, Sandra	P-197	3.1.1

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5/8/2013	Moser, Andrew D.	P-198	3.1.1
5/7/2013	Muñoz Chavez, Paquita	P-199	n/a
5/7/2013	Name Withheld	P-25	3.1.1
5/30/2013	Name Withheld	P-200	3.2.1, 3.7.1
5/29/2013	Name Withheld	P-201	3.1.1
5/7/2013	Name Withheld	P-202	n/a
5/20/2013	Name Withheld	P-203	3.1.1
5/7/2013	Name Withheld	P-204	3.1.1
5/21/2013	Name Withheld	P-205	3.1.1
5/7/2013	Name Withheld	P-206	3.1.1
6/1/2013	Name Withheld	P-207	3.1.1, 3.7.1
5/20/2013	Name Withheld	P-208	3.1.1
5/7/2013	Name Withheld	P-209	3.1.1
5/25/2013	Name Withheld	P-210	3.1.1
5/16/2013	Name Withheld	P-211	3.1.1, 3.7.1
5/7/2013	Name Withheld	P-212	3.9.5, 3.14.2, 3.15.1, 3.15.2, 3.15.3, 3.15.4, 3.4.8
5/13/2013	Nava, Juan S.	P-213	3.1.1
5/7/2013	Navarro, Juan David	P-214	3.1.1, 3.16.1, 3.13.3
5/8/2013	Nieto, Karla	P-215	3.1.1
5/7/2013	Nixon, Rob	P-61	3.7.4, 3.15.4, 3.7.1, 3.15.3
5/8/2013	Olivares, Ramiro	P-216	3.1.1
5/20/2013	Ontivens, Celia	P-217	3.1.1
5/7/2013	Ortega, Luis	P-38	3.1.1
5/7/2013	Ortiz Knopp, Alma	P-218	3.1.1
3/7/2013	Ortiz, Simon	P-219	3.1.1, 3.16.1, 3.13.3
5/7/2013	Osecona, Mauricio	P-57	3.1.1
5/24/2013	Perales, Mark	P-220	3.1.1
5/7/2013	Perez, Adriana	P-221	3.1.1, 3.16.1, 3.13.3
5/30/2013	Perkins, Robert L. III	P-222	3.1.1
5/7/2013	Pinkerton, Bob	P-20	3.1.1
6/24/2013	Pointer, Maria and Rayford L.	P-223	3.2.1, 3.19.1, 3.20.1
5/7/2013	Pokrass, Scott	P-224	n/a
5/7/2013	Portillo, Deborah	P-33	3.1.1
5/24/2013	Presas, Jon	P-225	3.1.1
5/20/2013	Quiñones Longoria, Esmeralda	P-226	3.1.1
5/31/2013	Quintanilla, Edgar	P-227	3.1.1
5/7/2013	Ramos, Aubree	P-228	3.1.1
5/23/2013	Ramos, Pedro III	P-229	3.1.1

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6/11/2013	Reed, Terrel	P-230	3.1.1
5/6/2013	Rendon, Stephanie M.	P-231	3.1.1, 3.16.1, 3.13.3
6/24/2013	Reyes, Luis	P-232	3.1.1, 3.16.1
5/7/2013	Rios, Guadalupe	P-233	3.1.1, 3.16.1, 3.13.3
3/7/2013	Rivera-Ramos, Krysna	P-234	3.2.1, 3.16.1, 3.22.1
6/22/2013	Robinson, Tom	P-235	3.2.1, 3.7.1, 3.22.1
5/7/2013	Robles, Tony	P-236	3.1.1, 3.16.1, 3.13.1
5/8/2013	Rocha, Armando	P-237	3.1.1
5/7/2013	Rocha, George	P-17	3.1.1
5/7/2013	Rodriguez, Campy	P-238	3.1.1
5/23/2013	Rodriguez, Danielle	P-239	3.1.1
5/9/2013	Rodriguez, Graciela	P-240	3.1.1
5/31/2013	Rodriguez, June	P-241	3.14.6
3/7/2013	Rodriguez, Mickey	P-242	3.1.1
5/7/2013	Rodriguez, Santiago	P-243	3.1.1, 3.16.1, 3.13.1
5/7/2013	Rosales, Isabel	P-47	3.1.1, 3.7.1
5/23/2013	Rosenbaum, Ashlea Rosemarie	P-244	3.1.1
4/16/163	Roxlau, Kathy	P-245	3.11.3
6/12/2013	Ruedas, Timo	P-246	3.1.1
6/4/2013	Ruiz Cisneros, David A.	P-247	3.2.1
6/8/2013	Ruiz, D. Alejandro	P-249	3.2.1
5/7/2013	Ruiz, David	P-35	3.2.1
6/5/2013	Ruiz, David A.	P-248	3.2.1, 3.4.8
5/7/2013	Ruiz, Fernando	P-63	3.2.1
5/20/2013	Ruvalcaba, Erick	P-250	3.1.1
5/7/2013	Saenz Blanchard, Denise	P-64	3.1.1
5/7/2013	Salazar, Alicia Elizabeth	P-251	3.22.1, 3.16.2, 3.24.1
5/23/2013	Salazar, Estephanie	P-252	3.1.1
5/7/2013	Salazar, Gonzalo	P-15	3.1.1
5/8/2013	Salinas, Clarissa	P-253	3.1.1
5/7/2013	Salinas, Daniel	P-254	3.1.1
5/7/2013	Salinas, Gilbert	P-255	3.16.1
5/7/2013	Salinas, Gilberto	P-44	3.1.1
5/23/2013	Salinas, Nathaniel	P-256	3.1.1
5/23/2013	Sanchez, Deanna Angelica	P-257	3.1.1
5/7/2013	Sanchez, Giana	P-258	3.1.1, 3.16.1, 3.13.3
5/13/2013	Sanchez, Michele	P-259	3.1.1
5/7/2013	Santiago Loa, Gene Jim	P-08	3.1.1
5/24/2013	Santibanez, Jasmin	P-260	3.1.1
5/30/2013	Sederholm, Don and Leann	P-261	3.1.1, 3.7.1

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5/7/2013	Sepulveda, Myrna G.	P-262	3.1.1
5/7/2013	Sepulveda, Norma	P-263	3.1.1
5/7/2013	Sepulveda, Rebekkah N.	P-264	3.1.1
5/7/2013	Sepulveda, Sylvia	P-265	3.1.1
5/7/2013	Sepulveda, Vivien S.	P-266	3.1.1
5/7/2013	Sepulveda, Yaretzi R.	P-267	3.1.1
5/7/2013	Serafy, Nicholas T. Jr.	P-268	3.1.1, 3.16.1, 3.13.3
5/6/2013	Serafy, Nicholas T. Jr.	P-269	3.1.1, 3.16.1, 3.13.3
5/7/2013	Serafy, Nick	P-62	3.1.1
5/7/2013	Silva, Esequiel "Zeke"	P-60	3.1.1
5/7/2013	Silva, Esequiel "Zeke" Silva	P-270	3.1.1
5/20/2013	Skelley, Lynne	P-271	3.25.2
5/7/2013	Sloane, Elayne	P-272	3.1.1, 3.16.1, 3.13.3
5/7/2013	Sloane, Kate	P-273	3.1.1, 3.16.1, 3.13.3
5/7/2013	Sloane, Warren	P-274	3.1.1, 3.16.1, 3.13.3
5/16/2013	Sokolow, Mark	P-275	3.1.1
5/8/2013	Soliz, Jacob	P-276	3.1.1
5/6/2013	Sossi, John	P-277	3.1.1
5/7/2013	Soto, Diana	P-278	3.1.1, 3.16.1, 3.13.3
5/18/2013	Soto, Simon	P-279	3.1.1
5/7/2013	Stegg, Gary	P-280	3.1.1
5/20/2013	Stumbaugh, Jennifer	P-281	3.1.1
5/7/2013	Technical Sergeant, Civil Air Patrol	P-48	3.1.1
5/7/2013	Tellez, Andrea	P-27	3.1.1
5/7/2013	Tetreau, Jessica	P-46	3.1.1
5/7/2013	Tijerina, Edgar	P-54	3.22.1
5/8/2013	Torres, Linda	P-282	3.1.1
5/7/2013	Tyla, Ellen	P-14	3.2.1, 3.22.2
6/4/2013	Urrutia, Miguel	P-283	3.1.1
5/8/2013	Valdez, Cecilia	P-284	3.1.1
5/7/2013	Vallesteros, Laura	P-53	3.1.1
5/7/2013	Velasquez, Janie	P-285	3.1.1
5/7/2013	Villanueva, Omar	P-286	3.1.1, 3.16.1, 3.13.3
5/20/2013	Villarreal, Joseph R.	P-287	3.1.1
5/24/2013	Villarreal, Waldo	P-288	3.1.1
5/24/2013	Virgen, Andrea	P-289	3.1.1
5/7/2013	Wade, William	P-59	3.1.1
5/7/2013	Walker, Scheleen	P-23	3.1.1
5/2/2013	Whelan, T.	P-290	3.25.2

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5/31/2013	Wilson, Deborah	P-291	3.14.6
5/8/2013	Yanez, Perla	P-292	3.1.1
5/16/2013	Yu, Juan Pablo	P-293	3.1.1
5/8/2013	Zamora, Kristian	P-294	3.1.1

3.1 GENERAL SUPPORT

(279 comment excerpts summarized)

3.1.1 Comment Summary – General Support

A number of commenters expressed support for the proposed SpaceX project and for the FAA proposal to issue launch licenses and/or experimental permits that would allow SpaceX to launch the Falcon 9 and Falcon Heavy from the proposed launch site. Reasons stated by commenters for their support included: direct and indirect jobs that would be created; well-paying jobs; inspirational aspects of the space launch facility that will motivate school children and the community; educational and research possibilities; opportunities for and retention of graduating students in the Brownsville area; protection of the wildlife and natural resources in the surrounding area; increased tourism and visitors; potential economic boom and aerospace industry development; revitalization of downtown Brownsville; continuation and expansion of the space industry in Texas; improved image of Brownsville and Cameron County.

Response – General Support

Thank you for your comments. The individual issues are also addressed under the comment categories below.

3.2 GENERAL OPPOSITION OR CONCERN

(48 comment excerpts summarized)

3.2.1 Comment Summary – General Opposition or Concern

Several commenters disapproved, or expressed concern about impacts, of the proposed action. Reasons included concerns about contamination, destruction of the ecosystem, wildlife, historic properties, traffic, safety, noise, and restrictions on access to the public beaches. Commenters were also concerned that jobs would not go to local people. One commenter cited the proximity of the project to their home.

Response – General Opposition or Concern

Thank you for your comments. The individual issues are also addressed under the comment categories below.

3.3 PURPOSE AND NEED

(1 comment excerpt summarized)

3.3.1 Comment Summary – Purpose and Need

The USACE commented on the project purpose related to the USACE's obligations during future permit application review under Section 404 of the Clean Water Act (CWA), as follows: "The Corps develops a basic project purpose based on the applicant's stated project purpose to conclude if the project requires access or proximity to the special aquatic site, such as a wetland, and discloses this conclusion in the appropriate NEPA documentation. The Corps also requires, pursuant to 33 CFR 320.4, that the need for the project be clearly identified and disclosed in the NEPA document. In situations involving two or more agencies that have a decision to make on the same proposed action, it is prudent to jointly develop a purpose and need statement that may prevent problems later that may delay completion of the NEPA process. In understanding that the FAA's mission is to encourage, facilitate, and promote commercial space launch and reentry activities, the Corps' requested, by letter dated February 4, 2013, that the attached language be included in Section 1.3 Purpose and Need rather than attempt to develop a statement jointly. While the requested language was included in the DEIS, it was inappropriately relegated to Section 1.2.2 Role of Cooperating Agencies rather than included in the appropriate Purpose and Need section. The Purpose and Need statement is important to the Corps' independent legal responsibilities and provides the framework for the Corps to conduct an appropriate alternatives analysis. The Corps requests that the language be properly included in the Purpose and Need section of the Final EIS so that the Corps is not required to supplement these NEPA documents during its permit review process."

Response– Purpose and Need

The FAA Proposed Action is the issuance of launch licenses and/or experimental permits. The USACE is a cooperating agency in the EIS prepared by FAA under NEPA. The applicant for a Department of Army Permit under Section 404 of the CWA would be SpaceX. SpaceX would be required to obtain a Section 404 permit from the USACE prior to construction. The permit would be prepared as the design for the project is further developed and as a separate, rather than integrated, process.

The permit would require additional efforts to avoid and minimize wetland impacts and compensatory mitigation to offset the loss of function to waters of the U.S. (see Section 6.6 of the Final EIS). Currently, SpaceX's compensatory mitigation plan proposes to preserve in-kind, high-quality wetlands at a ratio of ten times the amount of wetlands impacted by the Proposed Action. Additional mitigation may be imposed upon SpaceX by the USACE.

SpaceX is working with the USACE to identify existing type for type wetlands that have been degraded or adversely affected by other activities and would be candidate sites for wetland enhancement in lieu of preservation only mitigation. Candidate sites would be finalized during the Section 404 permit process.

The FAA kept the USACE Purpose and Need in Section 1.2.2.

3.4 PROPOSED ACTION AND ALTERNATIVES

(20 comment excerpts summarized)

3.4.1 Comment Summary - Proposed Action - Operations

Several commenters asked if launch frequency would increase in later years or remain the same. Clarification was requested about whether the maximum of 12 launches per year would include the sub-orbital launches. Commenters asked for clarification on whether the suborbital launches would be included in the 12 launches per year.

Response - Proposed Action - Operations

This EIS covers a 10-year period, which has been updated to 2016-2025 in the Final EIS (refer to Section 2.1 Proposed Action), and assesses a maximum of 12 annual launch operations during this time period, which would include orbital and suborbital launches. SpaceX has not identified proposed operations beyond this time period. As necessary, for any activity that is outside the scope of this EIS and falls under the FAA's purview, a new or supplemental NEPA analysis would be conducted.

3.4.2 Comment Summary - Proposed Action - Operations

Commenters asked if each dry or wet dress rehearsal would institute a closure, and wanted to know the total number of closures per year.

Response - Proposed Action - Operations

A closure for a wet dress rehearsal or static fire engine test would be shorter than a closure for a launch. Closures for a wet dress rehearsal or static fire engine test would typically be 3 hours or less. The total number of closures and closure hours for wet dress rehearsals, static fire engine tests, and actual launches would fall within SpaceX's proposed 12 launch operations per year or annual maximum of 180 hours of closure per year.

3.4.3 Comment Summary - Proposed Action – Construction Activities

NPS commented that dimensions are provided for the Hangar, workshop and office, however, no dimensions or mention of the "Storage/GSE Parts" structure that appears on the site layout on p. 2-14 are provided.

NPS also requested the height and diameter of the potable water tank, where fuels required for payload processing (helium, nitrogen, UDMH, MMH and NTO, etc.) would be stored on parcels 1, 2 and 3, a description of the amounts required and storage facilities, and the height of the satellite fuel storage area.

Response - Proposed Action – Construction Activities

Sections 2.1.2.1 and 2.1.2.2 of the Final EIS have been updated to include dimensions of buildings and structures. The warehouse for storing parts would be 10,800 ft^2 and approximately 45 ft in height. The water tower would contain at least 250,000 gallons and would be approximately 250 ft high. Section 2.1.1.3 of the Final EIS has been updated to indicate that UDMH, MMH, and NTO would be stored in the

control center area in the satellite fuels storage area that would consist of an approximate 20 ft x 20 ft (400 ft^2) area, approximately 15 ft in height (see Section 2.1.2.2, *Satellite Fuels and Gas Storage* for further discussion of propellant storage). Helium and nitrogen gases would be required at both the vertical launch and control center areas and would be stored in above ground storage tanks (high pressure tube banks) approximately 6,750 ft^3 and approximately 13,000 ft^3, water volume, of helium and nitrogen, respectively (see Section 2.1.1.4, *Propellant, Gas, Fuel, Oil, and Solvent Storage* for further discussion of these process gases).

3.4.4 Comment Summary - Proposed Action - Personnel

NPS commented that in addition to personnel levels, the increased levels of use of the area should include supporting contractors, delivery truck traffic, etc. NPS also requested a support transportation and personnel table based upon requirements for fuel and water deliveries, etc.

Response - Proposed Action - Personnel

Table 2.1-3 represents full-time employees/contractors working on-site and also employees/supporting contractors plus additional local/transient workers during launch campaigns. Volume II, Appendix K *Ground Traffic and Transportation* has been updated to include analysis of truck deliveries of fuel and water. Appendix K Table K.2-3 shows the annual propellant, fuel, and water deliveries. By 2025, there would be an estimated 602 trucks per year (i.e., 602 truck trips in each direction) delivering propellant, fuel, and water, with an average of 2.5 trucks per work day (Monday through Friday), traveling in each direction. Section 4.7.1.2 *Water Resources–Groundwater* has also been updated to discuss the potential for water to be supplied by truck if groundwater quality is not adequate for potable water use.

3.4.5 Comment Summary - Proposed Action – FAA License

A comment letter from Governor Rick Perry of the State of Texas expressed support for SpaceX and urged the FAA to approve SpaceX's application for a license.

NPS noted that the Draft EIS states that "The FAA/AST would likely issue launch specific licenses for the first few years of operation of the exclusive launch site" and asked why only the first few years and not until 2022.

One commenter assumed that NASA would be involved in the launch site.

Response - Proposed Action – FAA License

With regard to the issuance of launch licenses and/or experimental permits, the requirements for obtaining and possessing a launch license and/or experimental permit are described in 14 CFR Parts 400-450. The completion of the environmental review process does not guarantee that the FAA would issue launch licenses and/or experimental permits to SpaceX to launch from the proposed privately owned site in Cameron County, Texas. The Proposed Action must also meet the FAA safety, risk, and indemnification requirements.

The FAA would likely issue launch specific licenses for the first few years of operation from the exclusive launch site. SpaceX may then apply for a launch operator license, which lasts for five years and covers the same family of vehicles. To clarify, SpaceX is a private company proposing to develop and operate

from the site. NASA is not involved in the development of the site. Most SpaceX payloads would be commercial; however, some could be Department of Defense payloads, NASA payloads, or a Federal contribution to a commercial payload. This contribution could be monetary (e.g., funding a technology demonstration) or physical, such as providing a secondary payload/instrument.

3.4.6 Comment Summary - Alternatives

Commenters questioned whether sufficient alternative sites were analyzed to avoid environmental impacts. One commenter expressed that it appears actions have been taken that limit the availability of alternatives, therefore violating the intent of NEPA.

EPA commented that "[a]ccording to the DEIS, SpaceX developed evaluation factors that were applied to SpaceX's identified potential locations for operation of the Falcon 9 and Falcon Heavy launch vehicle program". Nine (9) evaluation factors were included for the alternatives analysis. However, none of the evaluation factors were environmental considerations. EPA believes environmental factors must be considered. For the launch area, Space X considered eight (8) more evaluation factors for two (2) possible sites. However, as stated above, none of the evaluation factors were environmental considerations. Environmental factors must be considered. FAA should include in the Final EIS environmental considerations or site selection such as avoidance of significant impacts to special aquatic sites that are tidally influenced. This is particularly important because of severe soil limitations. FAA should also develop factors that would evaluate site selection not contiguous to or near critical habitat for threatened or endangered species."

EPA commented that "[t]he DEIS identifies the US Army Corps of Engineers as a cooperating agency. The COE's jurisdictional responsibility lies in the issuance of a Section 404 Permit for the proposed action. According to the COE 404 Public Notice (PN), 'The Basic Project Purpose is to construct and operate an exclusive launch site on privately owned property. The project is considered to be… *non-water dependent as it does not require siting in or on a special aquatic site, such as a wetland, to meet the basic project purpose. The Overall Project Purpose is to construct and operate a vertical launch area and control center area to launch the Falcon 9 and Falcon Heavy orbital vertical launch vehicles and a variety of reusable suborbital launch vehicles from a launch site on privately owned property. The proposed private launch site is needed to provide SpaceX with an exclusive launch site that would allow the company to meet tight launch windows*.' The Final EIS should provide a more expanded and robust discussion on why other alternatives considered were eliminated. EPA agrees that the basic purpose of this project is not water dependent under the 404 (b)(1) guidelines promulgated at 40 CPR Part 230 under Section 404(b)(1) of the Clean Water Act (CWA). While EPA understands that SpaceX needs an exclusive launch site to meet tight launch schedules, it is not clear in the DEIS why FAA should approve locating the launch site in potential aquatic resources of national importance. EPA contends there are, for example, many spoil islands and other disturbed uplands along the GIWW in Texas and Louisiana that could potentially serve as a good base for the launch site and meet the other evaluation factors presented further in the DEIS."

USACE commented that "[t]he Corps can only issue a permit for the least environmentally damaging practicable alternative (LEDPA) that meets the project purpose. The project purpose is used by the Corps to evaluate practicable alternatives to the proposed project. An alternative is practicable if it is available

and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes. If it is otherwise a practicable alternative, an area not presently owned by the applicant which could reasonably be obtained, utilized, expanded or managed in order to fulfill the basic purpose of the proposed activity may be considered. The alternatives analysis in the DEIS is based on siting criteria so narrow as to eliminate all reasonable alternatives without disclosure of their impacts. In addition, based on the current analysis, the Corps cannot conclude if the alternatives are practicable. As a Cooperating Agency, the Corps requests the FAA expand the alternative analysis to clearly describe why the alternatives are not practicable under FAA statutory and regulatory requirements. Pursuant to the 404(b)(1) Guidelines, the Corps may not issue a permit until the applicant demonstrates that they have taken all appropriate and practicable steps to avoid and minimize adverse impacts to waters of the United States, including wetlands. Avoidance and minimization of proposed impacts to wetlands are assessed using a hard look at the on-site alternatives analysis. Once the applicant has demonstrated that wetlands have been avoided and minimized to the greatest extent practicable, compensatory mitigation may be required to ensure that proposed action in compliance with the 404(b)(1) Guidelines and does not result in a significant impact on the human environment."

USFWS noted that "[t]he DEIS alternatives analysis does not appear to consider impacts to fish and wildlife resources to evaluate the merits of one alternative over another."

Response - Alternatives

Section 2.3, *Alternatives Considered but Not Carried Forward*, was revised to provide more explanation of the site evaluation criteria that SpaceX used to identify potential launch sites. The FAA believes SpaceX's site evaluation criteria and evaluative process is adequate and appropriate for determining a reasonable range of alternatives. SpaceX would not begin construction of the proposed control center or vertical launch areas until they receive all appropriate environmental approvals (e.g., NEPA, ESA, CWA, NHPA, etc.). The FAA's choice of alternatives is focused by the primary objectives of SpaceX. Given SpaceX's objectives and goals, the FAA is evaluating sites for the proposed vertical launch and control center areas that it has determined are feasible.

With regard to the comment about possible use of spoil islands and disturbed uplands along the Gulf Intracoastal Waterway for a launch site, refer to Section 2.3.1.4, which explains that within Texas, Evaluation Criterion 2 (refer to Section 2.3 for Evaluation Criteria), requires a launch trajectory to the east that limits possible sites to the area between 0 and 70 miles from the Mexican border; north of this point, a large dogleg (i.e., turn or a large change in direction that results in a bent trajectory which severely compromises the performance to orbit) would be required. This eliminates northern areas of Texas (as well as the Louisiana coast). Other areas meeting this criterion are discussed in Section 2.3.1.

SpaceX is in the preliminary design stages for the vertical launch and control center areas. SpaceX will be able to perform detailed engineering for purposes of permitting and future construction, which has not yet occurred, and thus it is not possible to define in the Final EIS all of the detailed measures that will be instituted for those sites at this time. Those measures will be what the USACE would consider as meeting the definition of LEDPA for the permit application and possible issuance of a Section 404 permit to SpaceX. SpaceX is working with the USACE - Galveston District at this time to identify candidate

wetland sites which have been degraded by other activities and would provide opportunities for the enhancement of these wetlands rather than a preservation only mitigation approach.

Section 2.3.2 discusses on-site alternatives. On-site alternatives were considered to minimize, to the extent practicable, the amount of potential wetland impacts. The site layout selected and analyzed for potential environmental impacts in the Draft EIS and Final EIS is the layout that minimizes, to the extent practicable, the amount of potential wetland impacts. The Final EIS considers the potential impacts to all fish and wildlife resources.

Chapter 6.0 lists minimization and mitigation measures that would be implemented to reduce potential environmental impacts, including measures to avoid and minimize water resources impacts. Also refer to Comment Response 3.13.6 regarding Section 404 permitting.

3.4.7 Comment Summary - Proposed Action – Site Soils

EPA commented that "[at] the proposed vertical launch area the predominant soil series is Mustang fine sand, saline. This soil type has severe limitations for septic tank absorption fields, building site development, sanitary facilities, construction materials, and water management. The physical and chemical properties of this soil type indicate that it is highly permeable, shallow to clay, and highly saline. The soil and water features indicate that this soil type is subject to frequent flooding, a seasonal high water table, and a high risk of corrosion. With a gross liftoff weight of approximately 3.5 million pounds, the Falcon Heavy may not achieve maximum liftoff in the existing unstable substrate at this location. Explanation of the design features used to compensate for these impact concerns should be identified and incorporated into the Final EIS."

Response - Proposed Action – Site Soils

The detailed engineering considerations with respect to whether or not a Falcon Heavy may achieve maximum liftoff are not part of the FAA's environmental review under NEPA. The FAA conducts a safety review as part of its license/permit review process. Detailed engineering analysis and study would be performed by SpaceX to ensure the site is capable of supporting the proposed activities. The preliminary studies performed by SpaceX indicate that the proposed vertical launch and control center areas are sufficient for construction and operation.

3.4.8 Comment Summary - Proposed Action – Land Parcels

TPWD commented that "[t]he DEIS states definitively that the proposed control center would consist of three parcels." However, it was explained at the May 7, 2013 agency meeting and site visit that the control center would consist of either Parcel 1 alone or Parcels 2 and 3 together. The Final EIS should identify the location of the control center. Because Parcel 3 contains wetlands, TPWD recommends Parcel 1 be considered as a preferred location for the control center."

One commenter expressed the preference that the actual location of the launch area be as far south from State Highway 4 as is practical. Several commenters asked about the ownership of the proposed site.

Response - Proposed Action – Land Parcels

SpaceX has not identified the final design of the proposed control center area. Therefore, the Final EIS includes the most conservative scenario and assumes that the proposed control center would comprise portions of all three privately-owned parcels described in Section 2.1. However, the final site design may only include portions of one or two of the parcels. FAA acknowledges the presence of the wetland in Parcel 3. Refer to Section 4.7 of the Final EIS with regard to wetland impact avoidance and compensatory mitigation undertaken as part of the Section 404 permitting process.

The proposed vertical launch area is approximately 56.5 acres and is located directly adjacent to the eastern terminus of State Highway 4 (Boca Chica Boulevard) (see Exhibits 1.0-2 and 2.1-3 in the Final EIS). The proposed control center would be located immediately adjacent to Boca Chica Village, approximately 2 miles west of the proposed vertical launch area and north of Boca Chica Boulevard (see Exhibits 1.0-2, 2.1-4a and 2.1-4b). To avoid wetlands to the maximum extent practicable, the proposed layout of the vertical launch area abuts State Highway 4 (Exhibit 2.1-3). Exhibits 2.3-1 and 2.3-2 in Section 2.3.2 of the Final EIS show additional layouts slightly farther south than the proposed layout. These were considered but were not carried forward because they would result in more wetlands affected.

3.5 PUBLIC INVOLVEMENT

(1 comment excerpt summarized)

3.5.1 Comment Summary - Comment Period

One commenter asked for confirmation that the comment period for the Draft EIS had been extended to June 24, 2013 because they had not received notice of the extension. The commenter requested to be added to any email list for future updates on this project.

Response - Comment Period

At the request of the EPA, the comment period was extended until June 24, 2013. Notice of the comment extension was provided through publication in the *Federal Register*; the FAA website; public announcements in the Brownsville Herald, Valley Morning Star, and El Bravo newspapers (publication dates Thursday June 6 and Friday June 7); and email. Postcards were mailed out to the public and other interested parties on the mailing list. The commenter's name has been added to the mailing list.

3.6 AGENCY CONSULTATION

(2 comment excerpts summarized)

3.6.1 Comment Summary-Agency Comments

One commenter requested to see agency comments attached to this EIS to benefit from the expertise of the resource agencies.

Response - Agency Comments

All comments, including agency comments, on the Draft EIS and the FAA's responses are summarized in this appendix; the original comments are included in Volume III.

3.6.2 Comment Summary-Stakeholder Meetings

The Sierra Club recommends that SpaceX host quarterly stakeholder coordination meetings in the launch site community and at their expense. These meetings should include, at a minimum, SpaceX launch staff; staff from the following public agencies: USFWS, NPS, TPWD, BLM, TDOT, TxCPA ESA staff, TGLO; and other interested stakeholders such Surfriders, Inc., Sea Turtle, Inc., Sierra Club LRGV Group, and other local groups with an interest in being included.

Response - Stakeholder Meetings

SpaceX would consider stakeholder meetings. According to stipulations of the BCO (refer to Appendix G), SpaceX will submit an annual summary report to the USFWS Coastal Ecological Services Field Office by December 31 of each year. The SpaceX summary report will include monitoring reports, conservation measures implemented during project activities, success of such measures, incidences, and any recommendations on improvements to those measures. Section 6.8.1 has been updated to include this Special Conservation Measure (SCM).

In addition, as a stipulation of the Programmatic Agreement (PA), the FAA and signatories will hold an annual meeting.

3.7 LAND USE

(24 comment excerpts summarized)

3.7.1 Comment Summary - Public Access Restrictions

Commenters expressed concern over restrictions and banning of access to Boca Chica Beach and public recreational lands during launches. They cited concern over lack of access for people, some of whom are low income, that traditionally have enjoyed unhindered access to Boca Chica Beach. Commenters stated that visiting the beach is an inexpensive pastime. Commenters stated that the beach is public land and the Open Beaches Act prohibits closure by private entities and wanted more detailed information be included in the Final EIS on how beach closures would be implemented and maintained, including which entities/agencies would be responsible for any associated costs. Other commenters expressed a concern that future expansion of SpaceX launch operations could go beyond the 12 launches a year and would cause more beach closure. A commenter suggested that the Texas General Land Office (TGLO) be the ultimate decision maker in both primary and secondary launch dates.

Response - Public Access Restrictions

SpaceX proposes to limit public access to Boca Chica Beach and the surrounding area at two pre-defined checkpoints on State Highway 4 to ensure that unauthorized persons remain out of the FAA-approved hazard area. The two checkpoints include a soft checkpoint on State Highway 4, just west of the U.S. Customs and Border Protection checkpoint (approximately 14–16 miles west of the State Highway 4

terminus at Boca Chica Beach). Government personnel, SpaceX personnel, emergency personnel, and anyone with property beyond this soft checkpoint could pass, but the general public would be denied access. The second checkpoint would be a hard checkpoint, just west of the control center area. Closures would last for up to 15 hours on a launch day, with 6 hours being the typical closure time for a nominal launch (see Figure 2.1-1 in the Final EIS for the locations of the checkpoints and closure areas). The 15-hour closure period allows for potential aborts and contingencies.

The total number of closures and closure hours for wet dress rehearsals, static fire engine tests, and actual launches would fall within SpaceX's proposed 12 launch operations per year or annual maximum of 180 hours of closure per year. This EIS covers a 10-year period (2016-2025) and assesses a maximum of 12 annual launch operations during this time period. SpaceX has not identified proposed operations beyond this time period. As necessary, for any activity that is outside the scope of this EIS and falls under the FAA's purview, a new or supplemental NEPA analysis would be conducted

Approximately two weeks in advance of a launch, the County Commissioner's Court would be notified of the proposed launch date, the expected beach closure times, and backup closure dates and times (see Section 2.1.1.5 of the Final EIS). SpaceX would post written notices of the launch date and time and the proposed beach closure in several businesses and local offices in the area and within the County, as well as an advertisement in local newspapers advising of the beach closure. SpaceX would also coordinate with the Secretariat of Communications and Transportation–Mexico. In addition, SpaceX would coordinate with U.S. Customs and Border Protection, Cameron County and State of Texas law enforcement agencies, the U.S. Coast Guard (USCG), and Houston ARTCC in order to ensure public safety and allow for the issuance of Notice to Mariners (NOTMAR) and Notice to Airmen (NOTAM).

Approximately 3-6 days prior to launch, the public would be notified of the upcoming launch through local media and through the use of NOTMARs and NOTAMs. SpaceX would also inform the cities of Brownsville and South Padre Island; NPS; PINS; USFWS, Lower Rio Grande Valley National Wildlife Refuge; TPWD; TGLO; and TxDOT of the launch schedules.

As of May 24, 2013, House Bill 2623 was signed by Governor Rick Perry to amend the Texas Natural Resources Code Chapter 61 (§ 61.132) to allow for the TGLO and/or the Cameron County Commissioners Court to temporarily close a public beach and beach access for space flight activities, including launches. However, if the primary launch date falls on the major summer holidays of Memorial Day, Fourth of July, Labor Day, and/or summer weekends between Memorial Day and Labor Day weekends, additional approval from the TGLO would be required. The legislation also allows for a Memorandum of Agreement between the TGLO and Cameron County to further define specific requirements for beach and access closure requests, approvals, and related public notices.

As mitigation for beach access impacts, SpaceX would serve as a Beach Guardian, participate in beach cleanups, and provide educational speakers to teach the community about caring for the beach and wildlife (refer to EIS Section 6.1).

3.7.2 Comment Summary - Proximity to Homes

Commenters expressed concern about proximity of the launch facilities to homes and wanted to know if a launch would in any way affect homes within 5 miles.

Response - Proximity to Homes

Possible impacts to nearby properties as a result of the Proposed Action are detailed in Section 4.1.1.2, Land Use. To assess land use compatibility in residential areas, the EIS described three operational scenarios and the number of households that would be affected. As shown in Exhibit 4.1-1 of the EIS, under the worst case scenario, 35 households within a 2.8 mile radius would have the potential to be affected by noise-induced vibrations. Sonic booms associated with launch events would not impact residential areas, because sonic booms would occur more than 40 miles off the coast over the Gulf of Mexico.

3.7.3 Comment Summary - Critical Dune Areas

TPWD commented on Critical Dune Areas – "The DEIS states that all construction at the vertical launch area is proposed inland of dunes and would not compromise dune structure. However, according to the site layout (Figure 2.1-3; east of the unpaved road), the proposed security road and two perimeter fences would cross a dune that may be within 1,000 feet of the mean high tide. Well-vegetated dunes provide protection from storm surges along the coast. Compared to dunes along the upper Texas coast, dunes along the south Texas coast typically have less vegetative cover that is necessary for stabilization; therefore, impacts due to disturbance (e.g., construction vehicles) on dunes along the lower Texas coast can be longer lasting than similar impacts to more vegetated dunes along the mid and upper Texas coast and can remove the natural protective buffer provided by dunes. TPWD recommends avoiding construction in dune areas to the greatest extent practicable.

"Additionally, dunes provide habitat for a state species of concern, the Keeled earless lizard (*Holbrookia propinqua*). When threatened by a perceived predator, the escape behavior employed by this lizard is to flee at most only a few meters to an available ground squirrel burrow or plant cover (Cooper 2003). During construction on a dune occupied by Keeled earless lizards, it is likely they would flee to an available burrow within the construction area and potentially be negatively impacted. If construction must occur in the dunes, TPWD recommends surveying for the presence of Keeled earless lizards prior to construction. If lizards are observed during surveys, TPWD recommends a biological monitor be present during construction in dune areas to capture and relocate individuals. Please contact TPWD for appropriate methods for surveying and capturing lizards."

Response - Critical Dune Areas

SpaceX would apply for the required Dune Protection Permit and would get approvals before construction would commence in the dune protection area.

The area of suitable habitat for the keeled earless lizard is found within the dune habitat associated with the perimeter fence and security road along the eastern portion of the vertical launch area. While there is no state or federal regulatory requirement for pre-construction surveys for the keeled earless lizard since the species is not federally or state-listed, SpaceX would consider conducting presence-absence surveys for the species prior to construction activities and in conjunction with other wildlife surveys for ESA-listed species within the project area. In addition, although a biological monitor would not be used to monitor for this specific species, biological monitors monitoring for other species that do have

regulatory requirements for surveys and monitoring could also note the presence of the earless lizard, e.g., species surveys specified in the USFWS Biological and Conference Opinion (refer to Appendix G).

3.7.4 Comment Summary - Coastal Resources

TGLO and several other commenters expressed concern about construction and operations near coastal resources and dunes. TGLO commented, "…all construction activities within 1,000 feet of mean high tide, including the construction of roads and fences, must be consistent with provisions of the Open Beaches Act and the Dune Protection Act. A beachfront construction certificate and dune protection permit must be obtained from Cameron County. The Texas Administrative Code defines 'construction' as: causing or carrying out any building, bulkheading, filling, clearing, excavation, or substantial improvement to land or the size of any structure. Building includes, but is not limited to, all related site work and placement of construction materials on the site. "Filling" includes, but is not limited to, disposal of dredged materials. 'Excavation' includes, but is not limited to, removal or alteration of dunes and dune vegetation and scraping, grading, or dredging a site. Substantial improvements to land or the size of any structure include, but are not limited to, creation of vehicular or pedestrian trails, landscape work (that adversely affects dunes or dune vegetation), and increasing the size of any structure. After comparing maps provided in the Draft EIS to recent aerial photography, it appears that construction of the perimeter security access road and fence line in the vertical launch area are between approximately 700 and 1,000 feet from mean high tide. To verify the exact location of proposed construction activities, Space-X should submit a licensed survey of the site identifying the location of the proposed construction and the distance between the proposed construction and mean high tide, the vegetation line, the dune protection line, and the landward limit of the beachfront construction area; the location of proposed and existing structures, and the size (in acres or square feet) of the proposed project area, including proposed roadways and driveways.

"There appears to be dunes and dune vegetation near the proposed fire port in the vertical launch area. If dunes or dune vegetation are damaged due to heat or launch related activities, or during construction activities, the applicant must submit a comprehensive mitigation plan that includes a detailed description of the methods that will be used to avoid, minimize, mitigate, and/or compensate for any adverse effects on dunes or dune vegetation.

"A grading and layout plan identifying all elevations (in reference to the NOAA datum), existing contours of the project area (including the location of dunes and swales), and proposed contours for final grade should also be submitted so the TGLO can determine if there are dunes within the critical dune area (defined as within 1,000 ft of MHT) that may be affected by proposed construction activities.

"In addition, the DEIS states that SpaceX would monitor the beach area using all-terrain vehicles (ATVs) to ensure that the area is clear before launch. At this time, according to Dune Protection Act, Tex. Nat. Res. Code (TNRC) § 63.093, no person may operate a recreational vehicle on a sand dune seaward of the dune protection line in any county in which a dune protection line has been established. In Cameron County, the dune protection line is 1,000 feet from mean high tide."

Response - Coastal Resources

A Federal Consistency Review was prepared and submitted to TGLO, to assess compliance of the Proposed Action with the TCMP (see Appendix B). TGLO has raised no objections to the Federal Consistency Review and indicated in an email dated June 24, 2013 (see Appendix B) that it has no comments on the Federal Consistency Review. Based on this consultation, the FAA has determined the Proposed Action is consistent with the enforceable policies of the TCMP. Appendix B includes a discussion about proposed construction within 1,000 feet of mean high tide line and the need for a Dune Protection Act permit. Section 4.1.1.1 has also been updated with this information. SpaceX would be required to submit plans and permit applications in accordance with all Federal and State regulations. During the permitting process, a Dune Protection Act permit and associated materials for development within 1,000 feet of the mean high tide line would be obtained from Cameron County. The EIS is not a permitting document, and this permit does not need to be obtained at this time (see Comment Response 3.13.6 regarding permits and the NEPA process).

Monitoring would be done by vehicles along existing roads including State Highway 4, as well as by video surveillance (e.g., high definition video camera with zoom lenses placed well above ground level on the water tower or lightning towers). Only in the case that video surveillance is insufficient would other monitoring methods be used such as unmanned aerial surveillance (no more than two unmanned vehicles at the same time), manned aerial surveillance (one fixed-wing aircraft with flight time less than 30 minutes at an altitude of less than 1,000 ft), beach sweeps using ground vehicles suitable for beach travel (e.g., one ATV or one sport utility vehicle [SUV]), or USCG vessel.

The USFWS BCO (Appendix G) stipulates that SpaceX will develop a detailed Security Plan to fully describe agreements and plans with local authorities whose support is needed to ensure public safety during launch procedures, locations of checkpoints and roadblocks, who will secure those areas, exact type of unmanned and manned aerial and ground vehicles to be used to perform pre-launch security sweeps, and if necessary in the future, a location on private land for public viewing.

3.8 SECTION 4(F)

(15 comment excerpts)

3.8.1 Comment Summary - Adverse Effects

NPS recommended further consultation to ensure all feasible and prudent alternatives have been analyzed and all possible measures to minimize harm to the NHL are considered.

USFWS did not agree monthly closures are an unsubstantial lessening of use or enjoyment. Monthly closures will impact the public's ability to access public lands for the enjoyment of hunting, fishing, ecotourism, and recreational access to the beach. Closures will also impact monitoring and management of nesting sea turtles; bird surveys including Northern aplomado falcons, piping plovers; and other management operations.

Construction activities and operation of the facilities would have impacts on the character and sense of place associated with Section 4(f) properties related to the increase in human intrusions on the landscape from traffic, litter, incidental use, viewsheds, etc.

NPS commented that, "as currently described, the proposed action would adversely affect the activities, features, and attributes of the Palmito Ranch Battlefield NHL, a Section 4(f) property, and may result in temporary occupancy and constructive use of this property. For example, if the NHL is closed during launch hours, this could constitute temporary occupancy of the NHL. Constructive use of the NHL may result in the long-term visual and short-term noise impacts."

NPS was also concerned that secondary impacts resulting from public visitation to the launches may also adversely affect the NHL due to the potential for off-road driving, campfires/campsites, and looting. NPS IMR-NR believes closing the NHL for launches would be advantageous.

NPS expressed concern that closures and activities associated with the launch will have significant impacts to the management of surrounding NWR, NPS, and State Park lands, migratory birds, other coastal species, wetlands, floodplain, and viewshed to the Palmito Ranch Battlefield NHL.

Response - Adverse Effects

In accordance with FAA Order 1050.1E, the FAA consulted with the officials having jurisdiction over these Section 4(f) properties to determine whether the officials concur with FAA's determination that operation of the proposed vertical launch and control center areas would not constitute a constructive use of the properties (see Appendix C). The THC concurred with the FAA's determination on April 22, 2013, and the TPWD concurred on April 17, 2013 (Appendix C). The USFWS and NPS did not concur with the FAA's determination that operation of the proposed vertical launch and control center areas would not constitute a constructive use. In correspondence to the NPS and USFWS dated August 16, 2013, and December 23, 2013, respectively, the FAA addressed the NPS and USFWS's concerns and further explained why the Proposed Action would not constitute a constructive use of the properties (Appendix C). While neither agency ultimately concurred with FAA's determination, both agencies agreed to move forward with development of "measures to minimize harm" to the Section 4(f) properties in consultation with the FAA and other consulting parties participating in the Section 106 process. The FAA considers these measures to be proposed mitigation measures (see Chapter 6 of the EIS). With respect to the Proposed Action, the FAA is ultimately solely responsible for Section 4(f) applicability and determinations. By letter dated January 10, 2014 (Appendix C), USFWS did concur with the FAA's *de minimis* impact determination for the installation of power lines along State Highway ROW.

Section 4.2.1 of the EIS states that the 250-ft tall water tower and the 230-ft tall lightning protection towers would be visible from much of the battlefield area. However, the water tower and lightning protection towers would have a small profile on the horizon due to the relative distance of the vertical launch area from the NHL (approximately 3 miles from the eastern end of the NHL). To minimize the visibility of these towers in the landscape, SpaceX would paint the towers a non-reflective, light color that blends in with the surroundings. Additional measures to minimize harm would be developed in consultation with the THC, NPS, and other consulting parties during the Section 106 process. Taking this into account, the FAA determined construction of the proposed vertical launch and control center areas would not constitute a constructive use of the NHL.

With regard to the concern that closures would impact ongoing monitoring programs, the area closures are not expected to result in significant impacts to existing natural resource management actions. Beach

monitoring by sea turtle surveyors will be allowed to commence once the launch area is deemed safe for 1 hr before the general public is allowed access to Boca Chica Beach. Given that sufficient notice prior to a launch will be given to USFWS, TPWD, NPS, and other interested agencies with management responsibilities within the action area, and the relatively short time of area closure (maximum 15 hrs per launch operation), the area closures are not expected to result in significant impacts to ongoing monitoring and management conducted by the aforementioned agencies.

The FAA expects that implementation of the Proposed Action would raise the potential for secondary (induced) impacts from increased visitation in the area during launches (see Section 4.12.1.2). In collaboration with the FAA, SpaceX developed a Security Plan. The FAA distributed the plan to the USFWS (and other agencies) for review and comment. The plan was revised based on feedback received from the USFWS (and other agencies). The plan describes the procedures for securing the land and water closure areas that would limit public access in the area on a launch day (see Exhibit 2.1-1), which would minimize the potential for impacts to sensitive biological resources (plants, animals, and habitat). The Security Plan would be implemented in accordance with USFWS BCO.

SpaceX also will coordinate with the U.S. Customs and Border Protection, Cameron County; Cameron County and State of Texas law enforcement agencies; City of Brownsville; City of South Padre Island; Texas General Land Office; Texas Department of Transportation; and the U.S. Coast Guard on the plan to secure the area during launches.

3.8.2 Comment Summary – Recreational and Commercial Fishing

One commenter expressed concern that "closure of the shipping channel and offshore water resources" would impact recreational and commercial fishery industries as well as tourism based industries that depend on the waters of the Lower Laguna Madre and Gulf of Mexico and suggested a financial analysis.

Response - Recreational and Commercial Fishing

The Brownsville Ship Channel would not be included within the closure area for launches and would not be affected (refer to Exhibit 2.1-1 in the Final EIS for the proposed closure areas). A maximum of 12 closures (each involving a maximum of 15 hours) of the nearshore water adjacent to Boca Chica Beach is not expected to have any significant impact (including financial) on regional recreational or commercial fishing activities.

3.9 NOISE

(8 comment excerpts summarized)

3.9.1 Comment Summary - Generators

USFWS commented on the statement in Section 4.6.1.2, Air Quality, Operations, that generators would be used during a power outage or as a supplemental power source that could be used continuously for the final 48-hours prior to launch. USFWS requested that generators should have sound abatement baffles installed to reduce noise levels while in operation.

Response - Generators

SCMs listed in Section 6.8.1, which are based on the Terms and Conditions that implement the Reasonable and Prudent Measures of the BCO (see Appendix G), state that to the maximum extent possible, SpaceX would reduce noise impacts from generators that may be used during construction or operations. Generators are to be in baffle boxes (a sound-resistant box that is placed over or around a generator), have an attached muffler, or use other noise-abatement methods in accordance with industry standards.

3.9.2 Comment Summary - Typical A-weighted Sound Levels at NHP and NHL

NPS requested and notes that text was added in DEIS Section 3.3.4 to address the diurnal differences in the Affected Environment at Palo Alto Battlefield NHP (and at Palmito Ranch Battlefield NHL) for daytime and nighttime launches. However, the estimated daytime and nighttime sound levels do not reflect the currently accepted (2013) version of ANSI S12.9/Part 3. Also, they are not limited to Palo Alto NHP or Palmito Ranch Battlefield NHL nor are they applicable to all NHPs and NHLs. Therefore, we request a correction in the text, with better clarification of applicability as follows: "For land in the vicinity of the Palo Alto National Historic Park and the Palmito Ranch Battlefield NHL, the typical A-weighted daytime and nighttime sound levels are estimated at 40 dBA and 34 dBA, respectively (American National Standards Institute 12.9-2013/Part 3)."

Response - Typical A-weighted Sound Levels at NHP and NHL

Section 3.3.4 of the Final EIS has been revised as suggested.

3.9.3 Comment Summary - Static Fire Test Noise

NPS commented that the Noise Analysis considers proposed operations that "would consist of up to 12 launches per year" but neglects disclosure of noise impacts due to the potential two second static rocket fire tests that are described in Section 2.1.1.5. It is unclear whether the sound power of a static fire was appropriately modeled as described in Appendix D Section 3.2 (pages 9-11), but Appendix D Sections 3.2.4, 3.2.5, and 4.0 (Figures 22 and 23 in particular), indicate that sound propagation to distant receivers may have been appropriately modeled for static test fires and the initial (ground-based) location of launches. NPS requested more complete analysis and disclosure of impacts in Section 4.3.1 and that Table 4.3-3 and the text disclose the maximum sound levels (L_{max}), SEL, and Time Above (66 and 52 dBA) at Palmito Ranch Battlefield NHL and Palo Alto Battlefield NHP due to static rocket fire tests. NPS suggested added columns in Tables 4.3-1 and 4.3-2 to disclose Maximum OASPL for static fire tests, in addition to descriptive document text.

Response - Static Fire Test Noise

For the purposes of the noise modeling for this EIS, the maximum scenario, up to 12 actual launch events per year, was considered. Launch operation such as mission rehearsals and static fire engine tests would generate lower noise levels than an actual launch event and therefore would not exceed the modeled noise.

3.9.4 Comment Summary - Traffic Noise

NPS commented that the discussion of noise in Section 4.3.1.2 is dismissive of the volume and type of traffic traveling SH 4 daily in support of the facilities which is over and above the noise generated by operation of the facilities themselves.

Response - Traffic Noise

The EIS states that there would be an increase in noise levels along State Highway 4 as a result of the operation of delivery trucks and personnel vehicles. An estimated average of 2.5 delivery trucks would travel each way on work days (Monday through Friday) and up to 250 personnel vehicles by 2025. Increased noise levels would typically be greatest during commuting hours. Sections 4.3.1.2, 4.5.1.2, and Appendix K, *Ground Traffic and Transportation*, have been updated to include estimates of delivery trucks. Also refer to responses to Comment 3.11.5.

3.9.5 Comment Summary - Noise Impacts on People

Commenters are concerned about how launch noise would affect the local people.

NPS requests addition of the following descriptive text to the paragraph on page 4-25 following Table 4.3-3: "Outdoor speech interference can be expressed as a percentage of sentence intelligibility among two people speaking in a normal voice at approximately 1 meter (3.28 ft) apart or for outdoor interpretive programs where the communication distance may be up to 5-10 meters (16.4-32.8 feet) apart for normal or raised voice levels, respectively. The model results shown in Table 4.3-3 indicate that speech intelligibility would drop below 95 percent for a time period of up to 3 to 5 minutes per launch for two people speaking at approximately 1 meter apart and speech intelligibility would drop below 95 percent for a time period of up to 7 to 8 minutes per launch for outdoor interpretive programs where the communication distance may be up to 5-10 meters (16.4-32.8 feet) apart."

Response - Noise Impacts on People

Potential noise impacts are discussed in detail in Section 4.3. Intermittent noise impacts during construction, as well as long-term operational and launch impacts, including sonic boom, were detailed in Sections 4.3.1.1 and 4.3.1.2. Noise impacts would be short-term since noise levels would last less than 1 minute and would only occur up to 12 times per year. Noise from sonic booms would not be heard inland. Hearing protection measures would be implemented to ensure the health and safety of Boca Chica Village residents during launch activities. For example, the residents would be notified of each scheduled launch operation and potential noise hazards well in advance of the launch day. Residents would be encouraged to remain indoors during a launch event, which can reduce noise exposure. SpaceX may also make hearing protection devices available to residents to reduce noise levels below 15 dBA at distances up to approximately 1.2 miles for the Falcon 9 and 2.1 miles for the Falcon Heavy.

With regard to NPS comments on outdoor speech interference, Section 4.3.1.2 of the Final EIS has been revised to the following: Time above is an additional supplemental metric that can be used to estimate potential speech interference. Outdoor speech interference can be expressed as a percentage of sentence intelligibility among two people speaking in a normal voice at approximately 1 meter (3.28 ft) apart or for outdoor interpretive programs where the communication distance may be up to 5-10

meters (16.4 – 32.8 ft) apart for normal or raised voice levels. Ninety-five percent of speech intelligibility usually permits reliable communication because of the redundancy in normal conversation (EPA 1974). For two people speaking in a normal voice at approximately 1 meter apart, speech intelligibility would drop below 95 percent when the background level exceeds 66 dBA. Table 4.3-3 indicates that 66 dBA would be exceeded for a time period of up to 3 to 5 minutes per launch. For outdoor interpretive programs where the communication distance may be up to 5 meters (16.4 ft) apart for normal voice levels and 10 meters (32.8 ft) apart for raised voice levels, speech intelligibility would drop below 95 percent when the background level is above 52 dBA. Table 4.3-3 indicates that 52 dBA would be exceeded for a time period of up to 5 to 8 minutes per launch.

3.10 LIGHT EMISSIONS AND VISUAL IMPACTS

Comments on these topics are also addressed under Biological Resources and Historical Resources.

(4 comment excerpts summarized)

3.10.1 Comment Summary - Light Emissions

NPS assumed that the Lighting Management Plan will address the differences in nighttime lighting throughout the year as well as specific nighttime lighting associated with night launches and asked what the duration and intensity of night lighting is for a launch. NPS commented that security and operational lighting will have impacts on night skies as well as wildlife.

Response - Light Emissions

Prior to construction and operational activities, a Draft Lighting Management Plan would be submitted to USFWS and NPS (refer to Sections 6.4 and 6.8 of the Final EIS, Volume I). The Final Lighting Management Plan would be approved and implemented prior to nighttime construction activities to minimize overall lighting impact, including potential direct impacts and cumulative glow, on wildlife and adjacent sea turtle nesting beaches.

3.11 HISTORICAL, ARCHITECTURAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

(40 comment excerpts summarized)

3.11.1 Comment Summary - Historic Properties Visual Effects

Several commenters expressed concern about visual impact to historic sites and the need for mitigation. NPS requested that Figures 4.3-1, 4.3-2, 4.3-3, and 4.3-4 be augmented to disclose the boundaries and thereby the impacted locations of the Palmito Ranch Battlefield National Historic Landmark and Palo Alto Battlefield NHP.

NPS noted that the towers and associated structures, buildings ranging from 65 to 85 feet tall, and lighting proposed would have adverse visual effects on the NHL and NHP, and asked that the viewshed analysis in Section 4.4.1.2 include the 65 -85 foot high structures slated for the control center area as well. NPS stated that the RF antenna arrays at parcels 1 and 2 may require some visual mitigation measures.

NPS and USFWS anticipate development of a Memorandum of Agreement to mitigate adverse effects to historic properties, and would like to be involved with other related "mitigation plans," such as the Security Plan, Lighting Plan, Hurricane Plan, and monitoring.

Response - Historic Properties Visual Effects

The boundaries of the NHP and NHL, as well as the Battlefield Overlook, were added to the appropriate figures in the Final EIS.

Through Section 106 consultation, all parties have agreed to execute a PA in place of the MOA. The Section 106 PA between the FAA, SHPO, NPS, USFWS, TPWD, ACHP, and SpaceX is included in the Final EIS in Appendix C. The PA includes stipulations on the process for minimizing and mitigating adverse effects on historic properties.

SpaceX developed a draft Lighting Management Plan which the FAA distributed to the NPS, USFWS, and other cooperating and consulting agencies for review and comment. The plan was revised based on feedback received from the NPS, USFWS, and the other agencies. The Final Lighting Management Plan is subject to approval by the USFWS and NPS (refer to Sections 6.5 and 6.8 of the EIS) and would be implemented prior to nighttime construction activities to minimize overall lighting impacts, including potential direct impacts and cumulative glow. Sections 4.5.1 and 6.8.1 have been updated to reflect the Lighting Management Plan and coordination with USFWS, NPS, and other agencies.

3.11.2 Comment Summary - Historic Properties Noise Effects

NPS is concerned about noise impact to the Palmito Ranch Battlefield NHL because of its proximity to the launch area and would like more detail on noise-related mitigation that would be included in the Security Plan. Regarding driving or installation of pilings - what will be the noise levels associated with this activity? What impacts will this have on the historic pilings in the immediate area? In reference to Section 4.2.1.2, NPS noted that text on Draft EIS page 4-14 that disclosed potential launch noise-induced damage to the unconventional structures of historic pilings, which are much closer than 3.4-6.4 miles from the launch site, but stated that the existing text on structural damage probability is unclear and potentially misleading for closer structures. Therefore, to better clarify the meaning and applicability of the study results, NPS requested the following text change: "According to the unweighted L_{max} levels modeled for the Proposed Action, the probability of noise-induced structural vibration damage to buildings or structures is 1 in 100 or higher within areas exposed to unweighted noise levels of 119 dB or greater, which is 3.4 miles from the launch pad in the vertical launch area for the Falcon 9 and 6.4 miles for the Falcon Heavy."

Response - Historic Properties Noise Effects

The noise study evaluated potential noise-induced impacts using the best available approach, which is probability of damage claims rather than probability of damage. The suggested text provided would indicate to the reader that the noise model derived probabilities for actual damage rather than a probability of a claim; therefore, no text change has been made. The Section 106 PA between the FAA, SHPO, NPS, USFWS, TPWD, ACHP, and SpaceX includes stipulations for mitigating potential noise-

induced impacts to the historic pilings. The PA is referenced in Section 4.5.1 and is included in the Final EIS in Appendix C.

3.11.3 Comment Summary - Historic Properties Direct Historic Integrity Impacts

NPS requested that the statement in Table ES.6-1 indicating the construction of these facilities would not directly impact any historic property, be revised to state direct impact on the historic integrity of the NHL. NPS also requested revision of the statement "…would indirectly impact one historic property through visual impacts." To read "… would directly impact the historic integrity of the Palmito Ranch Battlefield NHL through visual impacts." NPS requested that wherever the word "setting" occurs related to the NHL, the words "location and feeling" be added.

NPS asked if control center area construction would have negative visual impacts on NHL, and requested that, if possible, orientation of buildings be with the smaller side on an east/west line to minimize impacts to viewsheds. All facility colors should be included in mitigation measures

Response - Historic Properties Direct Historic Integrity Impacts

The associated text in Table ES.6-1 and Section 4.5.1 of the EIS were revised as suggested. Construction of facilities at the control center could visually impact the NHL. The Executive Summary and Section 4.5.1 of the EIS were revised to address potential visual impacts of control center area construction on the NHL.

Sections 3.5.5.3, 4.5.1.1, and 5.2.5 of the EIS were revised to "setting and feeling." Construction of the proposed vertical launch and control center areas would not impact integrity of location as both areas are outside of the boundaries of the NHL, and removed from the core battlefield area.

One of the stipulations in the PA requires SpaceX to develop a preliminary Facility Design Plan. This plan will be subject to the review process stipulated in the PA. The PA is referenced in Section 4.5.1 of the EIS and is included in the Final EIS in Appendix C.

3.11.4 Comment Summary - Historic Properties Texas State Historic Preservation Office Concurrence

NPS asked if THC concurred with all of the determinations of eligibility found in Table 3.5-2 - Summary of Cultural Resources. If not, then any cultural resources that have not been officially determined eligible should be treated as such until such time that THC has concurred with eligibility determinations. NPS recommended not including a map of archaeological sites.

Response - Historic Properties Texas State Historic Preservation Office Concurrence

THC provided concurrence with determination of eligibility on November 16, 2012 (Refer to Section 33.5.5 and Appendix C). Exhibit 3.5-1 has been deleted.

3.11.5 Comment Summary - Historic Properties Truck Traffic Effects

NPS submitted several comments related to the increase in truck traffic in proximity to the NHL. Impacts to land use are under-represented. "The description of day to day activities omits the impacts from all of the required support and contracted services required for operation of the sites. Delivery of over 550,000 gallons of fuels per launch and up to ten daily deliveries to supply the required 50,000

gallons of potable water will require thousands of round trips for these trucks alone. This volume of heavy truck traffic will impact the integrity of the NHL."

"Review of Appendix K raises questions. The calculations for traffic volumes related to operations again omits any mention of all the service and support trucking required. Rough estimates for 2022 based on water and fuel deliveries alone would require 3,160 trucks for water and 733 trucks for LOX and RP1 (550,000/9,000 x 12). Applying the conversion factor given in Appendix K of 1.5 passenger cars per truck, this segment of supporting traffic adds an additional 5,840 cars that are not considered in the appendix."

"As illustrated in Table 4.9-1, there are large quantities of fuels that will need to be delivered. The numbers and impacts of that traffic on the NHL and NWR are not clearly discussed in the document."

Response - Historic Properties Truck Traffic Effects

Appendix K, *Ground Traffic and Transportation,* has been updated to include analysis of truck deliveries. By 2025, there would be an estimated 602 trucks per year (i.e., 602 truck trips in each direction) delivering propellant, fuel, and water (assuming potable water must be delivered by truck), with an average of 2.5 trucks per work day traveling in each direction. Appendix K also includes additional explanation of the heavy truck equivalence factor 1.5. For the purpose of calculating traffic levels of service (LOS), a heavy truck equivalence factor of 1.5 is applied to trucks only to account for the differences in traffic flow between trucks and cars. Section 4.7.1.2 *Water Resources–Groundwater* has also been updated to discuss the potential for water to be supplied by truck if groundwater quality is not adequate for potable water use. The proposed volume of truck traffic for operational activities would have no adverse effect on the NWR and would not result in an adverse effect to the setting of the NHL. Also refer to Sections 4.2.1.1 and 4.5.1.2.

3.11.6 Comment Summary - Historic Properties Underground Power Line Effects

NPS is concerned soil disturbance associated with the installation of the underground power lines may lead to the proliferation of exotic weeds and notes a potential for archaeological resource discovery during this installation.

Response - Historic Properties Underground Power Line Effects

As USFWS and TxDOT would issue utility permits for the installation of the underground power lines, they would require the electrical contractor to adhere to the current vegetation management procedures to minimize the spread of existing exotic weeds within the roadside ROW. No new soil would be introduced during utility line burying activities and the potential for the proliferation of exotic weeds would be limited to those already present within the project area. Therefore, there would be no significant impact to vegetation and habitat within the ROW. This text has been added to the Final EIS to Section 4.8.

Regarding the potential for archaeological resource discovery, an Unanticipated Discoveries Plan for archaeological resources would be developed in accordance with the Section 106 PA (Refer to Appendix C).

3.11.7 Comment Summary –Historic Properties Programmatic Agreement

NPS recommended language in the MOA be strengthened to indicate that mitigation measures "will" be explored in more detail through preparation of a Memorandum of Agreement with consulting parties. In addition, mitigation measures "will" also be addressed in other "plans" associated with this Draft EIS including a lighting plan, security plan, emergency action plan, etc.

Response - Historic Properties Programmatic Agreement

The text was revised as suggested. Through Section 106 consultation, all parties have agreed to execute a PA in place of the MOA. The PA has been developed, pursuant to 36 C.F.R. § 800.14(b), to govern the implementation of a program for the continued assessment of effects on known historic properties and the resolution of adverse effects on known historic properties, and this PA will govern completion of FAA's Section 106 compliance responsibilities.

3.11.8 Comment Summary – Tribal Consultation

EPA commented, "…the DEIS indicates that Tribes were identified and contacted during the scoping phase of the DEIS; however, E.O. 13175 is not referenced and it is not clear whether government-to-government consultation occurred. Coordination regarding NHPA and cultural resources occurred (Section 3.5.5.4). Consultation efforts need to be documented in the Final EIS. EPA requests that the FEIS provide the following information to document and confirm that: 1) potentially affected Tribes, tribal resources and citizens were identified, and 2) appropriate contact was made with the Tribal officials of potentially affected Tribes (beyond the narrow context of working with THPOs or SHPOs on issues related to historic properties (National Historic Preservation Act (NHPA)), or 3) that the agency otherwise concluded that there were not tribes or tribal resources that would be affected and there was no need for such contact or consultation."

Response - Tribal Consultation

The following text has been added to the Final EIS, Section 4.5: "In accordance with 36 C.F.R. § 800.3c(3) the FAA sent consultation letters (dated 2 May 2012), describing the Proposed Action and inviting tribes to participate in Consultation, to the Comanche Nation of Oklahoma, the Mescalero Apache Tribe of New Mexico, the Kiowa Tribe of Oklahoma, Apache Tribe of Oklahoma, and the Tonkawa Tribe of Oklahoma for which the Project area has religious and cultural significance, but received no response."

3.12 AIR QUALITY

(2 comment excerpts summarized)

3.12.1 Comment Summary – Control Measures

EPA suggested that the following control measures be included in the Final EIS to reduce air quality impacts associated with emissions of Nitrous Oxides (NOx), Carbon Monoxide (CO), Particulate Matter (PM), Sulfur Dioxide (S02), and other pollutants from construction-related activities.

"Fugitive Dust Source Controls:

- Install wind fencing and phase grading operations where appropriate, and operate water trucks for stabilization of surfaces under windy conditions; and
- Prevent spillage when hauling material and operating non-earthmoving equipment and limit speeds to 15 miles per hour. Limit speed of earth-moving equipment to 10 mph.
- Mobile and Stationary Source Controls:
- Plan construction scheduling to minimize vehicle trips;
- Verify idling restrictions through unscheduled inspections;
- Maintain and tune engines per manufacturer's specifications to perform at EPA
- certification levels, prevent tampering, and conduct unscheduled inspections to ensure these measures are followed;
- If practicable, utilize new, clean equipment meeting the most stringent of applicable Federal or State Standards. In general, commit to the best available emissions control technology. Tier 4 engines should be used for project construction equipment to the maximum extent feasible;
- Lacking availability of non-road construction equipment that meets Tier 4 engine
- standards, the responsible agency should commit to using EPA-verified particulate traps, oxidation catalysts and other appropriate controls where suitable to reduce emissions of diesel particulate matter and other pollutants at the construction site;
- Consider alternative fuels and energy sources such as natural gas and electricity (plug-in or battery).
- Administrative controls:
    - Prepare an inventory of all equipment prior to construction and identify the suitability of add-on emission controls for each piece of equipment before groundbreaking;
    - Develop a construction traffic and parking management plan that maintains traffic flow and plan construction to minimize vehicle trips; and
    - Identify sensitive receptors in the project area, such as children, elderly, and infirmed, and specify the means by which impacts to these populations will be minimized (e.g. locate construction equipment and staging zones away from sensitive receptors and building air intakes)."

Response- Control Measures

The emission of any air pollutants as a result of ground disturbance, use of equipment, coatings application, or other construction activities would be controlled by incorporating the following BMPs: minimal idling of engines, watering of soils to be disturbed, water and dust abatement applied to dirt roads, use of low volatility coatings, and other recognized controls (refer to EIS Section 4.6.1.1).

3.12.2 Comment Summary – Air Emissions During Launch

Several commenters asked about potential smoke, fumes, or vapor that may be released during launches and whether there are any harmful chemicals that will go into the air and impact nearby residents.

Response- Air Emissions During Launch

With the launch of the Falcon 9, Falcon Heavy, or reusable suborbital launch vehicle, an exhaust cloud would form near the launch pad at lift-off as a result of the exhaust plume and evaporation and subsequent condensation of deluge water (refer to Section 4.9.1.2 of the Final EIS). Because these launch vehicles use only LOX and RP-1 propellants, the exhaust cloud would consist of steam only and would not contain any hazardous materials. More information regarding air quality impacts as a result of operations is described in Section 4.6.1.2 of the EIS.

3.13 WATER RESOURCES (Including Surface Waters, Groundwater, Wetlands, and Floodplains)

(52 comment excerpts summarized)

3.13.1 Comment Summary – Surface Waters

NPS referred to the water sampling of the retention basin underneath the launch pad discussed in Section 2.1.2.1 and asked what the benchmark or applicable industry standard would be for the water quality standard to be developed with TCEQ?

Response – Surface Waters

The benchmark or applicable industry standard is Texas Administrative Code, Title 30 Environmental Quality, Part 1 - Texas Commission on Environmental Quality, Chapter 307: Texas Surface Water Quality. Sections 2.1.2.1 and 4.7.1.2 of the Final EIS have been updated to include this standard.

3.13.2 Comment Summary - Surface Waters

EPA is also concerned that "storm water runoff from filled materials, accidental rocket fuel spills, and return water from the Deluge Water System would likely result in a long-term increase in pollution in South Bay and/or the Gulf of Mexico and possibly affect the natural functions of the remaining special aquatic sites. Furthermore, a launch failure would scatter debris into the remaining special aquatic sites and/or the Gulf of Mexico. EPA is concerned drainage patterns in the project area drain into waters of the U.S., including special aquatic sites. Extensive grading and filling of this area may disrupt the natural flow and circulation of waters of the U.S. to the remaining special aquatic sites and/or the Gulf of Mexico. These impact concerns and the required mitigation measures to avoid or minimize these potential impacts should be identified and incorporated into the Final EIS. In the FEIS, the FAA should evaluate the effect of return water from the Deluge Water System into special aquatic sites and measures taken to avoid or minimize impacts. Design features to avoid or minimize these potential impacts should be identified and incorporated into the FEIS."

Response - Surface Waters

In order to obtain a TPDES Permit (Texas' authorized NPDES permit under Section 402 of the Clean Water Act), SpaceX would develop and submit a Stormwater Pollution Prevention Plan (SWPPP), which will address site drainage and stormwater flow/treatment (Refer to Sections 4.7.1.1 and 4.7.1.2). The SWPPP will identify potential sources of pollutants that affect stormwater discharges from the site; describe the practices that will be implemented to prevent or control the release of pollutants in storm

water discharges; create an implementation schedule to ensure that the practices described in the SWPPP are in fact implemented; and evaluate the plan's effectiveness in reducing the pollutant levels in storm water discharges. Adherence to the SWPPP would prevent potential spills at the site from affecting surface waters within the surrounding area. SpaceX would also develop a Spill Prevention, Control, and Countermeasures Plan and Hazardous Materials Management Plan (HMMP) to reduce the potential for adverse impacts to water resources.

The deluge water from the pad and flame duct would be captured in a retention basin under the launch pad and not released into the nearby tidal flat. Based on SpaceX's past experience with Falcon 9 launches, the deluge water system would generate a vapor cloud that would travel approximately 600 feet from the launch pad toward the east/southeast in the direction of the flame duct exit. Low wind conditions, required for a launch, may disperse the vapor cloud approximately 200 feet to the northwest under prevailing southeast winds. Portions of the deluge water would also be entrained in the exhaust and would follow that exhaust cloud over the Gulf of Mexico.

For launch failure impacts, see Section 4.6.1.2.

3.13.3 Comment Summary - Wetlands

USFWS commented that the Draft EIS states that, within the 20-acre fenced launch site facility, 3.34 acres of the jurisdictional area would be directly impacted and 2.85 acres would be indirectly impacted. USFWS notes that although not explicitly stated, as illustrated in Exhibit 4.7-1 and 4.7-3, there are additional jurisdictional areas that would be avoided within the fenced 20-acre launch site. No acreage is given for these avoided areas. This additional acreage will also be impacted because inside the fence, a perimeter security access road is proposed to be constructed. Also, the fill used to construct the roadway is likely to alter the drainage from the site, and could, along with the fence, stimulate the growth of vegetation in what is currently an unvegetated tidal flat. USFWS recommends all of the jurisdictional waters and wetlands within the 20-acre launch site be included as directly or indirectly impacted, and a mitigation plan be developed for these areas. Also, tidal areas not directly impacted by fill should be included as part of a long-term monitoring plan to determine the effects of a launch event on avian and other wildlife using these areas.

Response - Wetlands

The area to be used for a perimeter road is accounted for in the total acreage of impacted wetlands. Of 25.47 acres of wetlands present on the vertical launch and control center areas, impact minimization efforts, described in Section 2.3.2 of the EIS, resulted in the avoidance of 19.28 acres of wetlands and the direct and indirect impact of 6.9 acres. The total acreage of avoided wetlands within the 68.9-acre vertical launch and control center areas was added to Section 4.7.1.1.

In accordance with the USFWS BCO (refer to Section 6.8.1 and Appendix G), to protect surrounding wetlands and waterways, SpaceX would develop a detailed SWPPP that is coordinated with the USFWS, EPA and TCEQ to ensure compliance with protective surface water and sediment criteria (i.e. TRRP 24 Residential Surface Water and Sediment PCL and EPA Water Quality Criteria for surface water and sediment). Also refer to response to Comment 3.13.2. Section 6.8.1 was updated to state that based on the BCO (refer to Appendix G), SpaceX would provide the USFWS with a Vegetation Monitoring Plan for

tracking potential induced vegetative changes as a result of proposed construction activities, fencing, security, stormwater discharge, and launch activities (See Table ES.8-1 [#13] and Section 6.8.1.2 [#13]).

3.13.4 Comment Summary - Wetlands

Several commenters express concern about the protection of wetlands. USFWS noted that wetland mitigation presented in the DEIS was preservation in-kind with high-quality wetlands at a 5:1 ratio. USFWS commented that they do not oppose the use of preservation for compensatory mitigation, but the goal of no-net-loss of wetlands can only be achieved with wetland creation, restoration, or enhancement, as outlined in the 2008 Mitigation Rule and must "provide important physical, chemical, or biological functions for the watershed; contribute significantly to the ecological sustainability of the watershed; and is under threat of destruction or adverse modifications. Also, where preservation is used to provide compensatory mitigation, to the extent appropriate and practicable, the preservation shall be done in conjunction with aquatic resource restoration, establishment, and/or enhancement activities."

EPA also commented that "[f]or compensatory mitigation, EPA prefers restoration in combination with preservation of former wetlands or the creation of new wetlands with permanent protection. For example: In-kind compensatory mitigation in the form of restoration or enhancement and long term protection at other sites in the watershed may be preferable to sole preservation and may result in a net gain of wetland functions. In addition to the direct loss of wetland functions, EPA is concerned with potential secondary adverse impacts to water quality and natural ecological functions by construction of this project in wetlands."

Response - Wetlands

SpaceX would be required to obtain a Section 404 permit from the USACE prior to construction. The permit would require additional efforts to avoid and minimize wetland impacts and compensatory mitigation to offset the loss of function to waters of the U.S. (see Section 6.6 of the Final EIS). Currently, SpaceX's compensatory mitigation plan proposes to preserve in-kind, high-quality wetlands at a ratio of ten times the amount of wetlands impacted by the Proposed Action (see Appendix M). Additional mitigation may be imposed upon SpaceX by the USACE.

SpaceX is working with the USACE to identify existing type for type wetlands that have been degraded or adversely affected by other activities and would be candidate sites for wetland enhancement in lieu of preservation only mitigation. Candidate sites would be finalized during the Section 404 permit process.

3.13.5 Comment Summary - Wetlands

NPS commented that consideration should be given to a hard closure point located on Highway 4 west of the Palmito Ranch NHL and all USFWS lands. The Highway 4 ROW should be closed to parking and public viewing to protect adjacent fragile vegetation and wetland areas. A statement acknowledging that SpaceX will be responsible for all costs over and above normal operations for federal, state and local agencies associated with the closure should be included.

Response - Wetlands

The hard checkpoint is defined by FAA's hazard analysis. No one would be allowed to pass this checkpoint during a launch. Refer to Exhibit 2.1-1 for the location of the hard checkpoint. Also refer to the response to Comment 3.8.1 - Section 4(f) regarding the Security Plan and soft checkpoint. In response to comments from USFWS and NPS about protecting the NWR and NHL, the proposed soft checkpoint was moved farther west to a point on State Highway 4, just west of the U.S. Customs and Border Protection checkpoint, approximately 14–16 miles west of the State Highway 4 terminus at Boca Chica Beach (see Exhibit 2.1-1 of the Final EIS). Government personnel, SpaceX personnel, emergency personnel, and anyone with property beyond this soft checkpoint could pass, but the general public would be denied access. This proposed closure area includes the entire NWR and NHL.

The FAA understands that SpaceX has committed to working with the USFWS to fund additional resources/personnel necessary to enforce the closures required for launch operations, including the additional closure of land requested by the USFWS to the extended soft check point. Section 2.1.1.5 was revised to include this statement.

3.13.6 Comment Summary - Wetlands

EPA commented that on May 21, 2013, EPA Region 6 issued comments to the Galveston District Corps of Engineers on the Section 404 Public Notice [SWG-2012000381], dated April 23, 2013, associated with this project and initiated the Section 404(q) Dispute Resolution Process for Individual Permits with the Corps in accordance with Part IV.3(a) of the 1992 404(q) Memorandum of Agreement. EPA's commented that their comment to the Corps stated, "the project may result in substantial and unacceptable impacts to aquatic resources of national importance and therefore EPA recommends denial of the permit, as proposed. EPA attached a copy of their May 21st letter with their comment. EPA noted that under the Section 404(q) process, EPA, the Corps, FAA and the applicant are already actively engaged in dispute resolution discussions. EPA requested the development of project modifications and mitigation measures mutually agreed upon to avoid, minimize and mitigate the impacts.

Response - Wetlands

It is understood the EPA is performing its review of the Individual Permit application filed by SpaceX with USACE - Galveston District. It is also understood the Section 404(q) initiation process is related to the Section 404 permitting phase of the project and SpaceX is working with various agencies, including the USACE, to see what steps may be taken to further reduce the impacts to wetlands and aquatic resources of national importance. The permitting process will involve more detailed design information that is not available for the EIS process. At the same time, it is the FAA's responsibility to ensure that the potential environmental impacts are identified and actions taken to offset those impacts using the latest preliminary design input rather than detailed design, which is often available after the NEPA process is complete. The impacts documented in the permitting phase would have to be equal to or less than what was considered in the Final EIS for the project impacts to have been sufficiently evaluated under NEPA. The USACE may have to supplement the Final EIS if substantial changes to the project design occur after the FAA ROD is issued.

In addition, it should also be noted that CEQ guidance states that "Section 1502.25(b) requires the EIS list all the federal permits, licenses and other entitlements that are needed to implement the proposal." The guidance also states that "These provisions create an affirmative obligation on federal agencies to inquire early, and to the maximum degree possible, to ascertain whether an applicant is or will be seeking other federal assistance or approval, or whether the applicant is waiting until a proposal has been substantially developed before requesting federal aid or approval." Even though SpaceX has already submitted a 404 permit application, CEQ guidance clearly indicates that EISs are not required to contain permit-level information. Should the FAA issue launch and experimental permit licenses to SpaceX, SpaceX would be responsible for obtaining any necessary permits and providing information required for the permitting process.

3.13.7 Comment Summary - Wetlands

EPA commented that "…[t]he DEIS identifies a total of 25.43 acres of wetlands present at the vertical launch area (Exhibit 3.7-4) and 0.04 acre of wetlands on Parcel 3 of the control center area (Exhibit 3.7-5). The Jurisdictional Wetland Determination report (Appendix F) divides the wetlands into depressional areas, high marsh areas, and unvegetated salt flats. Based on the March 7, 2013 site visit, EPA staff documented tidal flats and wetlands present in the vertical launch area. The vegetated wetlands are very diverse within the site. Low depressional areas are dominated by *Monanthachloe littoralis, Salicornia virginica, Borrichia frutescens, Batis maritima*, and *Sporobolus virginicus*. Backdune wetlands are dominated by *Distichlis spicata, Borrichia frutescens, Rayjacksonia phyllocephala*, and *Sesuvium portulacastrum*. The FAA should develop a more robust alternative analysis explaining why other alternatives sites considered were eliminated."

EPA commented "[f]rom Appendix F, Page 12 'Additionally, three small unvegetated depressional features were identified in the northwestern portion of the site.' Based on the site visit, portions of these depressional areas appear to be algal depressions. The vertical launch and the control center areas are located entirely within the 100-year floodplain (Exhibit 3. 7-8). The DEIS states that the 56.5 acre launch site consists of 25.43 acres of emergent and shrub scrub wetlands and sand flats. Approximately 31.1 acres are uplands. The FAA should develop a more robust alternative analysis explaining why other alternatives sites considered were eliminated."

Response - Wetlands

Comments noted. Refer to Comment Response - 3.4.6 regarding the updated alternatives analysis.

3.13.8 Comment Summary - Wetlands

EPA commented "[t]he construction of the vertical launch and control center areas would result in the permanent impact of 6.19 acres of wetlands: approximately 3.34 acres of direct impacts to wetlands and 2.85 acres of indirect impacts to wetlands. The breakdown of these impacts is as follows. At the vertical launch area, approximately 3.30 acres of wetland impacts consisting of 0.7 acre of unvegetated depressional wetlands and unvegetated wetland salt flats (E2US2) and 2.60 acres of vegetated wetlands (E2SS3 and E2EM1) (Table 4.7-1 and Exhibit 4.7-1) would be impacted."

"In addition, the construction of buildings and roads at the vertical launch area would effectively cut off the tidal influence to 2.85 acres of wetland. These indirect wetland impacts are comprised of 2.54 acres of high marsh vegetated wetlands and 0.31 acre of unvegetated wetland salt flats (Table 4.7-1 and Exhibit 4.7-3)". "Additionally, in accordance with the DOT Order 5660.1A, the FAA has determined there is no practicable alternative to such construction (refer to Section 2.3, Alternatives Considered but Not Carried Forward), and the Proposed Action includes all practicable measures to minimize harm to wetlands which may result from construction (see Section 2.3 .1, *SpaceX On-Site Alternatives*). The FAA should consider adding environmental evaluation factors in Section 2 for site selection."

Response - Wetlands

An environmental evaluation criterion has been added to Section 2.3 of the Final EIS, as suggested. The factor aims to minimize environmental impacts, including wetland disturbance, hazardous material cleanup, avoidance of historic properties, and protected species.

3.13.9 Comment Summary - Wetlands

EPA expressed concern that "all impacts to adjacent special aquatic sites, including wetlands, may have not been identified at the proposed sites. EPA believes that adjacent flats and wetlands at the launch site could be adversely affected by the project. EPA recommends that these impacts be considered in compensatory mitigation for all anticipated, secondary impacts to waters of the U.S."

"In addition to the direct loss of wetland functions, EPA is concerned with potential secondary adverse impact to water quality and natural ecological functions by construction of this project in wetlands. EPA believes that all impacts to adjacent special aquatic sites, including wetlands have not been fully identified at the proposed site. The adjacent flats and wetlands at the launch site would be adversely affected by the project and should be considered in compensatory mitigation for all anticipated secondary and indirect impacts to waters of the U.S. We are also concerned with the cumulative loss and future degradation of special aquatic sites, including wetlands from the proposed project. The proposed project impacts, when viewed in light of the total number of projects proposed and/or reasonably within this portion of the watershed may have a significant impact on aquatic resources in this region."

EPA noted that "[u]nder the 404 (q) MOA process, EPA has the option to elevate the permit decision to a higher level of further review. At this time, Region 6 believes resolution can be accomplished with the COE at the lowest level. We believe suitable modifications to the proposed alternative with appropriate compensatory mitigation are possible. We ask that FAA work with the US Fish and Wildlife Service and our agency to find a suitable location to enhance or restore wetlands for compensatory mitigation making the proposed plan the least damaging alternative and suitable for implementation."

Response - Wetlands

SpaceX is working with USACE on impact minimization and compensatory mitigation through the Section 404 permit process. In addition, the USFWS BCO (Appendix G) discusses implementation of the Security Plan and required conservation measures that include protections for water quality.

3.13.10 Comment Summary - Wetlands

USACE commented that "[i]n Section 4. 7 Water Resources of the DEIS, the wetland section concludes with the statement "the FAA has determined there is no practicable alternatives to such construction, and the Proposed Action includes all practicable measures to minimize harm to wetlands which may result from construction." However, in numerous communications with SpaceX, SpaceX has indicated that they are able to further design the site to avoid and minimize impacts to wetlands and tidal sand flats. Additional minimization efforts documented in the Final EIS should include, but not be limited to: limiting effects on the daily tidal regime of avoided wetlands; limiting stormwater effects on avoided tidal wetlands; limiting ecological perturbances resulting from development and operation of the SpaceX facility; and impacts to critical habitat for endangered species. Once all appropriate and practicable steps to avoid and minimize adverse impacts to waters of the United States have been documented in the Final EIS, a compensatory mitigation plan in accordance with 33 CFR 332.4(c) must be documented. SpaceX has proposed a preservation plan for unavoidable impacts. Based on comments received from the resource agencies, the Corps recommends SpaceX incorporate an enhancement plan in addition or in place of their preservation plan to assure there is no significant loss of wetland function within the watershed."

"The Corps is required, pursuant to the Memorandum of Agreement between the FAA and Corps, to provide special expertise with respect to environmental issues concerning waters of the United States. While the Corps is neither a proponent or opponent of the proposed SpaceX project, projects that are not compliant with the 404(b)(1) Guidelines may not be authorized."

Response - Wetlands

SpaceX is in the preliminary design stages for the vertical launch and control center areas. SpaceX will be able to perform detailed engineering for purposes of permitting and future construction which has not yet occurred and thus it is not possible to define in the Final EIS all of the detailed measures that will be instituted for those sites at this time. Those measures will be the measures that the USACE will weigh as meeting the definition of LEDPA for the permit application and possible issuance of a Section 404 permit to SpaceX. SpaceX is working with the USACE - Galveston District at this time to identify candidate wetland sites which have been degraded by other activities and would provide opportunities for the enhancement of these wetlands rather than a preservation only mitigation approach. See also Comment Response 3.13.6.

3.13.11 Comment Summary - Wetlands

TPWD commented on Section 3.7.4.3 of the Draft EIS where it describes wetlands delineated only in the vertical launch area and three control center parcels. Wetlands occurring on TPWD property that may be subject to impacts during security patrols on launch day were not described. ln order to develop a plan to conduct security patrols on adjacent TPWD and USFWS properties that avoids sensitive habitats (e.g. wetlands,) the locations of those sensitive areas should be delineated. TPWD recommends conducting wetland delineations on any properties that may be affected by the project including adjacent properties used for launch day security patrols and any areas under consideration for construction of spectator parking lots

Response - Wetlands

The Security Plan states there would be no ground-disturbing security sweeps on TPWD land. Also refer to Comment Responses 3.14.1 and 3.22.1.

3.13.12 Comment Summary - Floodplains

EPA commented, "[o]n the left hand side of the cover page is a visual simulation of the operational launch site that reveals some of the major factors involved in this project. The launch site is directly landward of a washover cut in the dune system along Boca Chica Beach and State Highway 4. This breach could make the launch site extremely vulnerable to storm surges and frequent flooding from tropical depressions and hurricanes from the Gulf of Mexico. The simulation reveals the unstable nature of this site with shallow groundwater persistently present immediately under the soil at 20 inches or less. Grading, piling, filling, and launching over this saturated substrate may result in an unstable foundation and potential failure of above ground structures. Construction of underground power and data lines and operation of sewage collection and treatment facilities in this drainage field could be problematic. Further explanation and required design mitigation should be identified and incorporated into the FEIS."

Response - Floodplains

Sections 3.6.4, 3.7.4, 4.7, and 4.9 note that the proposed vertical launch area would be subject to hurricane conditions and tropical storms, including tidal surges associated with those events. The detailed engineering analysis and design specifications to overcome potential instability are beyond the preliminary design information available at this phase of the planning process. Sections 3.1, 3.7, 4.4.1.1, 4.6.1.1, 4.7.1.1, 4.9.1.1 note the type of soils that occur in the area and the potential impacts of construction on those types of soils. Section 3.7.4.4 addresses construction of the vertical launch area within the 100-year floodplain, Zone V, and Zone A, and the control center area within the 100-year floodplain, Zone A. The proposed construction would be conducted in accordance with applicable county zoning and would be coordinated with the Cameron County floodplain administrators to receive a development permit. Additional coordination with Cameron County would be required to ensure the proposed construction meets the requirements of the NFIP. Underground power and data lines are known to be placed in the area. Detailed engineering design measures would address any design problems. Sections 2.1.2.1 and 4.7.1.2 note that the septic tank would be a mobile aboveground unit with a collection tank rather than a typical underground septic tank.

3.14 BIOLOGICAL RESOURCES

(74 comment excerpts summarized)

3.14.1 Comment Summary – Vegetation and Wildlife – Launch Closure Area

Regarding Draft EIS page ES-11, Table 6-1, Biological Resources (Including Fish, Wildlife, and Plants, under Operations), USFWS commented that they do not agree with the no significant impacts assessment for this category, particularly with regard to operations of the proposed facility. USFWS and NPS expressed concerns about potential effects on sensitive tidal flats and areas used by federally-listed

species resulting from the launch-viewing public on National Wildlife Refuge (NWR) lands, NPS lands, State-owned property, and the currently undeveloped private property holdings along, and to the north and south of, State Highway 4 from Farm-to-Market Road 1419 (FM 1419) to the currently proposed Soft Checkpoint near Massey Way Street. Without a designated viewing area, visitors would park along State Highway 4 which, because of its narrow maintained right of way, would be unsafe for viewers and other traffic along State Highway 4 during a launch event and may result in wildlife mortality. It is also possible vehicles would seek to access viewing locations off of State Highway 4, on property owned or managed by the NWR or NPS, which may damage sensitive habitat.

USFWS recommended that the soft checkpoint be located just west of the U.S. Customs and Border Patrol checkpoint station to avoid impacts on NWR and NPS lands.

TPWD recommended that "vehicular traffic be excluded from the federal and state conservation land areas along SH 4 during launches. A checkpoint should be established outside the boundary of the federal and state conservation land area. Parking and viewing areas should be constructed at this location. If spectators and vehicles cannot be excluded from conservation lands along SH 4, other provisions should be made to protect these conservation areas. The Final EIS should explain how conservation lands will be protected (e.g., fencing, monitoring), how the protection will be enforced, and the anticipated role of agencies such as TPWD."

TPWD also noted that "Section 3.8.4.1 describes the vegetation at the vertical launch site and potential control center parcels but does not discuss vegetation at the proposed spectator parking area or areas that may be directly affected by security sweeps on TPWD or USFWS properties located within the closure areas on launch days. Section 3.8.4.3 of the DEIS states that seven state-listed species, six avian and one reptile, have the potential to occur in the proposed vertical launch and control center areas due to the presence of suitable habitat within the ROI. However, TPWD records indicate occurrences of state-listed species also have been documented near the soft checkpoint as described in the DEIS. ln order to adequately assess all potential impacts to natural resources in the areas that would be associated with the project, TPWD recommends the Final EIS evaluate potential impacts to state-listed species on any properties that may be affected by the project, including adjacent properties subject to launch day security patrols and any areas considered for construction of a spectator parking lot."

Response - Vegetation and Wildlife – Launch Closure Area

In response to USFWS and NPS comments about protecting the NWR and NHL, the soft checkpoint was moved farther west to a location along State Highway 4 near the U.S. Customs and Border Protection checkpoint (refer to Final EIS Exhibit 2.1-1). On launch days, government personnel, SpaceX personnel, emergency personnel, and anyone with property beyond this soft checkpoint could pass, but the general public would not be able to continue past this checkpoint. The new proposed closure area encompasses the property owned and/or managed by the USFWS, NPS, and TPWD. The public would not be allowed to enter the closure area and thus would not have access to these lands during a launch. Based on the new closure area and the distance of the soft checkpoint to the proposed vertical launch area, the FAA believes there is no need to identify a public launch-viewing area along State Highway 4. The new location of the soft checkpoint would reduce the potential for impacts on property owned and/or

managed by USFWS, NPS, and TPWD, including potential impacts on sensitive plant and animal species from the viewing public during a launch.

Based on TPWD records, the 7 state-listed species are the only state-protected species that may be potentially impacted by proposed construction and operation activities. The additional species mentioned in the comment that have been documented (refer to Final EIS Sections 3.8.4.3 and 4.8.1.2) within the vicinity of the soft checkpoint would not be impacted by the Proposed Action. See also Comment Response 3.22.1 regarding a Security Plan. SpaceX would not conduct ground sweeps on TPWD or USFWS land. Only in the case that video surveillance obtained from video cameras mounted on the water tower and/or lightning towers is insufficient would other monitoring methods be used such as: unmanned aerial surveillance (no more than two unmanned vehicles at the same time); manned aerial surveillance (one fixed-wing aircraft with flight time less than 30 minutes at an altitude of less than 1,000 ft); beach sweeps using ground vehicles suitable for beach travel (e.g., one ATV or one SUV); or USCG vessel. In accordance with the USFWS BCO (Appendix G), if ATV sweeps are needed on the beach, SpaceX would conduct sea turtle patrols after the beach is closed to the public during launch operations and prior to any ATVs traveling on the beach to ensure the protection of sea turtles and their nests.

3.14.2 Comment Summary – Wildlife - Noise Impacts

USFWS commented that the noise analysis in Chapter 4 did not include the effects of sound on wildlife near the site during a launch event and over the long term. USFWS requested the Final EIS provide more detail about noise-related mitigation measures. USFWS recommended developing and implementing a monitoring plan to assess the impacts of a launch event, such as noise, on wildlife, particularly nesting avian species and sea turtles.

Response - Wildlife - Noise Impacts

The FAA performed noise analyses using several different metrics to analyze the potential impacts of launch -generated noise, including impacts on wildlife (see Sections 4.3.1.1 and 4.3.1.2). Refer to Section 4.8.1.2 for a discussion of noise effects on wildlife. Noise from launch operations would most likely temporarily displace wildlife, including migratory birds, and could cause increased heart rates, abandoned nests, and consumption of additional energy. These noise impacts would be short-term and not significant since noise levels would last less than 1 minute and would only occur up to 12 times per year.

In terms of mitigation and monitoring, SpaceX would conduct pre- and post-launch monitoring of the piping plover and northern aplomado falcon, as well as migratory birds (see SCM #19 under Section 6.8.1 and the BCO in Appendix G).

3.14.3 Comment Summary – Wildlife - Birds

USFWS is concerned the perimeter road would create pooled water that would be a wildlife attractant and that the perimeter fence would exclude or inhibit the movement of wildlife, notably shorebirds.

Several commenters are concerned about migratory birds. Frontera Audubon noted that the Mississippi and Central Flyways converge on the Texas coast for the millions of songbirds and that the Draft EIS

does not adequately analyze these impacts. This becomes especially important when during spring migration there is a north wind "norther" which causes millions of birds crossing the western Gulf of Mexico to seek immediate landfall (a "fallout") for survival. The comment noted that a launch event during a fallout could be disastrous and suggested a 30-day launch moratorium during peak bird migration or a no-launch policy during "norther" events in April and May. Prevailing winds are from the southeast.

Frontera Audubon is also concerned about the effects of migrating birds colliding with structures and guide wires and suggests that design remedies can lessen though not eliminate this potential impact.

Response - Wildlife - Birds

The access and perimeter security roads would be constructed so as to avoid and minimize pooling of water, thereby decreasing the attractiveness of the roads to foraging or loafing birds. Birds, including shorebirds, encounter fences throughout their lives, particularly during migration, and they are expected to be able to fly over a 6-ft tall fence or around the fenced area. The proposed fences surrounding a small area, relative to the surrounding area, would not inhibit their normal behavior.

The exterior and interior of the proposed facilities would be designed and maintained in accordance with the Lighting Management Plan and as stipulated in the USFWS BCO, so that lighting does not present an attractant to birds, including shorebirds and migratory birds. To comply with the MBTA, project design and any above-ground utility upgrades within the control center area would incorporate raptor protection measures, as appropriate and applicable. For example, structures would be equipped with devices to discourage nest building and perching (e.g., monopole technology and visual fright devices). To avoid or minimize potential impacts to resident and migratory birds, all structures that pose a strike risk to birds would be constructed to comply, as practicable and applicable, with voluntary *USFWS 2012 Interim Guidelines for Recommendations on Communications Tower Siting, Construction, Operation, and Decommission*.

Regarding a launch moratorium or no-launch policy, for SpaceX to operate and be a viable business, SpaceX must meet its customer's needs, which could include conducting a launch during bird migrations. SpaceX would comply with the terms and conditions stated in the BCO, which are intended to minimize potential take of federally listed species. Further, a launch would not occur during periods of high winds typified during a "norther."

Therefore, given that launch operations would only occur a maximum of 12 times per year, and with implementation of proposed SCMs (e.g., conducting migratory bird surveys before, during and after construction and pre- and post-launch, and developing an Avian Monitoring Plan and a Lighting Management Plan [see Section 6.8, *Biological Resources (Fish, Wildlife, and Plants),* for more details]), there would be no significant impacts to migratory birds as a result of operations. In addition, in accordance with the conclusion of formal consultation with the USFWS under Section 7 of the ESA, incidental take of any migratory bird protected under the MBTA is addressed if such take is in compliance with the terms and conditions specified in the BCO (refer to Appendix G).

3.14.4 Comment Summary – Vegetation Changes

USFWS is concerned about long-term effects stormwater runoff from facility structures on vegetation communities, including currently unvegetated tidal flats within the launch site and extending south of the fenced area. The tidal flats on the south side of the project area are part of piping plover Critical Habitat Unit (CHU) TX-1. USFWS recommends this area be included in a long-term vegetation monitoring plan. USFWS is also concerned about the effect of deluge water released during launches where predominant winds would push the vapor cloud northwest across predominantly unvegetated areas of the South Bay system, which is also included in CHU TX-1.

Response – Vegetation Changes

The deluge water from the pad and flame duct would be captured and not released into the nearby tidal flats. Based on SpaceX's past experience with Falcon 9 launches, the deluge water system would generate a vapor cloud that would travel approximately 600 ft from the launch pad toward the east/southeast in the direction of the flame duct exit. Low wind conditions, required for a launch, may disperse the vapor cloud approximately 200 ft to the northwest under prevailing southeast winds. Portions of the deluge water would also be entrained in the exhaust and would follow that exhaust cloud over the Gulf of Mexico.

The launch pad area would be monitored for changes to vegetation and wildlife during the operational phase of the project, as outlined in the Long-term Monitoring Plan that SpaceX would develop in consultation with the USFWS in accordance with the BCO. SpaceX would provide the USFWS with monitoring plans tracking potential induced vegetative changes as a result of proposed construction activities, fencing, security, stormwater discharge, and launch activities. This text has been added to the Final EIS in Section 4.8.1.2 and Section 6.8.1, SCMs.

3.14.5 Comment Summary – Vegetation, Wildlife, Special-Status Species - Security Sweep Impacts

A number of comments, including USFWS and TWPD, concerned potential impacts to sensitive habitat and wildlife from activities associated with security sweeps that would be performed to secure the launch hazard area. The concern is that no information is provided regarding the security operations (helicopter, ATV, and vehicle sweeps) of the 3-mile radius closure area. Flushing of animals from nesting and roosting sites could be harmful and potentially lethal to animals and their young in the limited habitat and in the intense South Texas heat. USFWS recommended consideration of the effects of the public on NWR property around the proposed soft point closure for launch viewing and the effects low flying aircraft would have on wildlife, especially nesting migratory birds and nesting Northern aplomado falcons. TPWD commented that "if security patrols will include driving ATVs or small vehicles through TPWD properties, those properties should be surveyed for wetlands prior to implementing the security patrol plan as part of the operation of the launch facility. Wetlands identified on TPWD properties should be avoided.

Response - Vegetation, Wildlife, Special-Status Species - Security Sweep Impacts

Monitoring of the security closure area would be done by vehicle along existing roads including State Highway 4, as well as by video surveillance (e.g., high definition video camera with zoom lenses placed

well above ground level on the water tower or lightning towers). SpaceX and law enforcement would monitor the area to the east of the checkpoints to ensure that the area is clear. Unless there is an emergency, SpaceX would not conduct ground sweeps in adjacent TPWD or USFWS land. Only in the case that video surveillance is insufficient would other monitoring methods be used such as: unmanned aerial surveillance (no more than two unmanned vehicles at the same time); manned aerial surveillance (one fixed-wing aircraft with flight time less than 30 minutes at an altitude of less than 1,000 ft); beach sweeps using ground vehicles suitable for beach travel (e.g., one ATV or one SUV); or USCG vessel. The USFWS has reviewed the Draft Security Plan and incorporated its provisions in the BCO (Appendix G). Also refer to Comment Response 3.8.1 regarding the Security Plan.

3.14.6 Comment Summary - Special-status Species - Sea Turtle Nesting

Several commenters expressed concern about the effects of lighting, noise, and vibration on nesting sea turtles and recommended launches be suspended during the height of nesting season.

In reference to Section 2.1.1.6 of the Draft EIS, *Activities at the Vertical Launch Center*, USFWS requests that if SpaceX chooses to hire their own sea turtle patrollers they must be certified by completing a training course, specifically for performing patrols, taught by either Donna Shaver, Sea Turtle Coordinator at Padre Island National Seashore, or Sea Turtle, Inc. SpaceX also has the option of entering into an agreement with Sea Turtle, Inc. or another approved and certified entity to cover the months Sea Turtle, Inc. cannot perform patrols. Patrollers should sweep the beach prior to the 15-hour closure and reopening of the beach to the public after a launch. One hour to perform those patrols may not be sufficient, as the proposed beach area to be closed is approximately 7 miles in length. Under normal circumstances, if Sea Turtle, Inc. is on the beach, at the closure site, the patrol may take approximately 45 minutes to an hour. However, if they are not, they must be given additional time to arrive from South Padre Island. Additional time may also be required if a sea turtle is found actively nesting or to locate, remove, and transport eggs off the beach if located during either the first or second sweep.

USFWS recommended the one night launch noted in the Draft EIS not occur during sea turtle nesting season and that SpaceX provide a plan/protocol to address these issues and provide them to USFWS for review prior to finalizing the EIS.

TPWD commented "[a]s proposed, the project would include lighting the entire vertical launch area between dusk and dawn with high pressure sodium (HPS) light fixtures mounted on poles. Research indicates that sea turtle hatchlings are significantly more attracted to unfiltered HPS lights than filtered HPS lights (Salmon 2006). TPWD recommends when developing the Light Management Plan, consideration be given to utilizing filters on HPS lights to potentially reduce sea turtle attraction of the lights."

NPS commented on ES-3: Lighting Plan- "We assume the Lighting Management Plan will address the differences in nighttime lighting throughout the year as well as specific nighttime lighting associated with night launches. What is the duration and intensity of night lighting for a launch?"

Response - Special-status Species - Sea Turtle Nesting

Per Section 7(a)(2) of the ESA, the FAA conducted formal consultation with the USFWS. The FAA submitted a Biological Assessment (BA) to the USFWS, and the USFWS issued a BCO (see Appendix G). The BA and BCO include a discussion of the potential impacts on federally listed species, including five species of sea turtles (including Kemp's ridley). The BA and BCO only address the terrestrial nesting stage of sea turtles. The FAA conducted informal consultation with NMFS regarding the potential for effects to ESA-listed species under their jurisdiction. NMFS concurred with FAA's findings that the Proposed Action would have insignificant or discountable effects on sea turtles in the marine environment. The USFWS BCO is the final determination of impacts to federally listed species under the jurisdiction of the USFWS. The BCO includes the following:

- Reasonable and Prudent Measures – non-discretionary measures that are necessary to minimize impacts to listed species (i.e., amount or extent of incidental take) and critical habitat.
- Terms and Conditions – non-discretionary requirements that must be implemented to ensure each of the Reasonable and Prudent Measures is implemented.
- Conservation Recommendations – discretionary measures that are intended to further avoid or minimize adverse effects on listed species and critical habitat.

The Reasonable and Prudent Measures and terms and conditions were added to Section 6.8.1 of the Final EIS.

There would be no restrictions to prevent sea turtle patrols from occurring before and after launches. The only period of time where patrols would be prohibited would be during a launch operation when the area is closed.

As discussed in Section 4.8 of the Final EIS, noise and vibrations from the launch would last less than 1 minute and would occur a maximum of 12 times a year, thereby reducing the likelihood for the noise and vibrations to occur during the time a sea turtle is attempting to nest. In addition, since Kemp's ridley sea turtles primarily nest from April through September, they would be exposed to at most six launch operations a year. Launch operation vibrations could also harm incubating eggs. However, current standard procedure for all nests that are observed in Texas is for all eggs to be retrieved from each nest and transported to an incubation facility. Sea Turtle, Inc. administers nesting sea turtle patrols and relocation of eggs on Boca Chica Beach. Therefore, any vibrations from a launch would most likely only impact eggs that were laid the same day of the launch, were not found due to the beach closure during a launch, and were not relocated. However, it is expected that activities associated with digging up sea turtle eggs and relocating them to an incubating facility via vehicles would potentially subject sea turtle eggs to greater vibration and noise levels than a launch, which would only last approximately 1 minute. To date, there have been no impacts to sea turtle eggs during transport to an incubating facility due to vibration or noise.

With respect to potential impacts from sonic booms, modeled sonic boom events associated with proposed launches would intercept the surface more than 40 miles off the coast in the Gulf of Mexico and would not affect sea turtle eggs and nesting or hatchling sea turtles.

SpaceX will use Sea Turtle, Inc. to perform patrols of Boca Chica Beach or will ensure any SpaceX patrollers are certified by Sea Turtle, Inc. or NMFS. In accordance with the BCO, a sea turtle monitoring plan will be developed outlining detailed methods and survey efforts. Section 6.8.1 states that Sea Turtle, Inc. would be provided 1 hour of exclusive use of the beach to conduct sea turtle patrols (i.e., the public would not be provided beach access up to 1 hour after a launch). The FAA notes that Sea Turtle Inc. currently conducts sea turtle patrols while the general public is able to access the beach.

The majority of launches would be conducted between the hours of 7:00 a.m. and 7:00 p.m. However, there could be one nighttime launch per year. For the singular launch, SpaceX cannot guarantee that it would avoid sea turtle nesting season. SpaceX will utilize agency input where practicable for launch scheduling; however, SpaceX has indicated that it cannot commit to adjust schedules based on this input because launch dates and times are driven by customer requirements, orbital mechanics, and other technical factors.

In accordance with the USFWS BCO (refer to Appendix G), prior to construction and operational activities, a Draft Lighting Management Plan would be provided to USFWS and NPS. The Final Lighting Management Plan would be approved and implemented prior to nighttime construction at the vertical launch area to minimize overall lighting impact, including potential direct impacts and cumulative glow, on wildlife and adjacent sea turtle nesting beaches.

3.14.7 Comment Summary - Wildlife Mortality and Vehicle Speed

TPWD, USFWS, and other commenters expressed concern with potential ocelot and/or other wildlife mortality along State Highway 4 if speeds are not reduced. It was noted that in Section 6.7 of the Draft EIS, SpaceX addresses reduced speeds and states, "SpaceX employees and contractors would be educated on potential for vehicle collisions with wildlife, particularly ocelots and jaguarundis. SpaceX employees would then be mandated with strict internal repercussions, to reduce their speeds along State Highway 4 between the proposed vertical launch and control center areas…observe speed limits not to exceed 25 miles per hour." The statement applies to employees and contractors and the area between the vertical launch and control center. However, as discussed in the May 7, 2013, agency meeting, it is important delivery drivers or others who are not employees or formally under contract, also adhere to the enforcement terms. The required education also needs to make clear that ocelot/jaguarundi habitat is located along both sides of State Highway 4 between FM 511 and the launch facilities and much of the area is NWR-managed lands. SpaceX stated during the meeting that no one is allowed to do business with them until they have signed off on a safety package of information. We recommend this information be included in the Final EIS.

TPWD stated that if traffic requires future improvements to State Highway 4, a long-term strategy should involve coordination with USFWS to design and install speed deterrents(bumps or dips) along with functional wildlife crossing structures under elevated road sections with fencing to funnel animals through the crossing (similar to Texas Department of Transportation structures in other areas of South Texas).

"TPWD appreciates that construction employees would be educated on the potential for wildlife collisions to occur along State Highway 4 and be required to maintain reduced speeds along State

Highway 4 within the vertical launch and control areas. TPWD requests that all employees be informed that a higher potential exists for wildlife collisions, including state-listed species, west of the control center parcels. Collisions can be avoided or minimized by operating vehicles at the posted speed limit, especially along State Highway 4 adjacent to lands managed for wildlife, where wildlife encounters are highly probable. To assist in avoiding impacts to state-listed species, TPWD recommends preparing an educational pamphlet for construction employees (published in English and Spanish) identifying state-listed species that may occur within the biological ROI. Only seven state-listed species were considered to occur or potentially occur within the biological ROI. These included six avian species and one reptile. Information provided by TPWD during scoping was limited to within 1.5 miles of the launch area and control center. The limits of the biological ROI extend to the soft checkpoint which may be 7-15 miles from the vertical launch site when the final plan is developed. TPWD recommends incorporating the proposed measures of maintaining reduced speeds within the entire biological ROI and making all employees aware of the high probability of encountering wildlife, including state-listed species, on roads within the general project area."

USFWS also requested that the assessment include a discussion of increased vehicle strikes due to traffic intensification on State Highway 4 because of weekly deliveries to the vertical launch area, construction workers, and public attendance to launch event evaluations.

NPS commented that "[t]raffic estimates of 190 construction vehicles per day are given here [in Section 4.10.1]. On page 4-59 and in Appendix K, the increase in traffic during construction is given as 137 vehicles per day. Which is correct? Also, in both locations, night time construction truck traffic is proposed. This will greatly increase the potential for animal mortality on roadways and potentially the loss of individuals from one or more of the endangered species populations in the area."

Response - Wildlife Mortality and Vehicle Speed

Further clarification on the SpaceX educational briefing for employees and construction workers, including speed limits, wildfire prevention, noxious weed prevention and safe handling of hazardous wastes, is included in Section 6.8 of the Final EIS. State-listed species will be addressed in the educational brief and associated materials regarding ESA-listed species and wildlife that would be provided to all SpaceX personnel and construction contractors. In accordance with the USFWS BCO (refer to Appendix G), FAA inspectors and SpaceX employees and construction personnel will be educated on the potential for vehicle collisions with wildlife, particularly ocelots and jaguarundis. Personnel will be required obey speed limits on State Highway 4 and to reduce their speeds along State Highway 4 between and within the vertical launch and control center areas to 25 miles per hour. Any upgrade of State Highway 4 would be under the jurisdiction of USFWS and TxDOT.

Section 4.8.1.2 was revised to reflect that although the specific areas in proximity to the vertical launch and control center areas do not contain suitable habitat, it is expected that ESA-listed cats would move through the project area to access the suitable habitat in the surrounding areas.

The 190 vehicles per day in each direction included in Section 4.10.1, as noted in the comment, incorrectly referenced the number of vehicles that currently travel State Highway 4 (refer to Appendix K, Table K.2-1). The actual estimated number of construction worker vehicles and construction material

trucks is 107 per day in each direction. The 137 construction vehicles per day refers to the number assumed for calculating traffic Level of Service (LOS). The actual number of trucks would be 60 per day. A factor of 1.5 is applied to truck traffic when calculating the impacts of trucks on the LOS associated with the roadways. Therefore, the actual total number of additional construction vehicles would be 107 (47 + 60). The numbers have been corrected and/or clarified in Section 4.10.1 and Appendix K of the Final EIS.

During the operational period, by 2025 approximately 253 vehicles per day, including 2 to 3 delivery trucks per day, would be added to the existing 190 vehicles per day for a total of 348 vehicles per day traveling State Highway 4 (refer to Appendix K).

3.14.8 Comment Summary - Special-Status Species

USFWS recommends that to lessen impacts to Northern aplomado falcon, SpaceX coordinate with The Peregrine Fund regarding its plans to construct more Northern aplomado falcon hack sites and to release falcons in Fiscal Year 13 and Fiscal Year 14 in the Boca Chica area within the project area.

Frontera Audubon and other commenters commented about the proposed project's impact to critical habitat of the endangered piping plover and deemed the proposed 5:1 wetland mitigation as appropriate. The effects of launch noise, light and vibration on piping plovers, red knots, aplomado and peregrine falcons, reddish egrets and other nesting and resting species in the greater area is considered much harder to assess, and they feel some degree of negative impact is likely and that this unavoidable wide impact warrants mitigation on a larger scale.

Several commenters expressed concerns about ocelot and jaguarundi being disturbed by traffic and other noise, particularly at dawn and dusk. USFWS commented that it appears the scope of the project and its effects on federally-listed species, such as the ocelot and jaguarundi, are underrepresented because the assessment only covers impacts of the two construction areas. The assessment does not include disturbance of the closure areas by ATVs, vehicles, and helicopters each month SpaceX is in operation.

Response - Special-status Species

The USFWS BCO, provided in Appendix G, includes USFWS determinations on impacts to listed species and stipulates conservation measures and monitoring requirements.

SpaceX would coordinate with The Peregrine Fund regarding providing assistance with their efforts to establish or replace Northern aplomado falcon hack sites as per the BCO (Appendix G).

SpaceX's compensatory wetland mitigation plan currently proposes to preserve in-kind, high-quality wetlands at a ratio of ten times the amount of wetlands impacted by the Proposed Action (see Appendix M).

3.14.9 Comment Summary – Seagrass and Marine Species

USFWS commented that Chapter 4-10, under Coastal Resources: "South Bay" is described as the lower extension of the Lower Laguna Madre, and in the "action area." However, there is no discussion of sea grasses and marine organisms (oyster beds, marine fish) in this important recreational fishing and

ecologically sensitive area. The Draft EIS also mentions impacts to seagrass from boat activities during launch activities. It is unclear if impacts would be from SpaceX security boats performing sweeps or public boats. One commenter mentioned concern for dolphins in South Bay.

TPWD commented on Submerged Aquatic Vegetation –" Page 4-10 of the DEIS states that the majority of areas of known seagrass are not used by recreational boat traffic but that increased boat traffic may result in seagrass impacts as spectators attempt to view launches by boat. This statement is unclear to TPWD, as virtually all known seagrass beds including South Bay, Mexiquita Flats, and the lower Laguna Madre, have recreational boat traffic. As South Bay is within the launch day closure area and Mexiquita Flats and the lower Laguna Madre are too far away to view a launch, TPWD requests clarification as to the source and location of the anticipated seagrass impacts. Recommendation: If increased impacts are anticipated as a result of security patrols in South Bay, TPWD recommends those impacts be evaluated and included in the Final EIS as well as in the USACE permit (SWG-2012-00381). TPWD commented on the USACE permit application in separate and attached correspondence.

TGLO also commented on submerged aquatic vegetation, "The DEIS identifies possible impacts to adjacent submerged aquatic vegetation (SAV), but implies the impacts will not be significant because there will only be 12 launches per year. The Seagrass Conservation Plan for Texas identifies prop scarring from recreational boating as a cause of direct damage to SAV. The Texas Legislature recently passed an amendment (HB 3279) to the Parks and Wildlife Code § 66.024 making it illegal to cause prop scarring (or rotor wash) damage to SAV. Impacts to SAV must be documented and mitigated in accordance with 31 Tex. Admin Code § 155.3 (g)."

Response - Seagrass and Marine Species

The noted information on the South Bay Coastal Preserve is provided in Draft EIS and Final EIS Section 3.2.4.1 Public Parks, Recreation Areas, and Refuges. Section 4.1.1.2 was revised to state that elevated boating activity could increase disturbance to submerged aquatic vegetation from rotor wash. However, areas with submerged aquatic vegetation, including South Bay, would be closed during launch operations, and therefore there would be no impacts as the result of potential recreational boat traffic during a launch event. There would be no impacts to South Bay (including the plant and animal species living in the bay) from the proposed construction and operation of the vertical launch and control center areas. Refer to Exhibit 2.1-1 for the closure area. The USFWS BCO (Appendix G) discusses implementation of the Security Plan and required SCMs that include protections for water quality.

3.14.10 Comment Summary – State-listed Species

TPWD commented that "[t]he DEIS describes the Region of Influence (ROI) for biological resources to include the areas impacted by construction of the vertical launch and control areas, the area impacted by noise during launches, and the water/land closure areas on launch day. However, the DEIS did not fully address the resources known to occur within the defined ROI. TPWD recommends that this section of Chapter 3 in the Final EIS include species for which occurrences have been documented within or near the project ROI. Also, Table 3.8- 1 should be revised to reflect that the Texas horned lizard, Texas indigo snake and Texas tortoise have potential to occur in the proposed project area. If the soft checkpoint is moved 15 miles away as indicated during the May 7, 2013 agency meeting, this list should

be further revised. A map and Element Occurrence Records for rare species that have been documented in the general project area are attached.

Moving westward from the beach and dune system along SH 4 beyond Massey Way, habitat suitability increases for several state-listed reptiles. Multiple occurrences of the Texas tortoise (*Gopherus berlandieri*), Texas horned lizard (*Phrynosoma cornutum*), and the Texas indigo snake (*Drymarchon melanurus erebennus*) have been documented near SH 4 near Massey Way and westward. Also, rare plant species uniquely adapted to habitats associated with lomas have been documented near SH 4 and Massey Way. Lomas are small mounds unique to the south Texas coast formed from wind-blown silt and clay that create 'miniature ecosystems' of wooded islands that support assemblages of rare plants adapted to the saline environment."

Response – State-listed Species

Table 3.8-2 (Table 3.8-1 in the Draft EIS) was revised to reflect that state-listed species that have historical occurrences within the new closure area, Texas horned lizard, Texas indigo snake and Texas tortoise, have potential to occur in the ROI (refer to Exhibit 2.1-1 for the closure area). Because no lomas would be affected by the Proposed Action, there would be no impacts to rare plants associated with lomas. In response to comments from USFWS and NPS about protecting the NWR and NHL, the proposed soft checkpoint was moved farther west to a point on State Highway 4, just west of the U.S. Customs and Border Protection checkpoint, approximately 14–16 miles west of the State Highway 4 terminus at Boca Chica Beach (see Exhibit 2.1-1 of the Final EIS). Government personnel, SpaceX personnel, emergency personnel, and anyone with property beyond this soft checkpoint could pass, but the general public would be denied access. This proposed closure area includes the entire NWR and NHL. SpaceX does not expect viewers to congregate near the new location of the soft checkpoint because of its distance from the launch pad. Therefore, there would be no impacts from viewers at this location or within the expanded closure area.

3.14.11 Comment Summary - Vegetation

TPWD recommended, "revising the section on Vegetation to include all potential impacts to vegetation, including rare vegetation series occurring along SH 4 within the ROI, that may result as a consequence of the project in its entirety including the construction and operation of the vertical launch area, control centers, spectator parking, and launch day security patrols on properties within the closure area."

Response - Vegetation

Based on site surveys and NDDB records, there are no rare vegetation series within the areas proposed for direct ground disturbance associated with construction of the vertical launch and control center areas.

See also Comment Responses 3.14.1 and 3.14.5. Further, the Security Plan states there would be no ground-disturbing security sweeps on TPWD land.

3.14.12 Comment Summary - Wildlife Near Launch Area

TPWD recommended the Final EIS include procedures for ensuring wildlife is not present near the launch pad during launches.

Response - Wildlife Near Launch Area

The entire vertical launch area would be surrounded by two six-foot tall chain link fences, which would act as a significant barrier to most wildlife. In addition, given the high level of human activity in the proximity of the launch pad during pre-launch and launch day activities, it is highly unlikely that wildlife, including birds, would be found within the vicinity of the launch pad.

3.15 HAZARDOUS MATERIALS, POLLUTION PREVENTION, AND SOLID WASTE

(19 comment excerpts summarized)

3.15.1 Comment Summary – Pollution

Commenters were concerned about possible pollution, spills, and contamination that may occur at the facility, particularly in the event of a launch failure. USFWS commented that "debris, fuel, and payload may be ejected into surrounding habitat, NWR lands, wetlands and/or Gulf waters. In the May 7, 2013, meeting, FAA stated the ground safety plan will include procedures for spills on public lands and would include debris as well as toxic materials. Section 4.9.1.2 appears to address only petroleum propellants impacts in tidal wetlands and not short- and long-term impacts to upland soils and upland vegetation."

USFWS recommends including a discussion about restoration or impacts to federally-listed species and their habitats and requests the opportunity to review the plans prior to finalization of the EIS to ensure cleanup activities provide the least impact to NWR lands and federally-listed species.

Response - Pollution

SpaceX developed a Spill Prevention, Control, and Countermeasures Plan in accordance with the Clean Water Act that outlines proper management and spill response procedures for the oils and fuels that would be stored at the proposed vertical launch and control center areas. Potential impacts to water resources from potential spills are discussed in Section 4.7 of the EIS. The hazardous materials storage tanks would be located within secondary containment designed to hold at least 110 percent of the tank's maximum volume. To further minimize potential for groundwater contamination, SpaceX would assemble an emergency response team that would be responsible for responding to hazards and spills. Section 4.9.1.2 of the EIS has been updated to also include impacts to upland areas.

Sections 2.1.1.7, 4.6.1, 4.7.1, 4.8.1, 4.9.1, and 6.9 of the EIS address the potential impacts and steps that would be taken in the unlikely event of a launch failure. Sections 4.8.1 and 6.9 of the Final EIS have been updated to note that if a launch failure occurred, Space X and the FAA would contact USFWS to reinitiate ESA Section 7 consultation for emergency purposes to assess the impacts of the incident as well as the impacts from cleanup and restoration. In accordance with the BCO (Appendix G), SpaceX would develop a Hazardous Materials Emergency Response Plan for the vertical launch area and control center area. The plan would include the policies, process, and procedures used in handling hazardous

materials during operations and in the event of an unplanned or uncontrolled release, a list of hazardous materials stored on site, and a launch vehicle failure response plan in the event of a mishap. USFWS and TCEQ would be contacted if impacts extend beyond the fence line and would be participants in developing the cleanup and mitigation plans. If debris or spills occur on the NWR, TPWD, or NPS lands, those agencies would be contacted along with the National Marine Fisheries Service (NMFS).

3.15.2 Comment Summary – Propellant Storage

NPS commented that there are no figures for on-site storage requirements for propellants. What are the on-site quantities and number of storage tanks required? Mention of helium and nitrogen is made but no quantities are given nor the number storage tanks required at the launch site.

Response - Propellant Storage

Section 2.1.1.3 of the Final EIS has been updated to indicate that UDMH, MMH, and NTO would be stored in the control center area in the satellite fuels storage area (see Section 2.1.1.4, *Propellant, Gas, Fuel, Oil, and Solvent Storage* for further discussion of propellant storage). Approximately six tanks for LOX and four tanks for RP-1 would be needed at the vertical launch area. The exact tank dimensions are not known at this time; however, LOX tanks could be 60,000 gal each and measure approximately 14 x 80 ft. RP-1 tanks could be 50,000 gal each and measure approximately 12 x 60 ft. Helium and nitrogen gases would be required at both the vertical launch and control center areas (see Section 2.1.1.4, *Propellant, Gas, Fuel, Oil, and Solvent Storage* for further discussion of these process gases). Typical storage of these gases would be six to eight tanks measuring approximately 2 ft x 40 ft each.

Payload fuel, UDMH, MMH, and NTO, would be stored for each mission only. SpaceX does not intend to store bulk quantities of these propellants in large tanks. A typical storage tank for these types of propellants is 50 gal, though SpaceX may also use up to 250 gal per container in some cases. These propellants would be stored in above ground storage tanks in the approximate 20 x 20 ft satellite fuels storage area of the control center area.

3.15.3 Comment Summary - Fuel Storage

Commenters asked about the quantities of LOX and RP-1 to be maintained on site and if the Falcon Heavy fuel use figures given in the Draft EIS (550,000 gallons) include the additional amounts of fuel required for loss and turn around launches. Would there be additional quantities of these fuels to be stored on site? Mention is made in the document of using generators for power at the launch site; however, there is no mention in this section of quantities or storage of diesel fuel.

Commenters also expressed concern about the storage of fuels and the possible contamination of the surrounding wetlands and tidal flats in the proposed launch area. It was noted that common products and steel treating processes that typically have long life spans in other coastal communities around the US have only a minimal fraction of effectiveness in the Lower Laguna Madre Area due to the exceptionally high salinity of Laguna Madre. It was recommended that the fuel storage tanks be constructed out of stainless steel, thought to be the best material to be used to resist corrosion in the area, along with concrete basins surrounding the tanks to catch any leakage.

Response - Fuel Storage

Chapter 2 – Section 2.1.1.4, Section 2.1.2.1, Vertical Launch Area, Section 2.1.2.2, Control Center Area, and Section 4.9, Hazardous Materials, Pollution Prevention, and Solid Waste of the Final EIS have been updated to include additional information on storage of propellants and fuels.

While SpaceX cannot specify the use of stainless steel tanks to store fuel until the design phase of the project, SpaceX is well versed in corrosion-resistant construction and would comply with the standard spill prevention and tank construction standards, as well as implement redundant containment mechanisms, as detailed in the spill prevention plan. The fuel tanks would be placed within concrete basins, which would contain any fuel leakage. Section 4.9.1.2 of the Final EIS was revised to include these details.

3.15.4 Comment Summary – Hurricane Plan

Several commenters expressed concern about spills of chemicals and fuels during storms and tidal surges and wanted to know if there would be a hurricane evacuation plan for all of the fuel stored on site. Commenters noted that in the past, a hurricane formed with less than 24 hours advance notice and are concerned that evacuation of all fuels would not be possible. They questioned whether there is a construction standard to follow to insure tanks, either empty or full of fuel, won't be ripped loose and float inland. There appears to be a need for a Comprehensive Hurricane Plan.

Response – Hurricane Plan

As discussed in Sections 4.7 and 4.9, in the event of a flood or storm event, SpaceX would implement flood control measures, which could include locating water-sensitive equipment, supplies, chemicals, etc. above flood level, and would move hazardous waste outside the floodplain when substantial storms are imminent. SpaceX developed a Hurricane Preparation Plan that describes the process for preparing for and responding to hurricane conditions. The Hurricane Preparation Plan is based on coordination and discussions with USFWS, TPWD, and NPS, and is designed to ensure personnel safety is maintained during severe weather conditions caused by tropical cyclones (to include Tropical Depressions, Tropical Storms, and Hurricanes).

Chapter 6 *Mitigation and Special Conservation Measures*, Section 6.9 *Hazardous Materials, Pollution Prevention, and Solid Waste*, and other sections of the Final EIS have been updated to include elements of SpaceX's Hurricane Preparation Plan and Site Spill Prevention Plan relative to fuel storage tanks. Measures to prevent release of fuels could include design of elevated and reinforced facilities to withstand wind and waves to mitigate damage and release of fuels. In advance of a storm alert, hazardous materials would be removed from the site or to high ground; all equipment and loose objects would be secured to the ground or removed; propellant deliveries would be canceled; vehicles would be removed or stored in the hangar. Containment areas around fuel tanks would be sized to contain the volume of the largest tank plus sufficient freeboard for a 25-year, 24-hour storm event (7.6 inches). Storm preparations also include communication with local emergency management agencies, USFWS, and TPWD.

3.16 SOCIOECONOMICS

(44 comment excerpts summarized)

3.16.1 Comment Summary – Job Creation

Many members of the public support the development of the SpaceX facility because they believe it will bring many jobs in the aerospace industry as well as general jobs in the Brownsville area that would be created by related economic development. A number of the commenters provided job and economic estimates that do not appear in the EIS.

Response – Job Creation

According to the EIS, Section 4.10.1.1, under a maximum case scenario, it was assumed that the peak construction period would employ 47 personnel. Section 4.10.1.2 states that beginning in the first operational year, approximately 30 full-time personnel would be on-site year round, increasing over a 10-year period up to approximately 150 full time workers in 2025. With their families, it is estimated that the increase in population would be approximately 825 people by 2025. During a launch campaign, an additional maximum of 100 local or transient workers would be present at the vertical launch area and/or control center area. Under a maximum case scenario, approximately 250 personnel would be present on-site. Although not quantified, the EIS states that spending by the permanent and transient SpaceX personnel and their families would indirectly generate additional jobs and income in areas, such as the accommodation and food services and retail trade sectors, benefitting the ROI economy. Potential socioeconomics impacts are discussed in Section 4.10 of the EIS. Secondary (induced) impacts are discussed in Section 4.12 of the EIS.

3.16.2 Comment Summary – Community Impacts

Commenters requested information about how the proposed launch site would affect the community.

Response – Community Impacts

Potential impacts to the community are described in EIS Section 4.10. Construction of the vertical launch and control center areas would not negatively affect the community and would have some beneficial economic impact. People moving into the area as a result of construction or operations would not create a strain on community services. Operation of the vertical launch and control center areas would change the noise environment, visual viewshed, nighttime light emissions, traffic, and numbers of people in the vicinity. These changes would affect how Boca Chica Village residents experience their neighborhood. Please also refer to response to Comment 3.16.1 regarding the number of new jobs expected in the area.

3.17 ENVIRONMENTAL JUSTICE

(1 comment excerpt summarized)

3.17.1 Comment Summary – Transient Workers

EPA commented that "FAA should consider that minority and low income workers would be attracted to job opportunities in the area. Most likely the pool of applicants would be transient workers who might be disproportionately impacted by construction activities associated with the proposed project."

Response - Transient Workers

It is not anticipated that low income transient workers would live in proximity to construction impacts. Currently, there is no housing available for transient workers near the launch site, and SpaceX does not plan on developing worker housing.

3.18 NATURAL RESOURCES AND ENERGY SUPPLY

(5 comment excerpts summarized)

3.18.1 Comment Summary – Safety/Spill Plan

ES-16: NR and Energy Supply - is there a Safety Plan/Spill Plan addressing transport of propellant?

Response - Safety/Spill Plan

Per consultations with NPS and USFWS, SpaceX will develop a Hazardous Materials Emergency Response Plan and a Spill Pollution Prevention and Countermeasures Plan. These plans will be subject to the review process stipulated in the PA, which is referenced in Section 4.5.1 of the EIS and is included in the Final EIS in Appendix C.

3.18.2 Comment Summary – Water Requirements

NPS asked how SpaceX intends to obtain the necessary water needed for launches and what the water requirements are for static and wet dress rehearsals.

Response - Water Requirements

As discussed in Section 4.11, groundwater would potentially be used for two primary uses: the supply of the deluge water for each launch and for personnel use at the facilities. Potable water would either be delivered by truck or pumped from an on-site well to a water tower at the vertical launch area. Water distribution lines would be installed to distribute the potable water from the water tower to the facilities at the vertical launch and control center areas.

A well located adjacent to the water tower and drilled into a high transmissive portion (i.e., yielding relatively large water quantities) of the Gulf Coast Aquifer (the Chicot Aquifer) would provide all deluge water at an average well pumping rate of 4.6 gpm, assuming water quality is adequate for potable use. Also refer to Comment Response 3.11.5.1 regarding water delivery by truck.

Most wet dress rehearsals and static fires, which are included in the 12 launch operations per year, would not require deluge water. Section 2.1.1.5 has been revised to state that during an actual launch, the water tower would discharge up to 100,000 gal of water for a Falcon 9 launch operation and up to 200,000 gal for a Falcon Heavy launch operation. The EIS has assumed the maximum scenario for use of

deluge water by calculating total gallons of deluge water per year (1,400,000 gal) for 12 launch operations.

3.18.3 Comment Summary – Groundwater Resources

NPS asked that water supply sources be defined. "If groundwater is to be used, source and potential effects should be well defined. If water is to be trucked from municipal sources this needs to be made clear given the fact that current drought conditions are already impacting these sources. A clear understanding of quantities and impacts to all source systems is needed."

Response - Groundwater Resources

Refer to Section 4.11, which discusses the groundwater resources usage for construction and the municipal water supply, groundwater supply, and aquifer drawdown for operation of the site.

3.19 GROUND TRAFFIC AND TRANSPORTATION

(1 comment excerpt summarized)

Comments related to wildlife being struck by vehicles on the road or on the beach and traffic effects on the NWR and historic properties are discussed in Comment Summaries 3.8.1, 3.11.5, 3.14.7, and 3.22.7. Responses are provided under those respective comment summaries.

3.19.1 Comment Summary - Traffic

One nearby resident was concerned that an influx of non-local traffic would impact beach-goers traveling from Brownsville.

Response - Traffic

The results of the traffic analysis (refer to Appendix K) indicate that the traffic increases associated with the construction and operation of the Proposed Action should not cause hourly vehicular traffic to exceed 245 vehicles per hour and would not adversely impact the existing levels of service on State Highway 4. There is the potential for the additional traffic associated with peak construction, such as concrete deliveries, to create some congestion at the U.S. Customs and Border Protection checkpoint and within the Boca Chica Village community; however, scheduling truck-intensive efforts during off-peak times would help to minimize potential traffic congestion. It is expected that there may be occasional brief periods of congestion at these locations, but there would not be permanent or significant traffic congestion.

3.20 TRANSBOUNDARY IMPACTS

(15 comment excerpts summarized)

3.20.1 Comment Summary – Transboundary Impacts

La Secretaria de Medio Ambiente y Recursos Naturales (SEMARNAT) and one individual asked what transboundary environmental impacts have been considered.

Response - Transboundary Impacts

Section 1.7 of the EIS states that NEPA requires that Federal agencies include analysis of potential transboundary effects extending across the border and affecting another country's environment. Because of the proximity of the proposed vertical launch area to the U.S./Mexico border, the FAA has considered the potential for transboundary impacts. For the purposes of this EIS, transboundary impacts are addressed in Sections 3.3, 4.3 (Noise) and 4.8.1.2 (Biological Resources) as the potential for transboundary impacts would only occur from noise and lighting during launches. See related comments and responses below for details.

3.20.2 Comment Summary – Wildlife/Threatened and Endangered Species

SEMARNAT asked if the FAA can guarantee that in general, wildlife won't experience significant impacts, and what are the prevention or mitigation actions.

Response - Wildlife

The FAA cannot guarantee that significant impacts on wildlife would not occur. However, potential wildlife impacts would be avoided, minimized, or mitigated through implementation of the SCMs listed in Section 6.8.1 of the EIS. Additionally, the FAA engaged in formal consultation under Section 7 of the U.S. Endangered Species Act (ESA) with the U.S. Fish and Wildlife Service (USFWS). Under the U.S. ESA, the FAA must ensure that its actions do not jeopardize the continued existence of threatened or endangered species, or their habitat. The FAA submitted a Biological Assessment (BA) to the USFWS on April 29, 2013. The BA analyzes the potential impacts on ESA-listed species and critical habitat from the Proposed Action and includes proposed conservation measures to avoid and minimize for potential effects on the species. These measures include monitoring during construction and operations to identify if any impact to ESA-listed species is occurring. Upon review of the BA, the USFWS issued a Final BCO in December 2013 (refer to Appendix G). The BCO includes:

- Reasonable and Prudent Measures – these are non-discretionary measures that are necessary to avoid or minimize the amount of incidental "take" of species that must be implemented by the action agency or applicant. Under the U.S. ESA, incidental take is defined as, "the take of listed fish and wildlife species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by a Federal agency or applicant."
- Terms and Conditions – these are non-discretionary requirements that must be implemented by the action agency or applicant; essentially, they specify the methods by which the Reasonable and Prudent Measures are to be accomplished. Terms and conditions include reporting and monitoring requirements that assure adequate action agency oversight of any incidental take.
- Conservation Recommendations – these are discretionary activities to further avoid or minimize potential adverse effects.

The BCO includes an extensive list of Reasonable and Prudent Measures and Terms and Conditions that will become binding when the FAA issues its Record of Decision (ROD), which completes the NEPA process (refer to Appendix G). The measures identified in the BCO and ROD must be implemented by SpaceX during construction and operation of the project. Therefore, potential wildlife impacts would be avoided and minimized to the extent practicable and feasible.

3.20.3 Comment Summary - Noise

SEMARNAT asked if Matamoros inhabitants would be exposed to sound pollution by the launching of rockets.

Response - Noise

The extent of the noise impact perceived by Matamoros inhabitants would depend on the ambient noise levels in Matamoros at the time of a launch and the type of launch vehicle (Falcon Heavy, Falcon 9, or smaller reusable launch vehicle). Matamoros is over 20 miles (32 kilometers) away from the vertical launch area. However, it is likely that Matamoros inhabitants would hear launch-generated noise. Launch-generated noise would be temporary (only a few minutes), would attenuate rapidly, and would occur a maximum of 12 times a year. This short-term event is not expected to result in significant impacts to residents of Matamoros or surrounding areas.

When assessing the significance of noise impacts, the FAA defines, through NEPA, that a significant noise impact would occur if analysis shows that the Proposed Action would cause noise sensitive areas to experience an increase in noise of day-night average sound level (DNL) 1.5 decibels (dB) or more at or above DNL 65 dB noise exposure when compared to existing conditions. To assess land use compatibility in residential areas, consideration was given to the noise impact analysis and the DNL 65 A-weighted decibels (dBA) standard. Three operational scenarios were considered:

- Scenario A – 10 daytime Falcon 9 launches; 2 daytime Falcon Heavy launches
- Scenario B – 9 daytime and 1 nighttime Falcon 9 launches; 2 daytime Falcon Heavy launches
- Scenario C – 10 daytime Falcon 9 launches; 1 daytime and 1 nighttime Falcon Heavy launch

The results show that Mexico lies outside the DNL 65 dBA contour levels for Scenarios A and B, with a small area located inside the DNL 65 dBA for Scenario C (see Exhibit 4.1-1 in the EIS). Aerial imagery just south of the U.S./Mexico border was reviewed, and the area was found to be unpopulated and undeveloped. Based on information received from SEMARNAT, it appears this small area of Mexico that lies within the DNL 65 dBA noise contour does not overlap with the Laguna Madre and Rio Bravo Delta Flora and Fauna Protection Area. Therefore, launch-generated noise impacts in Mexico are not expected to be significant per the FAA's definition under NEPA.

3.20.4 Comment Summary - Safety

SEMARNAT asked about preventive and response actions for potential emergencies, and how these actions would safeguard the integrity of people and wildlife in the area.

Response - Safety

Section 2.1.1.5 of the EIS states that approximately 2 weeks in advance of a launch operation, the Cameron County Commissioner's Court would be notified of the proposed date, the expected closure times, and backup closure dates and times. SpaceX would post written notices of the date, time, and the proposed closure area in several businesses and local offices in the area and within Cameron County, as well as an advertisement in local newspapers. In addition, SpaceX would coordinate with the following

entities regarding launch activities and to ensure public safety and allow for the issuance of NOTMARs and NOTAMs and other public notices of the upcoming launch:

- Secretariat of Communications and Transportation–Mexico (Mexican Airspace Navigation Services)
- U.S. Customs and Border Protection
- Cameron County and State of Texas law enforcement agencies
- U.S. Coast Guard
- Houston Air Route Traffic Control Center

Approximately 3 to 6 days prior to a launch operation that would require a closure, the public would be notified through local media and through the use of NOTMARs and NOTAMs. SpaceX would also inform the following about the launch operation and associated closure schedules:

- Cities of Brownsville and South Padre Island
- U.S. National Park Service
- Padre Island National Seashore
- USFWS, Lower Rio Grande Valley National Wildlife Refuge
- Texas Parks and Wildlife Department
- Texas General Lands Office
- Texas Department of Transportation

In addition, as part of FAA's licensing and permitting process, SpaceX must implement a Security Plan that defines the process for ensuring that any unauthorized persons, vessels, trains, aircraft, or other vehicles are not within the FAA-approved hazard area. The Security Plan must include safety and security personnel for each launch operation and roadblocks and other security checkpoints. SpaceX also must develop and implement agreements and plans with local authorities whose support is needed to ensure public safety during all launch processing and flight, in accordance with 14 CFR § 417.111. The Security Plan will describe the procedures for securing the closure area, thus limiting public access in the area on the day of a launch operation. The closure area would include areas along State Highway 4, on Boca Chica Beach, and offshore areas. SpaceX would coordinate with the following entities on developing and implementing the Security Plan: U.S. Customs and Border Protection; Cameron County and State of Texas law enforcement agencies; the cities of Brownsville and South Padre Island; NPS; PINS; USFWS, Lower Rio Grande Valley NWR; TPWD; TGLO; TxDOT; and the USCG.

Further, SpaceX is preparing the following plans to maximize, to the extent practicable, the safety of humans, biological resources (plants and animals), and cultural resources (historic properties):

- Hazardous Materials Emergency Response Plan
- Hurricane Preparation Plan
- Lighting Management Plan
- Spill Prevention Control and Countermeasures Plan

- Construction and Operational Storm Water Management Plans

3.20.5 Comment Summary – Agency and NGO Consultation

SEMARNAT asked which environmental groups, other Mexican Government Agencies, or NGO´s are participating in the assessment of the EIS, and which of them have provided inputs in consultations.

Response - Agency and NGO Consultation

As stated in Section 1.2.2 of the EIS, there are four cooperating agencies involved in this EIS. A Cooperating Agency may be any federal, state, local, or tribal agency that has jurisdiction by law or special expertise. For this project, the National Aeronautics and Space Administration (NASA), NPS, U.S. Army White Sands Missile Range, and the U.S. Army Corps of Engineers agreed to be Cooperating Agencies, and all have provided input on the contents of the EIS. Other consulting agencies that are not official Cooperating Agencies but are providing input include the USFWS, U.S. Environmental Protection Agency, Advisory Council on Historic Preservation, Texas State Historic Preservation Officer, TPWD, and TGLO.

In addition, as part of preparing an EIS, the FAA held a scoping period, where it conducted a public scoping meeting to inform the public of the proposed project and to provide a forum for the public to provide comments. The comment period for the Draft EIS was another opportunity for the public to provide comments. Therefore, anyone interested or concerned with the proposed project has been given the opportunity to participate and provide input.

The FAA sent a letter and the Draft EIS to Mexico's Ministry of Communications and Transportation. The scoping letter described the project, identified potential transboundary impacts, and requested any comments or concerns regarding the potential transboundary impacts or any other potential environmental impacts that could affect Mexico's environment from implementation of the proposed project.

Non-governmental organizations (NGOs) that have interest in the project and have provided comments on the Draft EIS include the following:

- Surfrider Foundation of South Texas
- Frontera Audubon Society
- Palo Alto National Park Committee
- Civil War Trust
- Lone Star Chapter of the Sierra Club
- Sea Turtle Inc.
- Gulf of Mexico Turtle Island Restoration Project
- Lower Laguna Madre Foundation
- United Way of Southern Cameron County
- Jean-Michel Cousteau's Ocean Future Society

3.20.6 Comment Summary – Ecosystem/Habitat/Species Impacts

SEMARNAT asked about the results and opinions on the ecosystems, sensitive habitat, and species that could be affected by the construction of the launch site.

Response – Ecosystem/Habitat/Species Impacts

The baseline conditions of biological resources (plants and animals) and water resources (surface waters, groundwater, wetlands, and floodplains) are summarized in Chapter 3 of the EIS. It is this baseline description in which the potential impacts of the proposed construction and operation of the launch facility is measured. Detailed information on plant and animal species (including special-status species, such as those listed as threatened or endangered under the ESA) and terrestrial and aquatic habitats (including wetlands) is provided in this chapter, and is based on field surveys conducted by biologists, available federal and state databases, consultations with State and Federal resource agencies, and other available information.

Chapter 4 of the EIS describes the potential impacts of the construction and operation of the launch site. Direct and indirect construction and operational impacts to biological and water resources are discussed (see Sections 4.7 and 4.8). A summary of these potential impacts is provided in the Executive Summary (see Table ES.6-1). In general, the results of the analysis indicate that vegetation and habitat would be removed (based on the footprint of the facilities), wetlands would be affected, and launch operations noise would disturb wildlife. However, SCMs would reduce or minimize some of these impacts. These measures are outlined in Section 6.8.1 of the EIS.

In accordance with Section 7 of the ESA, the FAA prepared a BA and entered into formal consultation with the USFWS to address potential impacts to ESA-listed species, species proposed for listing, and critical habitat. Based on the analysis presented in the BA, the FAA determined that the Proposed Action *may affect, is likely to adversely affect* the following species: piping plover and its critical habitat, red knot, northern aplomado falcon, Gulf Coast jaguarundi, ocelot, and Kemp's ridley, hawksbill, leatherback, loggerhead, and green sea turtles. The FAA determined that the Proposed Action *may affect, is not likely to adversely affect* the West Indian manatee. ESA formal Section 7 Consultation under the ESA with the USFWS was completed with issuance of a BCO on December 18, 2013. The BCO concurred with the findings of the BA analysis and concluded no jeopardy to any species and no adverse modification to designated piping plover critical habitat. The BCO specified non-discretionary Reasonable and Prudent Measures that are necessary to minimize impacts to listed species (i.e., amount or extent of incidental take) and critical habitat. The BCO also specified discretionary Conservation Recommendations that are intended to avoid or minimize adverse effects on listed species and critical habitat. The FAA commits to implementing the Reasonable and Prudent Measures and the Terms and Conditions outlined in the BCO to minimize potential impacts on ESA-listed species and critical habitat. The BCO is presented in Appendix G; also refer to Comment 3.20.1 above. Also refer to responses to Comments 3.14.2, 3.14.3, 3.14.5, 3.14.6, and 3.14.7.

3.20.7 Comment Summary – Migratory Birds

SEMARNAT asked if migratory bird routes would be affected and would launches occur during bird migration season.

Response – Migratory Birds

As discussed in Section 3.8.4.2, *Wildlife*, of the EIS, the proposed vertical launch and control center areas are located within the Central Flyway, a migratory bird route used by more than 500 species annually. The proposed vertical launch and control center areas are located within the Lower Rio Grande Valley which is the southernmost range for numerous raptors and shorebirds that winter in south Texas, as well as the northernmost range for many species of neotropical migrants. Construction of the proposed vertical launch and control center areas would not affect the actual migration route (Central Flyway) because the flyway is a broad area along the central U.S. and Gulf Coast extending south into Mexico, and the vertical launch and control center areas make up a very small percentage of this area. Furthermore, the Proposed Action would include a maximum of 12 launch operations over the entire year; thus, approximately half of the launch operations would occur during migration periods (spring and fall). The FAA has determined that due to the short-term, temporary nature of the proposed launch operations that would occur a maximum of 12 times per year, with noise and associated impacts lasting only a few minutes, there would be no significant impacts to a population of migratory bird species.

Evidence suggests that migratory birds may be attracted to lighted areas at night, especially during overcast nights, causing them to be disoriented and collide with buildings and other structures. Almost all construction activities would occur during the day, although small amounts of construction may occur at night that would result in some nighttime light emissions. When the proposed vertical launch and control center areas are operational, they would contribute to nighttime light emissions from security lighting. Potential impacts from lighting on migratory birds would be reduced by complying with established lighting policy for minimizing disorienting effects on migratory birds. In accordance with the USFWS BCO (refer to Appendix G), prior to construction and operational activities, a Draft Lighting Management Plan would be provided to USFWS and NPS for approval. The Final Lighting Management Plan would be implemented prior to nighttime construction activities.

Section 4.8.1 of the EIS indicates that the greatest potential impact to wildlife from operations would result from the visual effect of the launch vehicle and the launch noise. Studies have shown that wildlife react to visual stimuli (e.g., aircraft overflights) that are below 1,000 feet AGL. Vehicle launches and the associated noise can affect wildlife directly. Wildlife responses may include increased movement after a launch, avoiding or leaving areas where a launch occurs, changes in foraging patterns, and arousal of species-specific defensive behaviors (e.g., flight, aggression). Noise from vehicle launches may also have indirect effects on wildlife such as masking. Masking occurs when noise interferes with the perception of a sound of interest. For example, masking may affect predator avoidance and the detection of social signals.

The effects of noise from vehicle launches are difficult to assess because a number of adaptive responses may be involved, making the overt behavioral or physiological changes in response to noise highly variable. These responses include the acoustic startle, the orienting response, species-typical defensive behaviors, and responses conditioned by previous exposures to noise.

The primary concern with vehicle launches, and the associated noise, is the startle effect. For example, this occurs when birds are surprised by sudden, unexpected loud noises and leave the nest or perch suddenly. Possible negative impacts from this behavior include the expulsion of eggs or nestlings from

the nest as the parent leaves suddenly, increased predation of eggs or young when parents are off the nest, and eggs or young may become chilled if the parent is off the nest for an extended period of time.

Most of the effects of noise are mild enough that they may never be detectable as changes in population size or population growth against the background of normal variation (Bowles 1995). Many other environmental variables (e.g., predators, weather, changing prey base, ground based human disturbance) may influence reproductive success and confound the ability to tease out the ultimate factor in limiting productivity of a certain nest, area, or region. In contrast, the effects of other human intrusions near nests, foraging areas, dens, etc. (e.g., hiking, bird watching, boating) are readily detected and substantial. Noise from launch operations would extend outside the vertical launch area and control center area. Limited data is available on the physiological impacts on wildlife due to rocket launches. However, the noise from the launches would most likely temporarily displace wildlife, including migratory birds, and could cause increased heart rates, abandoned nests, and consumption of additional energy. The SEL noise levels would be as high as 135 dBA at 0.2 mile (0.3 kilometer) and 115 dBA at 2.0 miles (3.2 kilometers) (see Draft EIS Section 4.3, Noise). These noise impacts would be short-term since these noise levels would last less than 1 minute and would occur up to 12 times per year. Sonic boom modeling shows that the booms would intercept the surface more than 40 miles (64 kilometers) off the coast in the Gulf of Mexico and would not be heard inland. Overall, there would be no significant impacts to wildlife from noise associated with operations. Launch closure areas would reduce the potential for impacts on migrating birds from human visitors seeking to watch launches.

Therefore, given that noise levels associated with proposed launch activities would last less than 1 minute and only occur a maximum of 12 times per year, and with implementation of proposed SCMs (e.g., conducting migratory bird surveys before, during and after construction and pre- and post-launch, and developing an Avian Monitoring Plan and a Lighting Management Plan [see Section 6.8, *Biological Resources (Fish, Wildlife, and Plants),* for more details]), there would be no significant impacts to local or transboundary wildlife, including migratory birds, as a result of operations. In addition, in accordance with the conclusion of formal consultation with the USFWS under Section 7 of the ESA, incidental take of any migratory bird protected under the MBTA is addressed if such take is in compliance with the terms and conditions specified in the BCO (refer to Appendix G).

3.20.8 Comment Summary – Wetlands

SEMARNAT asked what impacts would occur from residual water discharges in the wetlands at the proposed launch site and what prevention and mitigation measures would be implemented.

Response – Wetlands

The deluge water from the pad and flame duct would be captured and not released into the nearby tidal flat. Based on SpaceX's past experience with Falcon 9 launches, the deluge water system would generate a vapor cloud that would travel approximately 600 ft from the launch pad toward the east/southeast in the direction of the flame duct exit. Low wind conditions, required for a launch, may disperse the vapor cloud approximately 200 feet to the northwest under prevailing southeast winds. Portions of the deluge water would also be entrained in the exhaust and would follow that exhaust cloud over the Gulf of Mexico.

The launch pad area would be monitored for changes to vegetation and wildlife during the operational phase of the project, as outlined in the Vegetation Monitoring Plan that SpaceX will develop in consultation with the USFWS in accordance with the BCO. This text was added to Section 2.1.2.1 and Section 6.8.1 of the Final EIS.

3.21 CUMULATIVE IMPACTS

(13 comment excerpts summarized)

3.21.1 Comment Summary – Scope of Analysis

NPS commented that "the geographic boundary of the cumulative impacts analysis appears to be on a localized-regional basis, which seems appropriate for potential visual and noise effects. However, NPS recommends that the Final EIS define the geographic and temporal boundaries of the cumulative analysis and verify all appropriate actions are described in the cumulative scenario. NPS noted other projects that are not listed in the cumulative effects section, such as the North Edinburg-Loma Alta 345 kilovolt transmission line, the Tenaska power plant, the 550 Toll Road, proposed industrial parks, and possibly others. Once the geographical and temporal scope of the cumulative analysis is identified, it would be helpful to determine relevant past, present, and reasonably foreseeable future actions that fall within the scope."

NPS recommends a map be included showing the location of the projects mentioned in the Cumulative Impacts Section.

Response - Scope of Analysis

Sections 5.1 and 5.2 were revised to clarify the geographic and temporal boundaries of the cumulative impacts analysis. The geographic boundaries of the cumulative impacts analysis are resource specific and, because of the nature of the impacts of the proposed action, are the same as described in Chapter 3 of the EIS for direct and indirect impacts. The temporal scope of the analysis includes actions that occurred in 2012 and future actions that may occur in the next 10 years. The additional projects identified by NPS were added to the cumulative impacts analysis (see Section 5.1). The potential for cumulative impacts, when combined with the Proposed Action, from these additional projects is discussed, as appropriate.

The FAA does not think a map would enhance understanding of impacts in this case because the location of projects included in the Cumulative Impacts analysis have been described in sufficient detail and the cumulative effects are limited.

3.21.2 Comment Summary – Section 4(f) Properties

NPS recommended analyzing the cumulative effects to all Section 4(f) properties, not just the NHL.

NPS requested verification that all the effects of all actions in the cumulative scenario have been analyzed. The viewing platform project, in addition to the wind farm will affect the NHL. Also, once the cumulative scenario has been broadened (as suggested in the cover letter), then we recommend analyzing the effects of all projects with regards to all Section 4(f) properties.

Response - Section 4(f) Properties

Section 5.2.2 has been revised to broaden the cumulative impacts scenario as suggested and includes consideration of all Section 4(f) properties. A constructive use occurs when the transportation project does not incorporate land from a Section 4(f) property, but the project's proximity impacts are so severe that the protected activities, features, or attributes that qualify the property for protection under Section 4(f) are substantially impaired. Substantial impairment occurs only when the protected activities, features, or attributes of the property are substantially diminished.

3.21.3 Comment Summary – Historic Properties

NPS referred to Draft EIS page 5-9 (Section 5.2.5) and requested a text addition as follows: Third Paragraph, Second Sentence Add "…and the 250-ft water tower, 65-85 ft payload processing buildings, and 35 foot tall launch vehicle processing hangar at the Control Center area in particular, would introduce…" In last Sentence delete "not be significant" and replace with "be reduced."

Response - Historic Properties

Section 5.2.5 was revised as suggested.

3.22 MITIGATION AND SPECIAL CONSERVATION MEASURES

(46 comment excerpts summarized)

3.22.1 Comment Summary – Mitigation Plans

Several commenters feel wildlife and ecosystem values of the land that will be impacted are not fully recognized. Commenters suggested that mitigation measures be commensurate with the potential impacts.

Cooperating and consulting agencies requested the opportunity to review written plans for measures to be taken during construction and operations to mitigate impacts to historic properties and biological resources. Specifically:

- Stormwater Pollution Prevention Plan
- Memorandum of Agreement addressing the effects of the project on NPS properties (Palmito Ranch Battlefield National Historic Landmark and viewshed)
- Lighting plan for the SpaceX facilities, including effects to nesting sea turtles and migratory birds
- Hazardous Materials Emergency Response Plan
- Catastrophic launch failure response plan
- Security plan for the designated closure area before, during, and after launch events, including measures to avoid impacts to wildlife, nesting birds, and federally-listed species such as piping plovers, sea turtles, Northern aplomado falcons, and ocelots
- Hurricane planning and response plan
- Facility closure and site restoration plan, and
- Long-term wildlife monitoring plan for the life of the project for the Northern aplomado falcon, piping plover, sea turtles, and migratory birds.

In addition, USFWS recommended pre-, during- and post- construction monitoring be conducted by experienced, qualified biologists following the latest interim survey methodology and surveyor qualifications.

TGLO commented "[t]he DEIS identifies two possible launch failures where the vehicle survives water impact or strike, but does not identify how the vehicle, payload or hazardous materials will be removed without damage to the natural resources. There is extensive SAV habitat in the adjacent bays, and significant damage could be done during removal or retrieval. The Hazardous Materials Emergency Response Plan (HMERP) needs to account for possible impacts to SAV, and provide for mitigation of temporary and permanent impacts."

Response – Mitigation Plans

Regarding the description of the affected environment, the FAA understands the ecological value of the area. All attributes of the ecosystem where the proposed vertical launch and control center areas would be located, and the surrounding area, are discussed in Section 3.8 of the Final EIS. The description of the affected environment was supported by field surveys conducted by Certified Wildlife Biologists and wetland scientists; data collected from the USFWS, including the local NWRs; and information provided by the TPWD.

Regarding the mitigation measures identified in Chapter 6 of the Draft EIS, many of the measures were derived during conversations or correspondence with the USFWS (as part of Section 7 consultation), the NPS and THC (as part of Section 106 consultation), and the USACE as a cooperating agency in the EIS. SpaceX would be required to comply with all terms and conditions established in the ESA Section 7 BCO (Appendix G), NHPA Section 106 PA (Appendix C), and the Section 404 wetland permit to be completed.

In collaboration with the FAA, SpaceX developed the following plans:

- Lighting Management Plan
- Facility Design Plan
- Vibration Monitoring Plan
- Unanticipated Discoveries Plan
- Hurricane Plan
- Construction Stormwater Pollution Prevention Plan
- Operation Stormwater Pollution Prevention Plan
- Spill Pollution and Prevention Plan
- Hazardous Materials Emergency Response Plan
- Emergency Action Plan
- Security Plan

These plans are incorporated into the BCO (Appendix G) and the PA (Appendix C). As stated in the BCO, SpaceX would develop a long-term monitoring plan for review and approval by USFWS.

SpaceX would be responsible for funding and ensuring implementation of the Reasonable and Prudent Measures identified in the BCO, as well as the mitigation measures listed in Chapter 6 of the Final EIS and those that would be identified in the ROD.

Regarding facility closure and site restoration, the expected lifespan of the launch facility is 20 years; therefore, it is premature to develop a plan for facility closure. Section 6.9 of the Final EIS has been updated to state that if the site were to be permanently closed, SpaceX would remove all hazards after the site is no longer in use and would coordinate with USFWS and other relevant parties regarding the future of the site.

3.22.2 Comment Summary - Litter

NPS requested that in addition to the cleanup of the beaches, SpaceX should participate in the Adopt a Road litter cleanup campaign to manage litter along the length of State Highway 4 through the USFWS lands. Local residents asked if the areas would be kept clean.

Response - Litter

SpaceX will submit an application to the Texas Department of Transportation Pharr District Adopt-a-Highway Program to adopt a 2-mile portion of State Highway 4 as measured from the entrance to Boca Chica Beach for the term of its license with the FAA. SpaceX will also coordinate with the TPWD to pick up litter within 100 feet of the Palmetto and Cypress Pilings and the Pilings Camp Site four times per year. This text has been added to Section 6.1 and 6.4 of the Final EIS.

3.22.3 Comment Summary – Historic Pilings

NPS recommended that during construction, mitigation measures be put into place to safeguard the 1936 Palmetto Pilings Historic Marker from damage due to construction truck traffic. "The pull out for the marker is an obvious staging or turn around point and the marker could easily be struck and damaged by construction vehicles. Bollards or railings to protect the marker are one suggestion. All facilities should be painted to blend into the environment to minimize visual impacts. Colors and paint schemes including stenciled camouflage patterns should be approved by officials having jurisdiction."

NPS speculated that "one means for reducing potential adverse effects of launches and test fires to the five historic properties could be orientation of the launch pad flame trench (duct) shown in DEIS Exhibit 2.1-3. If the flame trench(es) is sufficiently deep and is oriented in a direction that would minimize impacts on sensitive resources, then this should be considered and added to Section 6.4 as a potential mitigation measure for this resource (and potentially to other Chapter 6 sections). We speculate that a single flame trench (on one side only as shown in Exhibit 2.1-3), directed away from sensitive historic resources, may be preferable."

Response - Historic Pilings

SpaceX would protect the 1936 Centennial Marker for the Palmetto Pilings (the Marker) from inadvertent vehicle damage during construction of the vertical launch area by placing temporary construction barriers around it. This avoidance measure would be included as a stipulation in the forthcoming Memorandum of Agreement. In addition, as stipulated in the PA, SpaceX would develop a Facility Design Plan that would be subject to the review process described in the PA. The Facility Design Plan would include an explanation of facility siting, including the launch pad and flame duct, and the proposed paint colors, schemes, or treatment for minimizing the visual impact of SpaceX facilities on the NHL. In accordance with PA stipulations, NPS would review and approve the proposed paint colors,

schemes, or treatments for minimizing the visual impact of SpaceX facilities (towers, light poles, and buildings) on the NHL prior to the completion of the final Facility Design Plan.

3.22.4 Comment Summary - Lighting

NPS suggested the use of LED lighting technology and use "Dark of Night Sky" planning for all exterior lights as much as possible.

Frontera Audubon suggested portable light and lightning towers, raised only during launch events and without guide wires, which would be much more bird-friendly.

Response - Lighting

SpaceX developed a draft Lighting Management Plan; the FAA distributed the plan to the NPS, USFWS, and other cooperating and consulting agencies, for review and comment. The plan was revised based on feedback received from the NPS, USFWS, and the other agencies. In accordance with the USFWS BCO (refer to Appendix G), prior to construction and operational activities, a Draft Lighting Management Plan would be provided to USFWS and NPS for approval. The Final Lighting Management Plan would be implemented prior to nighttime construction of the vertical launch area to minimize overall lighting impact, including potential direct impacts and cumulative glow, on wildlife and adjacent sea turtle nesting beaches.

SpaceX would position lights and use fixtures approved by the International Dark Sky Association wherever feasible to minimize lighting impacts, particularly lighting with potential to be seen from the beach area.

The FAA and SpaceX have considered the suggestion of portable light and lightning towers and have concluded that portable structures are not feasible. The lightning towers protect infrastructure and personnel at all times, not just at times of launch. In addition, the portable 200-ft lightning towers would be less structurally stable/safe and technically infeasible with the tight launch windows of the SpaceX launch manifest.

Site lighting would be needed for constant safety, security, and emergency response. The few launch-specific lights (e.g., spot lights for the launch pad) would be 6-8 ft high and would be shielded appropriately. Sections 6.4 and 6.8 discuss the Lighting Management Plan that has been reviewed by USFWS and includes measures to minimize lighting impacts to wildlife, particularly sea turtles. In addition, to avoid and minimize potential bird strikes, lightning towers would be constructed to comply, as practicable and applicable, with voluntary USFWS Interim Guidelines for Recommendations on Communications Tower Siting, Construction, Operation, and Decommission (also refer to Sections 4.8.1.2 and 6.8).

3.22.5 Comment Summary – Historic Properties

NPS requested that SpaceX prepare and submit nominations for all NRHP-eligible resources not currently NRHP-listed.

Response - Historic Properties

The Section 106 PA between the FAA, SHPO, NPS, USFWS, TPWD, ACHP, and SpaceX is included in the Final EIS in Appendix C. The PA includes stipulations on the process for minimizing and mitigating adverse effects on historic properties.

3.22.6 Comment Summary - Noise

NPS commented that "[a]dditional mitigation measures could include coordination of launch dates/times with cooperating agencies to minimize adverse impacts on wildlife and to avoid outdoor use conflicts during special events at Palo Alto Battlefield NHP and Palmito Ranch Battlefield NHL, for example. We ask that coordination of launch schedules with the NHP and NHL be included as a potential noise mitigation measure."

Response - Noise

SpaceX would inform all requested agencies of launch schedules. SpaceX would utilize agency input where practicable for launch scheduling; however, SpaceX has indicated that it cannot commit to adjust schedules based on input from these agencies, since launch dates and times are driven by customer requirements, orbital mechanics, and other technical factors.

3.22.7 Comment Summary – Vehicle Speed

NPS asked if the provisions of SCM #2b in the Draft EIS regarding speed limits apply only on roadways owned by SpaceX and how will this be enforced.

Response - Vehicle Speed

SCM #2b (SCMs #3 and 4 in the Final EIS) applies to construction areas on property owned or leased by SpaceX. This SCM would be enforced by SpaceX mandating that all employees and contractors, with strict internal repercussions, to travel within speed limits.

3.22.8 Comment Summary – Non-native Vegetation

With regard to SCM #4 in the Draft EIS, NPS requested that all fill not obtained on-site be treated or certified as free from non-native plant species seeds

Response - Non-native Vegetation

Conservation measures to be conducted during construction include the cleaning of all equipment and vehicles at designated locations and required inspections of all vehicles to ensure absence of loose soil and that plant debris is removed before leaving the project areas to prevent the spread of noxious weeds. Refer to the USFWS BCO (Appendix G) regarding a conservation measure requiring the development of a Vegetation Monitoring Plan to document any vegetation changes and implementation of appropriate corrective actions to help reduce impacts to habitat and vegetation.

3.22.9 Comment Summary - Native Vegetation

TPWD recommended that practices be implemented to sustain native plant species to prevent the establishment and spread of invasive plant species, particularly during the early stages of revegetation of disturbed soils in construction areas.

TPWD also recommended the exclusive use of a mixture of native grasses and forbs that currently occur within the project area for any herbaceous revegetation effort. "Lists of suitable plants and seed sources can be found on the Texas Plant Information Database at http://tpid.tpwd.state.tx.us/ and/or by contacting the U.S. Department of Agriculture-Natural Resource Conservation Service (USDANRCS) Plant Materials Center in Kingsville, Texas (http://plantmaterials.nrcs.usda.gov/stpmc) at (361) 595-1313. Additional information regarding the importance of native vegetation in revegetation or restoration activities, suitable seed mixes for South Texas, and seed availability are available from South Texas Natives (http://ckwri.tamuk.edu/research-programs/southtexas-natives/) located in Kingsville, Texas."

Response - Native Vegetation

Per SCMs in Section 6.8.1, prior to entry, all equipment would be cleaned in designated locations to prevent the importation of non-native plant species, and all vehicles would be inspected to ensure absence of loose soil and plant debris before leaving the project areas. In addition, SpaceX will provide USFWS with a Vegetation Monitoring Plan for tracking potential induced vegetative changes as a result of the proposed construction activities, fencing, security, stormwater discharge, and launch activities (see Section 6.8.1).

Also, construction of vegetated infiltration swales and bio-retention cells that would be part of the stormwater management and retention plan would occur with native plantings (See Section 6.7).

If revegetation is required for temporarily disturbed areas, native vegetation would be used.

3.22.10 Comment Summary – Special Conservation Measures

TPWD commented on several SCMs and made recommendations as follows.

"TPWD appreciates the mitigative and SCM that would be employed to avoid and/or minimize impacts to cultural and natural resources. To ensure that potential impacts to fish and wildlife resources are avoided and/or minimized to the greatest extent practicable, TPWD recommends that, in addition to the vertical launch area and control center, the proposed measures be implemented in all areas that may be affected by the project, including properties affected by security patrols and in spectator parking areas.

In addition to the proposed SCM #2d in the Draft EIS, TPWD recommends that any excavated pits or trenches not be left open overnight in the project area in order to prevent wildlife from potential entrapment. If trenches must be left unfilled at the end of the workday, they should either be covered or have escape ramps placed in them (fashioned from boards or soil). Also, any trenches left open overnight should be inspected the following morning for wildlife that may have been trapped. If any state-listed species are trapped in trenches, they should be removed by personnel permitted by TPWD to handle state-listed species.

TPWD recommends SCM #5a in the Draft EIS be revised to apply to the seven state-listed threatened species referenced in the Draft EIS as well as endangered species as stated in the Draft EIS.

SCM #7 in the Draft EIS would incorporate raptor protection measures in the project design or when upgrading utility structures. TPWD recommends following avian safety design features described in the following publication: Avian Power Line Interaction Committee (APLIC). 2012. Reducing Avian Collisions with Power Lines: The State of the Art in 2012. Edison Electric Institute and APLIC. Washington, D.C.

SCM #8 in the Draft EIS addresses vehicle collisions with wildlife and places particular emphasis on ocelots and jaguarundis. In addition to ocelots and Jaguarundis, Draft EIS SCM #8 should include the state-listed threatened Texas indigo snake and Texas tortoise. In addition to being a naturally slow-moving animal susceptible to vehicle collisions, when startled (e.g., by oncoming traffic), the Texas tortoise may withdraw into its shell rather than fleeing, thus increasing its risk for collision with vehicles.

SCMs listed under Section 6.7.1.2-Operations in the Draft EIS include measures to educate employees on the potential for wildlife collisions along State Highway 4 between the vertical launch area and control center. TPWD recommends revising Draft EIS SCM #2 to include the state-listed threatened Texas indigo snake and Texas tortoise as described above. Also, employees should be encouraged to abide by posted speed limits along all of State Highway 4, as there is a high potential for encountering wildlife along most of State Highway 4 east of Brownsville.

Response - Special Conservation Measures

Final EIS Section 6.8.1 Special Conservation Measures (formerly 6.7.1 in the Draft EIS) includes a measure for educating the public on safe and lawful areas where they may watch launches. Also see Comments Responses 3.13.3, 3.13.15, 3.14.1, and 3.14.5 regarding the security closure area and procedures.

The SCMs in Section 6.8 have been revised to reflect the recommended measures to address open pits or trenches. The construction area would be inspected each morning by the biological monitor to ensure no wildlife species have become trapped in trenches, under vehicles, etc.

Section 6.8.1 has been revised to include the state-listed as well as ESA-listed species.

Regarding the SCM on avian safety and power lines, according to correspondence from the Magic Valley Electric Cooperative, all utility line upgrades would be installed underground, and therefore there is no potential for avian collisions from utility upgrades.

Per the SCMs listed in the USFWS BCO (Appendix G) and Section 6.8.1, SpaceX employees and construction personnel would be educated on the potential for vehicle collisions with all wildlife, and mandated, with strict internal repercussions, to obey speed limits on State Highway 4 and reduce their speeds along State Highway 4 between the vertical launch and control center areas to 25 mph. Also see Comment Response 3.14.7.

3.23 AIRSPACE

(1 comment excerpt summarized)

3.23.1 Comment Summary-Airspace

The Aircraft Owners and Pilots Association (AOPA), requested more detail on the impacts to general aviation before AOPA can agree that the cumulative impacts are not significant.

The Draft EIS states that, "because there would be few launches each year and the launches would only last for a few minutes, temporary closures of existing airspace would not impact the performance and capability of the NAS." AOPA disagrees that temporary flight restrictions would last only a few minutes or that such closures would not impact the performance and capacity of the NAS. Similar launches have resulted in TFRs lasting several hours, oftentimes over successive days due to launch delays from unforeseen circumstances.

While AOPA appreciates that such unforeseen delays result in the TFR being cancelled early, there is no reliable or efficient mechanism to communicate such an early closure to general aviation pilots. AOPA requests that the FAA quantify the duration and frequency of anticipated temporary flight restrictions and the cumulative impact on general aviation flight operations in the area as part of the Final Environmental Impact Statement.

Response-Airspace

While launch operations would not impact the entire NAS, there would be minor temporary, intermittent interruptions in airspace that could affect commercial and general aviation in the local area. Approximately 3-6 days prior to launch, general aviation would be notified of the upcoming launch through local media and through the use of NOTAMs.

3.24 SAFETY

(3 comment excerpts summarized)

3.24.1 Comment Summary - Safety

Several commenters expressed concern about the potential for an explosion or launch failure, and what affect that might have on nearby residents and Brownsville's population.

Response – Safety

As part of the licensing and permitting process (refer to Section 2.1.1.5, *Pre-Launch Activities*, of the Final EIS), SpaceX must implement a plan (i.e., Security Plan) that defines the process for ensuring that any unauthorized persons, vessels, trains, aircraft, or other vehicles are not within the FAA-approved hazard area. The Security Plan must include safety and security personnel for each launch operation and roadblocks and other security checkpoints. SpaceX also must develop and implement agreements and plans with local authorities whose support is needed to ensure public safety during all launch processing and flight, in accordance with 14 CFR § 417.111. The Security Plan will describe the procedures for securing the closure area, thus limiting public access in the area on the day of a launch operation. The closure area would include areas along State Highway 4, on Boca Chica Beach, and offshore areas (see Exhibit 2.1-1 in the Final EIS). Regarding a launch failure, SpaceX has not experienced such a failure during its launch operations at Vandenberg Air Force Base or Cape Canaveral Air Force Station.

As outlined in Appendix J, Health and Safety, the proposed vertical launch area and control center area are in a sparsely populated coastal area. Boca Chica Village is approximately 2 miles from the vertical launch area and well outside the hazard area (see Section 2.1.1.7, *Launch Failures*, for further discussion of the FAA approved hazard area). As described in Section 2.1.1.6, *Nominal Trajectories*, all launches would be conducted to the east over the Gulf of Mexico and not over populated areas, such as Brownsville.

3.25 NEPA PROCESS

(3 comment excerpts summarized)

3.25.1 Comment Summary-EPA Rating

EPA rates the Draft EIS as "EO-2" (Environmental Objections -Request for Additional Information). The "EO" rating is based on potential impacts to special aquatic sites or aquatic resources of national importance and the lack of an appropriate compensatory mitigation plan. The "2" indicates the Draft EIS does not contain sufficient information in the areas of air quality, mitigation, wetlands, alternatives analysis, environmental justice and tribal consultation.

EPA noted that “detailed comments on the DEIS are enclosed with this letter which more clearly identifies EPA's concerns and the information requested for incorporation into the Final EIS. Responses to our comments should be placed in a dedicated section of the Final EIS and should specify the specific location in the Final EIS where the revision, if any, was made. If no revision was made, a clear explanation should be included. Please send our office two copies of the Final EIS, and an internet link, when it is sent to the Office of Federal Activities, EPA (Mail Code 2252A), Ariel Rios Federal Building, 1200 Pennsylvania Ave, N.W., Washington, D.C. 20004. Our classification will be published on the EPA website, www.epagov, according to our responsibility under Section 309 of the CAA to inform the public of our reviews on proposed Federal actions.”

Response-EPA Rating

The FAA has responded to EPA comments in this Appendix and has revised the EIS in response to EPA and other comments received on the Draft EIS. Final EIS section numbers are referenced for all revisions made in response to comments. The FAA filed the required copies of the Final EIS and internet link with EPA, as requested.

3.25.2 Comment Summary-EIS Contracting

One commenter asked for information on the EIS process, specifically if the FAA issues a Request For Proposal or if the state is involved.

Response- EIS Contracting

The EIS was prepared under a third-party agreement with SpaceX in accordance with Appendix B of FAA Order 1050.1E. SpaceX released an RFP and FAA evaluated the proposals and selected the environmental contractor. The State of Texas was not involved in the procurement of the environmental contractor.

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Exhibit A-1. Notice of Intent, Published April 10, 2012

impacts of SpaceX's proposal to launch orbital and suborbital launch vehicles from a private site in Cameron County in southern Texas. The EIS will consider the potential environmental impacts of the Proposed Action and reasonable alternatives, including the No Action Alternative. The successful completion of the environmental review process does not guarantee that the FAA would issue launch licenses and/or experimental permits to SpaceX. The project must also meet all FAA safety, risk, and indemnification requirements.

Proposed Action

The Proposed Action is for the FAA to issue launch licenses and/or experimental permits to SpaceX that would allow SpaceX to launch the Falcon 9 and Falcon Heavy orbital vertical launch vehicles and a variety of reusable suborbital launch vehicles from a launch site on privately-owned property in Cameron County, Texas. The Falcon 9 orbital vertical launch vehicle is a medium-lift class launch vehicle with a gross lift-off weight of approximately 1,000,000 pounds (lbs) with a maximum length of 230 feet (ft). The Falcon 9 uses liquid oxygen (LOX) and highly refined kerosene, also known as rocket propellant-1 or refined petroleum-1 (RP–1), as propellants to carry payloads into orbit. The Falcon Heavy is similar to the Falcon 9, except it has an additional two boosters "strapped on," each booster being almost identical to the Falcon 9 first stage core. The Falcon Heavy is a heavy lift class launch vehicle with a gross lift-off weight of approximately 3,400,000 lbs. It has an overall maximum length of approximately 230 ft.

A reusable suborbital launch vehicle could consist of a Falcon 9 Stage 1 tank with a maximum propellant (RP–1 and LOX) load of approximately 6,900 gallons.

As part of the Proposed Action, SpaceX proposes to construct a vertical launch area and a control center area. The proposed vertical launch area site is currently undeveloped and is located directly adjacent to the eastern terminus of Texas State Highway 4 (Boca Chica Boulevard) and approximately 3 miles north of the Mexican border on the Gulf Coast. It is located approximately 5 miles south of Port Isabel and South Padre Island. At the vertical launch area, the new facilities required would include: an integration- and processing-hangar, a launch pad and stand with its associated flame duct, propellant storage and handling areas, a workshop and office area, and a warehouse for parts storage.

The control center area would be located inland to the west of the vertical launch area and would include: A control center building and a payload processing facility; it might also include a launch vehicle preparation hangar and satellite fuels storage. All facilities would be constructed on private land owned or leased by SpaceX. The development of access and supporting utility infrastructure for the vertical launch area and the control center area may occur on lands outside that which is owned or leased by SpaceX.

Operations would consist of up to 12 launches per year with a maximum of two Falcon Heavy launches. All Falcon 9 and Falcon Heavy launches would be expected to have commercial payloads, including satellites or experimental payloads. In addition to standard payloads, the Falcon 9 and Falcon Heavy may also carry a capsule, such as the SpaceX Dragon capsule. All launch trajectories would be to the east over the Gulf of Mexico.

The potential environmental impacts of all proposed construction activities will be analyzed in the EIS, in addition to the impacts from operating the facilities and launching orbital and suborbital launch vehicles. The EIS will evaluate the potential environmental effects associated with: air quality; noise and compatible land use; land use, including Section 4(f) properties and Farmlands; coastal resources; biological resources, including threatened and endangered species; water resources, including surface waters and wetlands, groundwater, floodplains, and water quality; historical, architectural, archaeological, and cultural resources; light emissions and visual resources; hazardous materials, pollution prevention, and solid waste; infrastructure and utilities; and socioeconomics, environmental justice, and children's environmental health and safety. The analysis will include an evaluation of the potential direct and indirect impacts, and will account for cumulative impacts from other relevant activities in the area of Cameron County, Texas.

Alternatives

Alternatives under consideration include the Proposed Action and the No Action Alternative. Under the No Action Alternative, the FAA would not issue a license or experimental permit to SpaceX. Based on comments received during the scoping period, the FAA may propose additional alternatives.

Scoping Meetings

A public scoping meeting will be held to solicit input from the public on potential issues that may need to be evaluated in the EIS. The scoping meeting will be held on May 15, 2012 from 5 p.m. to 8 p.m., at the International Technology, Education and Commerce Center (ITEC Center), located at 301 Mexico Blvd. G–2, Brownsville, Texas 78520. The meeting format will include an open-house workshop from 5 p.m. to 6 p.m. The FAA will provide an overview of the environmental process from 6 p.m. to 6:15 p.m. followed by a public comment period from 6:15 p.m. to 8 p.m.

Issued in Washington, DC on April 3, 2012.

Glenn Rizner,

Deputy Manager, Space Transportation Development Division.

[FR Doc. 2012–8556 Filed 4–9–12; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Railroad Administration

[Docket No. FRA–2012–0033]

Notice of the Buy America Waiver Request for Vossloh 101–LV Concrete Ties

AGENCY: Federal Railroad Administration (FRA), United States Department of Transportation (DOT).

ACTION: Notice of Buy America waiver request and request for comment.

SUMMARY: FRA is issuing this notice to advise the public that the Burlington Northern Santa Fe Railway Co. ("BNSF") has submitted to FRA through or with the support of the Washington Department of Transportation ("WSDOT"), the Illinois Department of Transportation ("IDOT"), the Texas Department of Transportation ("TxDOT"), and the California Department of Transportation ("Caltrans") a waiver request from FRA's Buy America Act requirements for the purchase of Vossloh 101–LV concrete ties, which contain certain components not manufactured in the United States. In furtherance of four FRA High-Speed Intercity Passenger Rail ("HSIPR") grants, BNSF, as the railroad infrastructure owner, will construct certain rail project elements that consist of the installation of Vossloh 101–LV concrete ties. FRA has received this request from the four States for the following projects: (a) The Pacific Northwest Rail Corridor Program (b) the Amtrak Quad Cities to Chicago Service Initiation Project, (c) the Tower 55 At-Grade Improvement Project, and (d) the LA to Fullerton Triple Track—Segment 7 Project.

DEPARTMENT OF STATE

[Public Notice 7814]

Shipping Coordinating Committee; Notice of Committee Meeting

The Shipping Coordinating Committee (SHC) will conduct an open meeting at 9:30 a.m. on Wednesday, April 25, 2012, in Room 2501 of the United States Coast Guard Headquarters Building, 2100 Second Street SW., Washington, DC 20593–7126. The primary purpose of the meeting is to prepare for the 90th Session of the International Maritime Organization's (IMO) Marine Safety Committee to be held at the IMO Headquarters, London, England, United Kingdom, May 16–25, 2012.

The primary matters to be considered include:

Consideration and adoption of amendments to mandatory instruments;
Measures to enhance maritime security;
Goal-based new ship construction standards;
LRIT-related matters;
Flag State implementation;
Radiocommunications and search and rescue;
Ship design and equipment;
Safety of navigation;
Fire protection;
Dangerous goods, solid cargoes and containers;
Stability, load lines and fishing vessel safety;
Bulk liquids and gases;
Implementation of the STCW Convention;
Technical assistance sub-programme in maritime safety and security;
Capacity-building for the implementation of new measures;
Role of the human element;
Formal safety assessment;
Piracy and armed robbery against ships;
General cargo ship safety;
Implementation of instruments and related matters;
Relations with other organizations;
Application of the Committee's Guidelines;
Passenger ship safety.

Members of the public may attend this meeting up to the seating capacity of the room. To facilitate the building security process, and to request reasonable accommodation, those who plan to attend should contact the meeting coordinator, LCDR Matthew Frazee, by email at *imo@uscg.mil*, by phone at (202) 372–1376, or in writing at Commandant (CG–52), U.S. Coast Guard, 2100 2nd Street SW., Stop 7126, Washington, DC 20593–7126 not later than April 18, 2012, 7 days prior to the meeting. Requests made after April 18, 2012 might not be able to be accommodated. Please note that due to security considerations, two valid, government issued photo identifications must be presented to gain entrance to the Headquarters building. The Headquarters building is accessible by taxi and privately owned conveyance (public transportation is not generally available). However, parking in the vicinity of the building is extremely limited. Additional information regarding this and other IMO SHC public meetings may be found at: *www.uscg.mil/imo.*

Dated: March 29, 2012.

Brian Robinson,

Executive Secretary, Shipping Coordinating Committee, Department of State.

[FR Doc. 2012–8636 Filed 4–9–12; 8:45 am]

BILLING CODE 4710–09–P

DEPARTMENT OF TRANSPORTATION

Office of the Secretary

Aviation Proceedings, Agreements Filed the Week Ending March 10, 2011

The following Agreements were filed with the Department of Transportation under the Sections 412 and 414 of the Federal Aviation Act, as amended (49 U.S.C. 1382 and 1384) and procedures governing proceedings to enforce these provisions. Answers may be filed within 21 days after the filing of the application.

Docket Number: DOT–OST–2012–0035.

Date Filed: March 7, 2012.

Parties: Members of the International Air Transport Association.

Subject: Mail Vote 702—Resolution 100 Standard Condition Resolution for Special Fares (Memo 1665) Intended effective date: 1 April 2012.

Renee V. Wright,

Program Manager, Docket Operations, Federal Register Liaison.

[FR Doc. 2012–8446 Filed 4–9–12; 8:45 am]

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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Office of Commercial Space Transportation; Notice of Intent To Prepare an Environmental Impact Statement (EIS), Open a Public Scoping Period, and Conduct a Public Scoping Meeting

AGENCY: The Federal Aviation Administration (FAA) is the lead Federal agency.

ACTION: Notice of Intent to Prepare an EIS, Open a Public Scoping Period, and Conduct a Public Scoping Meeting.

SUMMARY: This Notice provides information to Federal, State, and local agencies, Native American tribes, and other interested persons regarding the FAA's intent to prepare an EIS for Space Exploration Technologies' (SpaceX's) proposal to launch the Falcon 9 and Falcon Heavy orbital vertical launch vehicles from a private site located in Cameron County, Texas. Under the Proposed Action, SpaceX proposes to construct a vertical launch area and a control center area to support up to 12 commercial launches per year. The vehicles to be launched include the Falcon 9, Falcon Heavy (up to two per year), and a variety of smaller reusable suborbital launch vehicles. SpaceX would be required to apply for the appropriate launch licenses and/or experimental permits to be issued by the FAA. The FAA will prepare the EIS in accordance with the National Environmental Policy Act of 1969 (NEPA; 42 United States Code [U.S.C.] 4321 et seq.), the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] parts 1500–1508), and FAA Order 1050.1E, Change 1, *Environmental Impacts: Policies and Procedures*, as part of its licensing and permitting process.

DATES: The FAA invites interested agencies, organizations, Native American tribes, and members of the public to submit comments or suggestions to assist in identifying significant environmental issues and in determining the appropriate scope of the EIS. The public scoping period starts with the publication of this notice in the **Federal Register**. To ensure sufficient time to consider issues identified during the public scoping period, comments should be submitted to Ms. Stacey M. Zee, FAA Environmental Protection Specialist, by one of the methods listed below no later than May 30, 2012. All comments will receive the same attention and consideration in the preparation of the EIS.

ADDRESSES: Comments, statements, or questions concerning scoping issues or the EIS process should be mailed to: Ms. Stacey M. Zee, FAA Environmental Protection Specialist, SpaceX EIS c/o Cardno TEC Inc., 275 West Street, Suite 110, Annapolis, MD 21409. Comments can also be sent by email to *faaspacexeis@cardnotec.com* or by fax to (410) 990–0455.

SUPPLEMENTARY INFORMATION:

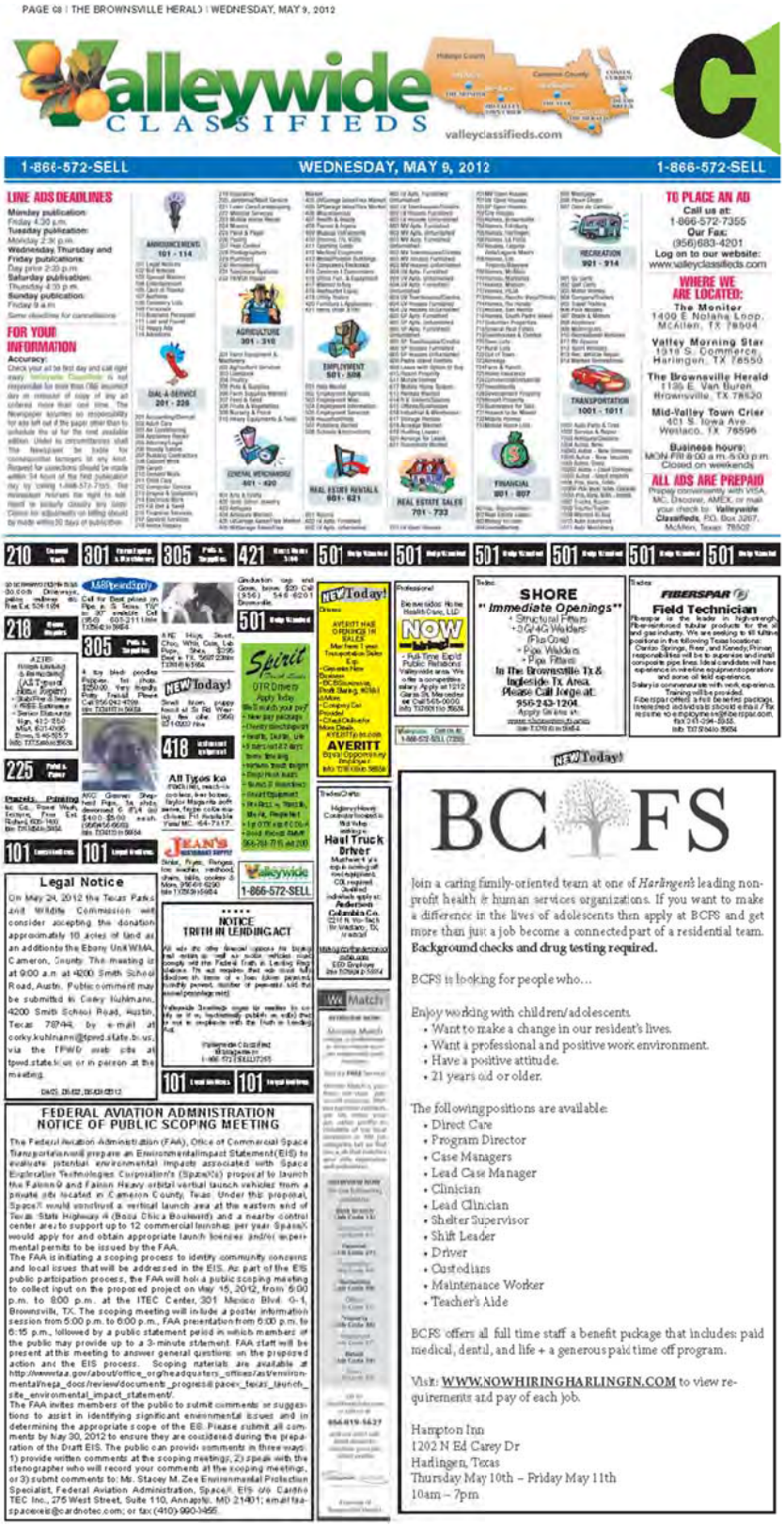
Background

The FAA is preparing an EIS to analyze the potential environmental

Exhibit A-2. Scoping Meeting Notice – Publication Dates for Newspapers

Newspaper	Dates	Page Number
The Brownsville Herald	May 9, 2012 May 10, 2012 May 11, 2012	C8 C3 C2
Valley Morning Star	May 9, 2012 May 10, 2012 May 11, 2012	B5 B5 B5
El Bravo (Spanish language)	May 9, 2012 May 10, 2012 May 11, 2012	7 5 5

Exhibit A-3. Scoping Meeting Notice - The Brownsville Herald



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Legal Notice

On May 24, 2012 the Texas Parks and Wildlife Commission will consider accepting the donation approximately 10 acres of land as an addition to the Ebony Unit WMA, Cameron County. The meeting is at 9:00 a.m. at 4200 Smith School Road, Austin. Public comment may be submitted to Corky Kuhlmann, 4200 Smith School Road, Austin, Texas 78744, by e-mail at corky.kuhlmann@tpwd.state.tx.us, via the TPWD web site at tpwd.state.tx.us or in person at the meeting.

NOTICE TRITH IN LENDING ACT

FEDERAL AVIATION ADMINISTRATION
NOTICE OF PUBLIC SCOPING MEETING

The Federal Aviation Administration (FAA), Office of Commercial Space Transportation will prepare an Environmental Impact Statement (EIS) to evaluate potential environmental impacts associated with Space Exploration Technologies Corporation's (SpaceX®) proposal to launch the Falcon® and Falcon Heavy orbital vertical launch vehicles from a private site located in Cameron County, Texas. Under this proposal, SpaceX would construct a vertical launch area at the eastern end of Texas State Highway 4 (Boca Chica Boulevard) and a nearby control center area to support up to 12 commercial launches per year. SpaceX would apply for and obtain appropriate launch licenses and/or experimental permits to be issued by the FAA.
The FAA is initiating a scoping process to identify community concerns and local issues that will be addressed in the EIS. As part of the EIS public participation process, the FAA will hold a public scoping meeting to collect input on the proposed project on May 15, 2012, from 5:00 p.m. to 8:00 p.m. at the ITEC Center, 301 Mexico Blvd. G-1, Brownsville, TX. The scoping meeting will include a poster information session from 5:00 p.m. to 6:00 p.m., FAA presentation from 6:00 p.m. to 6:15 p.m., followed by a public statement period in which members of the public may provide up to a 3-minute statement. FAA staff will be present at this meeting to answer general questions on the proposed action and the EIS process. Scoping materials are available at http://www.faa.gov/about/office_org/headquarters_offices/ast/environmental/nepa_docs/reviews/documents_progress/spacex_texas_launch_site_environmental_impact_statement/.
The FAA invites members of the public to submit comments or suggestions to assist in identifying significant environmental issues and in determining the appropriate scope of the EIS. Please submit all comments by May 30, 2012 to ensure they are considered during the preparation of the Draft EIS. The public can provide comments in three ways: 1) provide written comments at the scoping meetings; 2) speak with the stenographer who will record your comments at the scoping meetings; or 3) submit comments to: Ms. Stacey M. Zee Environmental Protection Specialist, Federal Aviation Administration, SpaceX EIS c/o Cardno TEC Inc., 275 West Street, Suite 110, Annapolis, MD 21401; email faa-spacexeis@cardnotec.com; or fax (410)-990-3455.

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FEDERAL AVIATION ADMINISTRATION NOTICE OF PUBLIC SCOPING MEETING

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The FAA is initiating a scoping process to identify community concerns and local issues that will be addressed in the EIS. As part of the EIS public participation process, the FAA will hold a public scoping meeting to collect input on the proposed project on **May 15, 2012, from 5:00 p.m. to 8:00 p.m.** at the ITEC Center, 301 Mexico Blvd. G-1, Brownsville, TX. The scoping meeting will include a poster information session from 5:00 p.m. to 6:00 p.m., FAA presentation from 6:00 p.m. to 6:15 p.m., followed by a public statement period in which members of the public may provide up to a 3-minute statement. FAA staff will be present at this meeting to answer general questions on the proposed action and the EIS process. Scoping materials are available at http://www.faa.gov/about/office_org/headquarters_offices/ast/environmental/nepa_docs/review/documents_progress/spacex_texas_launch_site_environmental_impact_statement/.

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DECLARING MOTOR VEHICLES ABANDONED

To Whom It May Concern:

Pursuant to the provisions of Article V of the Texas Abatement Act, V.C.S. 4477-9a, Sec. 5.05. We hereby notify you that we took custody of the following described motor vehicle:

Color: WHITE Year: 1999
MAKE: FORD
Model: EXPLORER LL
VIN#: 1FMZU32E9XZA76906
Lic. Plates: 203-27-26 State: MX

The registered owner or the lienholder has the right to claim the motor vehicle within ten (10) days from the date of this publication by payment of all towing, notification, preservation and storage charges, and a release from the impounding law enforcement agency. Unclaimed vehicles will be turned over to the Police Department to be declared abandoned, and sold at Public Auction to satisfy the charges against the said vehicle.

Lupe's Wrecker
By: Karina Cisneros
Phone: (956)831-4188
Fax: (956)831-9488

05/10/2012

BROWNSVILLE INDEPENDENT SCHOOL DISTRICT
PURCHASING DEPARTMENT
INVITATION

*** B/P/RFQ (BID/PROPOSAL/REQUEST FOR QUALIFICATION)**

Description	Number	Submission	Opening
Quote for Health Care Provider(s) for UIL Physicals for BISD UIL Students	Q (12-12	5/16/2012 10:00 AM	5/16/2012 10:15 AM

Senior Buyer: Delia Gonzalez

Sealed bids/proposals will be received/opened by the BISD at the office of Mrs. Rosario Pena, Administrator of Purchasing 1900 E. Price Rd, 1st Floor, Rm 107, Brownsville, TX 78521-7417, (956) 548-8361. Bidders/Proposers are invited to attend openings on the dates specified, however presence is not mandatory. If you have any questions please contact the assigned Senior Buyer, as listed above.

05/10/2012

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1-866-572-SELL — FRIDAY, MAY 11, 2012 — 1-866-572-SELL

NOTICE OF PUBLIC SALE

of property to satisfy landlord's lien. Sale is at 9:00 a.m. on Saturday, May 26, 2012 at 702 South Arroyo Blvd., Los Fresnos, Texas. Property will be sold to highest bidder for cash. Property includes contents of space of the following tenants

Patricia Castillo- Home Furnishings
Isabel Cuellar- Baby Clothes & Furniture
Benjamin Luna- Furniture
Cecilia Sentino- Furniture & Books

Contact Donald Badeaux @ 233-9171 or Los Fresnos Mini Storage, 702 South Arroyo Blvd., Los Fresnos, Texas 78566

0511, 05/12, 2012

VALLEYWIDE CLASSIFIEDS
Call Us At 1-866-572-SELL (7355)

NOTICE

APPLICATION HAS BEEN MADE WITH THE TEXAS ALCOHOLIC BEVERAGE COMMISSION FOR A MIXED BEVERAGE PERMIT, MIXED BEVERAGE LATE HOURS PERMIT BY RUCHI BAR & GRILL, L.L.C. dba RUCHI BAR & GRILL TO BE LOCATED AT 3777 HWY 77/83 NORTH, BROWNSVILLE, CAMERON COUNTY, TEXAS. MANAGER OF SAID LLC IS MEHUL PATEL.

3511, 05/12/2012

NOTICE

NOTICE IS HEREBY GIVEN THAT TORTUGOS INCORPORATED IS APPLYING FOR A WINE AND BEER RETAILER'S OFF PREMISE PERMIT UNDER THE NAME OF LOS TORTUGOS SEAFOOD MARKET TO BE LOCATED AT 1683 HWY 100, PORT ISABEL, TX 78578, CAMERON COUNTY, TEXAS. HEARING WILL BE HELD ON MAY 14, 2012 AT 10:00 A.M. CORPORATION NAME TORTUGOS INCORPORATED.

0511, 05/12/2012

FEDERAL AVIATION ADMINISTRATION
NOTICE OF PUBLIC SCOPING MEETING

The Federal Aviation Administration (FAA), Office of Commercial Space Transportation will prepare an EnvironmentalImpact Statement (EIS) to evaluate potential environmental impacts associated with Space Exploration Technologies Corporation's (SpaceX's) proposal to launch the Falcon 9 and Falcon Heavy orbital vertical launch vehicles from a private site located in Cameron County, Texas. Under this proposal, SpaceX would construct a vertical launch area at the eastern end of Texas State Highway 4 (Boca Chica Boulevard) and a nearby control center area to support up to 12 commercial launches per year. SpaceX would apply for and obtain appropriate launch licenses and/or experimental permits to be issued by the FAA.
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SpawGlass Contractors, Inc., Construction Manager for be University of Texas Brownsville Biomedical Research Facility 2 building will be receiving proposals on Tuesday May 22nd, 2012 by 2:00PM for a new 7,815 sf laboratory facility. Proposals will be received via fax, mail, courier or hand delivered from subcontractors and suppliers. Proposals received via e-mail will not be accepted. A non-mandatory but strongly encouraged Pre-Proposal conference is scheduled for Tuesday, May 8th, 2012 at 3:00PM at the SpawGlass Office located at 4909 E. Grimes, suite 116, Harlingen, Texas.Plans & Specifications are available on ISQFT, and in all local area plan rooms. This will be a tax exempt project. This project will be governed by the Davis/Bacon Act. SpawGlass Contractors, Inc. is an Equal Opportunity Employer and we encourage all MBE/WBE/SBE/DBE/HUB certified subcontractors and suppliers to submit proposals. Please contact Fred Ehasz or Juan Delgado at 956-412-9880 or fred.ehasz@spawglass.com or juan.delgado@spawglass.com with any questions regarding insurance, bonding requirements or for plan procurement for this project.

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THE DIOCESE OF BROWNSVILLE
HAS THE FOLLOWING JOB OPPORTUNITY
ELEMENTARY PRINCIPAL
JOB SUMMARY: San Martin de Porres Catholic School Serving 70 students in grades preK-4, is seeking a principal for the 2012-2013 school year. The school is located in Weslaco, Texas.
QUALIFICATIONS: Practicing Catholic, Master's Degree (Educational Administration) and classroom teaching experience. Must demonstrate a working knowledge of elementary education, strong administrative and communication skills, and a commitment to partnering with pastoral staff, parents and faculty. Salary and benefits are commensurate with experience and qualifications.
Interested applicants should call (956) 787-8571 for an Application. Application deadline is Friday, May 25, 2012.
Diocese of Brownsville
Attn: Mrs. Lisette Allen, Superintendent of Schools
700 N Virgen de San Juan Blvd., San Juan, Texas 78589
EOE

Field Technician
Fiberspar is the leader in high-strength, fiber-reinforced polymer products for the oil and gas industry. We are seeking to fill full-time positions in the following Texas locations: Carrizo Springs, Pearsall and Kenedy. Primary responsibilities will be to supervise and install composite pipe liner. Ideal candidate will have experience in wireline equipment operations and some oil field experience.
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Requirements:
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3.) Vehicle Insurance
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THE MONITOR

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NOTICE
TRUTH IN LENDING ACT

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Exhibit A-4. Scoping Meeting Notice - Valley Morning Star



VALLEY MORNING STAR — CLASSIFIED — WEDNESDAY, MAY 9, 2012 B5

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Valley Morning Star
1310 S. Commerce, Harlingen, TX 78550
The Brownsville Herald
1135 E. Van Buren, Brownsville, TX 78520
Mid-Valley Town Crier
401 S. Iowa Ave. Weslaco, TX 78596
Business hours: MON-FRI 8:00 a.m.-5:00 p.m. Closed on weekends

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111 Lost and Found | 301 Farm Equip. & Machinery | 305 Pets & Supplies | 305 Pets & Supplies | 418 Restaurant Equipment | 501 Help Wanted | 501 Help Wanted | 501 Help Wanted | 501 Help Wanted | 501 Help Wanted

225 Paint & Paper

Putzels Painting Int. Ext., Power Wash, Texture. Free Est. 428-8989, 605-1490 Info: TX46697 to 56654

Grayson (M) 3 yr old malt. 13 lb Schnauzer Real sweet Docked tail Text: 956.245.4809 Tip of Tex K9 Rescue

Missy (F) 1 ½ yr old 15 lb. spayed brown mix. Very playful. Text: 956.245.4809 Tip of Tex K9 Rescue

WYATT (m) 30 lb Terrier X. Quiet, easy to love. Lanky gentleman. HSH 956-425-7297

406 Miscellaneous

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FEDERAL AVIATION ADMINISTRATION
NOTICE OF PUBLIC SCOPING MEETING

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General

Pioneer Hi-Bred International, in Weslaco, Texas, tiene aperturas inmediatas para trabajadores desexpigamiento del campo. La inscripion para el empleo esta disponible con cita previa. Porfavor llame al 969-1569 o 1-800-8567833. Pioneer Hi-Bred International es un Empleador de Igualdad de Oportunidades. Info: TX76173 to 56654

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10am – 7pm



VALLEY MORNING STAR CLASSIFIED THURSDAY, MAY 10, 2012 ★ B5

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602 LV Apartments/Duplexes Furnished
602 LV Apartments/Duplexes Unfurnished
602 LV Houses Furnished
602 LV Houses Unfurnished
603 MV Apts. Furnished
603 MV Apts. Unfurnished
603 MV Apts. Furnished/Unsupervised
603 MV Townhouses/Condos
603 MV Houses Furnished
603 MV Houses Unfurnished
604 UV Apts. Furnished
604 UV Apts. Unfurnished
604 UV Apts. Furnished/Unfurnished
604 UV Townhouses/Condos
604 UV Houses Furnished
604 UV Houses Unfurnished
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1005I Autos - Used Imports
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1006D Pick Ups, Vans, SUVs - Domestic
1006I Pick Ups, Vans, SUVs - Imports
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1009 Wanted to Buy
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The Brownsville Herald
1135 E. Van Buren, Brownsville, TX 78520
Mid-Valley Town Crier
401 S. Iowa Ave. Weslaco, TX 78596

Business hours:
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101 Legal Notices

FEDERAL AVIATION ADMINISTRATION
NOTICE OF PUBLIC SCOPING MEETING.

The Federal Aviation Administration (FAA), Office of Commercial Space Transportation will prepare an Environmental Impact Statement (EIS) to evaluate potential environmental impacts associated with Space Exploration Technologies Corporation's (SpaceX's) proposal to launch the Falcon 9 and Falcon Heavy orbital vertical launch vehicles from a private site located in Cameron County, Texas. Under this proposal, SpaceX would construct a vertical launch area at the eastern end of Texas State Highway 4 (Boca Chica Boulevard) and a nearby control center area to support up to 12 commercial launches per year. SpaceX would apply for and obtain appropriate launch licenses and/or experimental permits to be issued by the FAA. The FAA is initiating a scoping process to identify community concerns and local issues that will be addressed in the EIS. As part of the EIS public participation process, the FAA will hold a public scoping meeting to collect input on the proposed project on **May 15, 2012, from 5:00 p.m. to 8:00 p.m.** at the ITEC Center, 301 Mexico Blvd. G-1, Brownsville, TX. The scoping meeting will include a poster information session from 5:00 p.m. to 6:00 p.m., FAA presentation from 6:00 p.m. to 6:15 p.m., followed by a public statement period in which members of the public may provide up to a 3-minute statement. FAA staff will be present at the meeting to answer general questions on the proposed action and the EIS process. Scoping materials are available at http://www.faa.gov/about/office_org/headquarters_offices/ast/environmental/neps_docs/review/documents_progress/spacex_texas_launch_site_environmental_impact_statement/.

The FAA invites members of the public to submit comments or suggestions to assist in identifying significant environmental issues and in determining the appropriate scope of the EIS. Please submit all comments by May 30, 2012 to ensure they are considered during the preparation of the Draft EIS. The public can provide comments in three ways: 1) provide written comments at the scoping meetings; 2) speak with the stenographer who will record your comments at the scoping meetings, or 3) submit comments to: Ms. Stacey M. Zee, Environmental Protection Specialist, Federal Aviation Administration, SpaceX EIS c/o Cardno TEC Inc., 275 West Street, Suite 110, Annapolis, MD 21401; email faaspacexeis@cardnotec.com; or fax (410)990-0455.

111 Lost and Found

$400 Reward for return of missing 4 mo. old male German Shepherd. Red collari Lost in Treasure Hills area. 956-202-5440 Info: TX776980 to 56654

found 2 Terrier mix dogs in Harlingen Week of 5/1 Call 541-0340 ASAP!! Info: TX78106 to 56654

204 Appliance Repair

Appliance Repair. Repairs guaranteed. Open 7 days/wk. 381-9426 Hgn. Info: TX67706 to 56654

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107 Auctions

Estate Sale
IN HARLINGEN!
May 11th & 12th, Friday & Saturday 8am - 5pm
Sale Location: 1022 E. Pierce
The estate belonged to Betty & Norman Murray Jr.

Items include: Antiques, sterling flatware, Steuben glass bowls, crystal, china (Limoges, Noritake, Nippon), sofas, side tables, vintage clothing & hats, 1800's books, queen bed, china cabinet with companion dining table & chairs, armoire, tv's, many collectables, suitcases, kitchenware, 1960's dining set and many other vintage pieces.

Event Held by Estate Sales & Liquidations by Jessica 956-778-5834. www.estatesalesbyjessica.com

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213 Drapes & Upholstery

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107 Auctions

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Putzels Painting Int. Ext., Power Wash, Texture, Free Est. 428-8999, 600-1490 Info: TX75097 to 56654

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A & B Pipe and Supply
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Imperial/Mini Shih-Tzu /Yorkie Terrier Puppies Deposits Accepted (956) 592-5128. Info: TX76289 to 56654

NEW Today!
AKC Registered German Shepards 1 Wht, 2M $500 / 4F $400. 1st shots. 956-456-7520 Info: TX76352 to 56654

AKC Huge, Smart, Choc./White, Cute, Lab Pups, Shots $395 Best in TX 7568722Info: TX78100 to 56654

Bear (M) 2 yr old, Blk. Pug-Chi X. Sweet & lovable. Missing an eye Text: 956.245.4809 Tip of Tex K9 Rescue.

FEISTY (f) young princess in training. Wants room with view. Lots of love. HSH 956-425-7297

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Grayson (M) 3 yr old neut. 13 lb Schnauzer Real sweet.Docked tail. Text: 956.245.4809 Tip of Tex K9 Rescue.

Joey (M) 1-2 yr old 12 lb mix. Friendly Maltipoo. Text: 956.245.4809 Tip of Tex K9 Rescue.

LARK (f) baby Schnauzer-Poodle X. Chunky pup, stubby legs, cuddle and play. HSH 956-425-7297

Call Us At 1-866-572-SELL (7355)

Mikey (F) 1 ½ yr old 15 lb. spayed brown mix. Very playful. Text: 956.245.4809 Tip of Tex K9 Rescue.

Romeo (M) 2 yr old neut. Friendly & playful white poodle. Text: 956.245.4809 Tip of Tex K9 Rescue.

SAVANNA(f) fliratious, charming, clean house pet, extra pretty girl. HSH 956-425-7297

WYATT (m) 30 lb Terrier X. Quiet, easy to love. Lovely gentleman. HSH 956-425-7297

NOTICE
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All ads that offer financial options for buying real estate as well as motor vehicles must comply with the Federal Truth in Lending Regulations. The act requires that ads must fully disclose the terms of a loan (down payment, monthly payment, number of payments and the annual percentage rate).

Valleywide Classifieds urges its readers to notify us if we, inadvertently publish an ad(s) that is not in compliance with the Truth in Lending Act.

Valleywide Classified Management 1-866-572-(SELL)7355

VALLEY MORNING STAR — CLASSIFIED — FRIDAY, MAY 11, 2012 ★ B5

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1-866-572-SELL — FRIDAY, MAY 11, 2012 — 1-866-572-SELL

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Monday publication: Friday 4:30 p.m.
Tuesday publication: Monday 2:30 p.m.
Wednesday, Thursday and Friday publications: Day prior 2:30 p.m.
Saturday publication: Thursday 4:30 p.m.
Sunday publication: Friday 9 a.m.
Same deadlines for cancellations

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Accuracy:
Check your ad the first day and call right away. Valleywide Classifieds is not responsible for more than ONE incorrect day or omission of copy of any ad ordered more than one time. The Newspaper assumes no responsibility for ads left out of the paper other than to schedule the ad for the next available edition. Under no circumstances shall The Newspaper be liable for consequential damages of any kind. Request for corrections should be made within 24 hours of the first publication day by calling 1-866-572-7355. The newspaper reserves the right to edit, reject or properly classify any copy. Claims for adjustments on billing should be made within 30 days of publication.

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TRANSPORTATION 1001 - 1011
1001 Auto Parts & Tires, 1002 Service & Repair, 1003 Antiques/Classics, 1004 Autos, New, 1004D Autos - New Domestic, 1004I Autos - New Imports, 1005 Autos, Used, 1005D Autos - Used Domestic, 1005I Autos - Used Imports, 1006 P/u, Vans, SUVs, 1006D P/u, Vans, SUVs - Domestic, 1006I P/u, Vans, SUVs - Imports, 1007 Trucks, Buses, 1008 Tractor/Trailer, 1009 Wanted to Buy, 1010 Auto Insurance, 1011 Auto Machinery

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Our Fax: (956)683-4201
Log on to our website: www.valleyclassifieds.com

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The Monitor
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Valley Morning Star
1310 S. Commerce, Harlingen, TX 78550

The Brownsville Herald
1135 E. Van Buren, Brownsville, TX 78520

Mid-Valley Town Crier
401 S. Iowa Ave. Weslaco, TX 78596

Business hours:
MON-FRI 8:00 a.m.-5:00 p.m.
Closed on weekends

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COMMUNITY DEVELOPMENT ADVISORY BOARD NOTICE OF REGULAR MEETING

NOTICE is hereby given that the Community Development Advisory Board of the City of Harlingen will hold a Regular Meeting on **Thursday, May 17, 2012 at 5:30 p.m.** in the Conference Room of the Lon C. Hill Building located at 502 E. Tyler Street, Harlingen, Texas 78550. Please call (956) 216-5180 for futher information. Accommodations for individuals with handicaps/disabilities or limited English proficiency shall be assisted upon request by calling 216-5180. *Los alojamientos para individuos con desventajas/incapacidades o pericia inglesa limitada serán ayudados sobre la petición llamando 216-5181.*

FEDERAL AVIATION ADMINISTRATION NOTICE OF PUBLIC SCOPING MEETING

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Imperial/Mini Shih-Tzu /Yorkie Terrier Puppies. Deposits Accepted (956) 592-5128 Info: TX70289 to 56654



AKC Huge, Smart, Choc,White, Cute, Lab Pups, Shots $395 Best in TX. 7568723 Info: TX76100 to 56654

AKC Registered German Shepards 8 Wks, 2M $500 / 4F $400. 1st shots, 956-456-7520 Info: TX71352 to 56654



Bear (M) 2 yr old, 8lb. Pug-ChiX. Sweet & lovable. Missing an eye Text: 956.245.4809 Tip of Tex K9 Rescue.



FEISTY (f) young princess in training. Wants room with view. Lots of love. HSH 956-425-7297

... old 12 lb neut. friendly Maltipoo. Text: 956.245.4809 Tip of Tex K9 Rescue.



LARK (f) baby Schnauzer-Poodle X. Chunky pup, stubby legs, cuddle and play. HSH 956-425-7297

... neut. Friendly & playful white poodle. Text: 956.245.4809 Tip of Tex K9 Rescue.



SAVANNA(f) flirtatious, charming, clean house pet, extra pretty girl. HSH 956-425-7297

... easy to love. Lanky gentleman. HSH 956-425-7297

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Event Held by Estate Sales & Liquidations by Jessica 956-778-5834. www.estatesalesbyjessica.com

JM PUBLIC ESTATE AUCTION
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POWER EQUIPMENT - SHOP EQUIPMENT
NEW CRAFTSMAN RIDING MOWER
RELOADERS - STEEL GUN CABINET/SAFE
NICE FURNITURE PIECES
DATE: SATURDAY, MAY 12, 2012 AT 10:00 A.M.
LOCATION: 116 S. 23RD ST., DONNA, TEXAS - Take Business 83 East to 23rd, then South.
See Website for Map and Pictures. www.jdmmace.com
Living Room Furniture including: Buffet/China Display - Butcher Block Table - Antique Ornate Buffet - Cedar Armoire - Loveseat - Modern Dresser - Tools and Equipment: Two Case Tractors (930's?), One Complete, One for Parts or Restoration - Heavy Duty Steel 14' Implement/ Utility Trailer with New Tires and Trailer Dolly - Small Disc - Large Shredder - Box Blade - Implement Hoist - Like New Craftsman Riding Mower - Craftsman Radial Arm Saw - Craftsman Band Saw - Ryobi Oscillating Sander - Belt Sander - Newer Pancake Style Air Compressor - Large ...

Valleywide ... CHECK OUT THE ... 1-866-572-SELL

405 Garage Sales/ Flea Market

HGN-801 E. Van Buren Sat & Sun 9-4, Estate Sale-Dining Room & Patio Set, Propane Stove, Antiques. Info: TX76448 to 56654

HUGE Estate Sale 519 E. Madison (6th & Madison) Brownsville May 17th, 18th, & 19th 8 am - 7 pm Photos & Info at www.estatesaleservice.net 956-355-9715 Info: TX76455 to 56654

Garage Sales/ Flea Market

405 Garage Sales/ Flea Market Lower Valley

NEW 800 FLEA MARKET
15960 FM 800 2 Mi. W Rangerville Rd., Harlingen.
Over 21,000 Sq. Ft., under roof.
Vendors: $3 Spaces/Tables
Food Vendors welcome, 8-5pm Sat. / Sun.
Free Parking
Call 956-444-8004

La Feria- Yard Sale May 12th, 508 Kiester Lane 8:30am-2pm, evening dresses, furn, clothes, misc. items. Info: TX76418 to 56654

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418 Restaurant Equipment

All Types Ice machines, reach-in coolers, beer boxes, Taylor Margarita soft serve, frozen coke machines Fin. Available Visa/MC. 464-7817.

JEAN'S
Sinks, Fryers, Ranges, Ice machine, venthood, chairs, tables, coolers & More. 956-688-6290 Info: TX75650 to 56654

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Trades

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Fiberspar offers a full benefits package. Interested individuals should email / fax resume to employment@fiberspar.com, fax 281-394-5955
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Trades

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Has
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- 6GR WELDERS
"TOP PAY"
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IMMEDIATE OPENINGS
- PIPE FITTERS
- PIPE WELDERS
- 3G/4G (FLUXCORE)
- STRUCTURAL FITTERS
"TOP PAY"
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Call Today!!!
We are looking for 100+ workers.
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Info: TX78334 to 56654

Mid-Valley Town Crier

Are you ready to sell an exciting number of products in established business environment, with lots of potential?

The *Mid-Valley Town Crier* located in Weslaco, TX, a leader in news and information is seeking an enthusiastic and motivated sales professional. This position will sell advertising in a number of exciting products including the twice weekly newspaper, as well as helping clients with the strategic placement of online advertising to better position their business for the future.
Candidates must have the ability to strategize, make presentations and coordinate the creative process. You will actively prospect for new business to grow a territory, manage current accounts as well as develop and execute strategic sales initiatives.
We offer a creative, interactive work environment that's exciting and ...

Exhibit A-5. Scoping Meeting Notice - El Bravo

CIUDAD 7

EL BRAVO | H. Matamoros, Tam., México
Miércoles 9 de Mayo de 2012

marketing@elbravo.com.mx

ADMINISTRACIÓN FEDERAL DE AVIACIÓN NOTIFICACIÓN DE REUNIÓN PÚBLICA

La Administración Federal de Aviación (FAA por sus siglas en inglés), Oficina de Transporte Espacial Comercial preparará una Declaración de Impacto Ambiental qué evaluará los posibles impactos ambientales asociados con la propuesta de Space Exploration Technologies Corp. (SpaceX), quienes proponen lanzamientos de vehículos orbitales verticales como el Falcon 9 y el Falcon Heavy, desde un sitio privado situado en el condado de Cameron Texas. Según esta propuesta, SpaceX construiría una zona de lanzamiento vertical en el extremo oriental de la Autopista 4 Estatal de Texas (Boca Chica Boulevard) y cerca de este, una zona que funcionaría como centro de control, para soportar hasta 12 lanzamientos comerciales cada año. SpaceX solicitaría y obtendría las licencias correspondientes y/o permisos de lanzamiento experimentales expedidos por la FAA.

La FAA está iniciando un proceso de evaluación para identificar los problemas de la comunidad y temas locales que se abordarán en la EIS. Como parte del proceso de participación pública de la EIS, la FAA organizará una reunión de presentación al público para recibir las opiniones sobre el proyecto propuesto el día ***15 de Mayo de 2012, desde las 5:00 p.m. a las 8:00 p.m.*** en el Centro ITEC, 301 México Blvd. G-1, Brownsville, TX. La reunión incluirá una sesión de carteles informativos desde 5:00 p.m. a 6:00 p.m., una presentación de la FAA desde las 6:00 p.m. a las 6:15 p.m., seguido por un período de declaraciones públicas en la que los miembros del público pueden proporcionar declaraciones de hasta 3 minutos. El personal de la FAA estará presente en esta reunión para responder a preguntas generales sobre la acción propuesta y el proceso de la EIS. Materiales de información están disponibles en la siguiente página de Internet: http://www.faa.gov/about/office_org/headquarters_offices/ast/environmental/nepa_docs/review/documents_progress/spacex_texas_launch_site_environmental_impact_statement/

La FAA invita a los miembros del público a compartir sus comentarios o sugerencias las cuales ayudaran a identificar temas ambientales significativos y a determinaran el enfoque apropiado de la EIS. Por favor emita y envíe sus comentarios hasta el 30 de mayo de 2012 para garantizar que sean considerados durante la preparación de la primera versión de la EIS. El público puede proporcionar sus comentarios de tres maneras:

1) proporcionar comentarios por escrito durante las reuniones de presentación
2) Hablar con el estenógrafo quién registrará sus comentarios en las reuniones de presentación o
3) Enviar sus comentarios por correo a:

Sra. Stacey M. Zee, especialista de proteccion ambiental, de la Administración Federal de Aviación, SpaceX EIS c/o Cardno TEC Inc., 275 West Street, Suite 110, Annapolis, MD 21401;
por email a faaspacexeis@cardnotec.com;
o por fax a (410)-990-0455.

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Servicio a Domicilio
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Suc. Plaza Fiesta 819 1500
Suc. Lauro Villar 813 3805
Suc. Laguneta 816 2666
Suc. Av. del Niño 817 8781

CIUDAD
EL BRAVO | H. Matamoros, Tam., México
Jueves 10 de Mayo de 2012
5

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NOTIFICACIÓN DE REUNIÓN PÚBLICA

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La FAA está iniciando un proceso de evaluación para identificar los problemas de la comunidad y temas locales que se abordarán en la EIS. Como parte del proceso de participación pública de la EIS, la FAA organizará una reunión de presentación al público para recibir las opiniones sobre el proyecto propuesto el día ***15 de Mayo de 2012, desde las 5:00 p.m. a las 8:00 p.m.*** en el Centro ITEC, 301 México Blvd. G-1, Brownsville, TX. La reunión incluirá una sesión de carteles informativos desde 5:00 p.m. a 6:00 p.m., una presentación de la FAA desde las 6:00 p.m. a las 6:15 p.m., seguido por un período de declaraciones públicas en la que los miembros del público pueden proporcionar declaraciones de hasta 3 minutos. El personal de la FAA estará presente en esta reunión para responder a preguntas generales sobre la acción propuesta y el proceso de la EIS. Materiales de información están disponibles en la siguiente página de internet:
http://www.faa.gov/about/office_org/headquarters_offices/ast/environmental/nepa_docs/review/documents_progress/spacex_texas_launch_site_environmental_impact_statement/

La FAA invita a los miembros del público a compartir sus comentarios o sugerencias las cuales ayudaran a identificar temas ambientales significativos y a determinaran el enfoque apropiado de la EIS. Por favor emita y envíe sus comentarios hasta el 30 de mayo de 2012 para garantizar que sean considerados durante la preparación de la primera versión de la EIS. El público puede proporcionar sus comentarios de tres maneras:

1) proporcionar comentarios por escrito durante las reuniones de presentación
2) Hablar con el estenógrafo quién registrará sus comentarios en las reuniones de presentación o
3) Enviar sus comentarios por correo a:

Sra. Stacey M. Zee, especialista de protección ambiental, de la Administración Federal de Aviación, SpaceX EIS c/o Cardno TEC Inc., 275 West Street, Suite 110, Annapolis, MD 21401;
por email a faaspacexeis@cardnotec.com;
o por fax a (410)-990-0455.

PARA MÁMA ESTÁ EN
Church's CHICKEN
EXPERTOS EN POLLO
ESTE 9 Y 10 DE MAYO
AL 2X1
Church's CHICKEN
TODOS NUESTROS COMPLEMENTOS FAMILIARES Y REGULARES
Servicio a Domicilio
Suc. Centro 811 8888
Suc. Plaza Fiesta 819 1500
Suc. Lauro Villar 813 3805
Suc. Lagunera 816 2666
Suc. Av. del Niño 817 8781



EJIDAL | Los cita el Centro de Salud una vez al mes

Bajo control los pacientes que padecen de diabetes

ADMINISTRACIÓN FEDERAL DE AVIACIÓN
NOTIFICACIÓN DE REUNIÓN PÚBLICA

La Administración Federal de Aviación (FAA por sus siglas en inglés), Oficina de Transporte Espacial Comercial preparará una Declaración de Impacto Ambiental qué evaluará los posibles impactos ambientales asociados con la propuesta de Space Exploration Technologies Corp. (SpaceX), quienes proponen lanzamientos de vehículos orbitales verticales como el Falcon 9 y el Falcon Heavy, desde un sitio privado situado en el condado de Cameron Texas. Según esta propuesta, SpaceX construiría una zona de lanzamiento vertical en el extremo oriental de la Autopista 4 Estatal de Texas (Boca Chica Boulevard) y cerce de este, una zona que funcionaría como centro de control, para soportar hasta 12 lanzamientos comerciales cada año. SpaceX solicitaría y obtendría las licencias correspondientes y/o permisos de lanzamiento experimentales expedidos por la FAA.

La FAA está iniciando un proceso de evaluación para identificar los problemas de la comunidad y temas locales que se abordarán en la EIS. Como parte del proceso de participación pública de la EIS, la FAA organizará una reunión de presentación al público para recibir las opiniones sobre el proyecto propuesto el día ***15 de Mayo de 2012, desde las 5:00 p.m. a las 8:00 p.m.*** en el Centro ITEC, 301 México Blvd. G-1, Brownsville, TX. La reunión incluirá una sesión de carteles informativos desde 5:00 p.m. a 6:00 p.m., una presentación de la FAA desde las 6:00 p.m. a las 6:15 p.m., seguido por un período de declaraciones públicas en la que los miembros del público pueden proporcionar declaraciones de hasta 3 minutos. El personal de la FAA estará presente en esta reunión para responder a preguntas generales sobre la acción propuesta y el proceso de la EIS. Materiales de información están disponibles en la siguiente página de internet:
http://www.faa.gov/about/office_org/headquarters_offices/ast/environmental/nepa_docs/review/documents_progress/spacex_texas_launch_site_environmental_impact_statement/

La FAA invita a los miembros del público a compartir sus comentarios o sugerencias las cuales ayudaran a identificar temas ambientales significativos y a determinaran el enfoque apropiado de la EIS. Por favor emita y envíe sus comentarios hasta el 30 de mayo de 2012 para garantizar que sean considerados durante la preparación de la primera versión de la EIS. El público puede proporcionar sus comentarios de tres maneras:
1) proporcionar comentarios por escrito durante las reuniones de presentación
2) Hablar con el estenógrafo quién registrará sus comentarios en las reuniones de presentación o
3) Enviar sus comentarios por correo a:
Sra. Stacey M. Zee, especialista de protección ambiental, de la Administración Federal de Aviación, SpaceX EIS c/o Cardno TEC Inc., 275 West Street, Suite 110, Annapolis, MD 21401;
por email a faaspacexeis@cardnotec.com;
o por fax a (410)-990-0455.





Exhibit A-6. Scoping Meeting Flyers (English and Spanish)

Federal Aviation Administration

PUBLIC SCOPING MEETING

YOU ARE INVITED

The Federal Aviation Administration (FAA) is asking for input from the community on the potential environmental impacts associated with Space Exploration Technologies Corporation's (SpaceX's) proposal to launch the Falcon 9 and Falcon Heavy orbital vertical launch vehicles from a private site located in Cameron County, Texas. Under this proposal, SpaceX would construct a vertical launch area and a control center area to support up to 12 commercial launches per year. SpaceX would apply for and obtain the appropriate launch licenses and/or experimental permits to be issued by the FAA.

The FAA is preparing an Environmental Impact Statement (EIS) to determine the environmental impacts associated with the proposed activities. The FAA invites interested parties to submit comments to assist in identifying significant environmental issues and in determining the scope of the EIS.

When?	*What?*	*Where?*
Tuesday, May 15, 2012		
5:00 pm to 6:00 pm	Poster Information Session	ITEC Center
6:00 pm to 6:15 pm	FAA Presentation	301 Mexico Blvd. G-1,
6:15 pm to 8:00 pm	Public Statement Period	Brownsville, Texas 78520

Information stations with posters and fact sheets will explain the proposal. The scoping meeting will incluce a poster information session, followed by a presentation, given by FAA, and ending with a public statement period in which members of the public may provide up to a 3-minute statement. FAA staff will be present at this meeting to answer general questions on the proposed action and the EIS process.

Administración Federal de Aviación

REUNIÓN PÚBLICA

USTED ESTÁ INVITADO

La Administración Federal de Aviación (FAA) está solicitando opiniones de la comunidad sobre los potenciales impactos ambientales asociados con la propuesta de Space Exploration Technologies Corporation (SpaceX) de establecer un sitio de lanzamiento para los vehículos orbitales de lanzamiento vertical Falcón 9 y Falcón Heavy desde una ubicación privada en el Condado Cameron, Texas. Bajo esta propuesta, SpaceX construiría un área de lanzamientos verticales y un área de centro de control para soportar hasta 12 lanzamientos comerciales cada año. SpaceX aplicaría y obtendría las licencias de lanzamiento apropiadas y/o permisos experimentales que serían expedidos por la FAA.

La FAA está preparando una Declaración de Impacto Ambiental (EIS por sus siglas en inglés) para determinar los impactos ambientales asociados con las actividades que han sido propuestas. La FAA invita a los sectores interesados a proveer comentarios para asistir en la identificación de temas ambientales significativos y en determinar el enfoque de la EIS.

¿Cuando?	*¿Qué?*	*¿Donde?*
martes, 15 de Mayo		
5:00 pm a 6:00 pm	Sesión informativa de Carteles	ITEC Center
6:00 pm a 6:15 pm	Presentación de la FAA	301 Mexico Blvd. G-1,
6:15 pm a 8:00 pm	Declaraciones del Público	Brownsville, Texas 78520

Estaciones de información con carteles y libretos explicaran la propuesta. La reunión incluirá una sesión informativa de carteles, seguida por una presentación dada por la FAA, y terminara en un período para declaraciones del público, en el cual miembros de la comunidad podrán ofrecer una declaración de un máximo de 3-minutos. El personal de la FAA estará presente en esta reunión para contestar preguntas generales sobre la acción propuesta y el proceso de la EIS.

Exhibit A-7. Scoping Meeting Factsheets



WELCOME

Public Scoping Meeting
Environmental Impact Statement
For the SpaceX Texas Launch Site

May 15, 2012
5:00 pm to 8:00 pm
ITEC CENTER
301 Mexico Boulevard G-1, Brownsville, TX

Scoping is your opportunity to provide comments
to help us improve our analysis

The official scoping period began when the Federal Aviation Administration (FAA) published a Notice of Intent to prepare an Environmental Impact Statement (EIS) in the Federal Register on April 10, 2012. The EIS will describe the potential environmental effects from the Proposed Action. The scoping period lasts until May 30 2012. Information on the NEPA process and the EIS is available on the following website:
http://www.faa.gov/about/office_org/headquarters_offices/ast/environmental/nepa_docs/review/documents_progress/spacex_texas_launch_site_environmental_impact_statement/.

Tonight's scoping meeting is beingheld to solicit input from the public on what should be analyzed and studied in the EIS. Scoping is one of the first stepsin the EIS process and your input during the scoping period is important.

The meeting includes an open-house workshop from 5:00 pm to 6:00 pm. The FAA will provide an overview of the environmental process from 6:00 pm to 6:15 pm followed by a public comment period from 6:15 pm to 8:00 pm.

During the scoping period, the public can provide comments in 5 ways:

1. Provide written comments at tonight's scoping meeting
2. Talk to our stenographer who can record your comments during the scoping meeting
3. Submit comments electronically to faaspacexeis@cardnotec.com
4. Fax your comments to (410) 990-0455
5. Mail your comment form to:

Ms. Stacey M. Zee, Environmental Protection Specialist
Federal Aviation Administration
SpaceX EIS
c/o Cardno TEC Inc.
275 West Street—Suite 110
Annapolis, MD 21401

EIS for SpaceX Texas Launch Site | Page 1

WELCOME TO THE FAA SCOPING MEETING

The Proposed Action is for the FAA to issue launch licenses and/or experimental permits to Space Exploration Technologies Corp. (SpaceX) that would allow SpaceX to launch the Falcon 9 and Falcon Heavy orbital vertical launch vehicles and a variety of reusable suborbital launch vehicles from a launch site on privately owned property in Cameron County, Texas. The FAA will prepare an Environmental Impact Statement (EIS) to evaluate the potential environmental effects of this proposal. FAA representatives are here to explain the proposed project and alternatives, answer any questions you might have about these items, and describe the environmental impact analysis process and related time line. An area has been set aside within the main meeting room to provide you with an opportunity to write and submit your comments, or to speak with a stenographer who will record your comments.

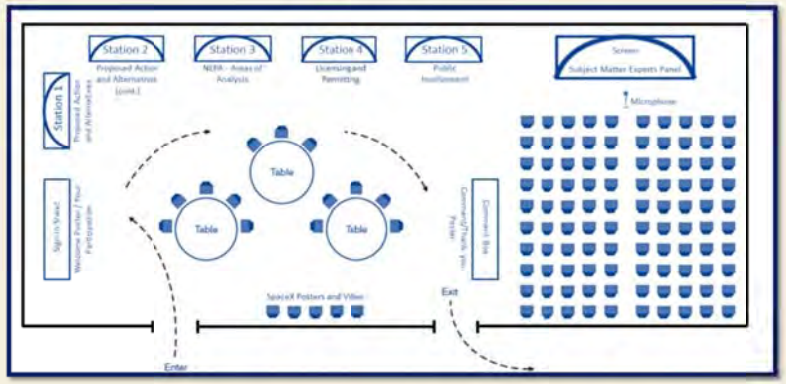
What is the purpose of this Public Scoping Meeting?

Scoping is an early and open process where the public is invited to help identify issues to be studied in the EIS. The purpose of this scoping meeting is to inform you about the proposed project, explain the National Environmental Policy Act (NEPA) and the associated environmental impact analysis, and solicit your comments and concerns related to the proposal and alternatives.

What is Scoping?
Scoping is an early and open process where the public is invited to help identify issues to be studied in the EIS.

Please review the displays located throughout the open house, and then provide us with your comments. The approximate layout of the room is shown below.

General Room Layout for the Public Scoping Meeting, 5:00 pm to 8:00 pm
(Actual layout may be different)



NATIONAL ENVIRONMENTAL POLICY ACT

Why is the FAA Preparing an EIS?

As part of our compliance with NEPA, the FAA is preparing an EIS to assess the potential environmental impacts of the proposed issuance of launch licenses and/or experimental permits to Space Exploration Technologies Corp. (SpaceX) for operating the Falcon vehicle launch programs from a private site located in Cameron County, Texas. The EIS will consider the potential environmental impacts of the Proposed Action and reasonable alternatives, including the No Action Alternative. The successful completion of the environmental review process does not guarantee that the FAA would issue launch licenses and/or experimental permits to SpaceX. The project must also meet all FAA safety, risk, and indemnification requirements.

The National Environmental Policy Act (NEPA) requires that all federal agencies consider the environmental impacts of any major proposed projects.



Informed decisions are based on a candid and factual presentation of environmental impacts. These facts come from collecting information on the areas and resources affected by the proposa, and then identifying the type and extent of potential impacts resulting from the proposa. For this project, the FAA will analyze potential impacts to:

- Air quality
- Fish, wildlife & plants, including threatened & endangered species
- Historical, architectural, archaeological & cultural resources
- Light emissions and visual impacts
- Water resources, including surface waters, wetlands, groundwater, floodplains, Wild & Scenic Rivers, water quality
- Section 4(f) properties
- Socioeconomics, environmental justice & children's environmental health & safety risks
- Compatible Land use, including farmlands & coastal resources
- Hazardous materials, pollution prevention & solid waste
- Natural resources, energy supply & sustainable design
- Noise

The analysis will include and evaluation of the construction impacts and secondary (induced) impacts, and will account for cumulative impacts from other relevant activities in the area of Cameron County, Texas. Numerous federal laws and regulations govern the protection and preservation of environmental resources. The FAA strictly adheres to these laws and regulations, such as the Endangered Species Act, Clean Air Act, Clean Water Act, among others.

Public Involvement in the EIS Process



The FAA invites public participation during the scoping process to help understand community-specific issues and concerns on the Proposed Action and alternatives. We anticipate receiving scoping comments from: business and community leaders, federal, state, and local elected officials, regulatory agencies and interested individuals. Scoping comments help the FAA determine the issues and concerns to analyze in the preparation of the Draft EIS. The public will have a second opportunity to participate in the NEPA process by commenting on the Draft EIS. The release of the Draft EIS will be announced in a newspaper that serves your area. All comments on the Draft EIS will be addressed in the Final EIS.

PROPOSED ACTION & ALTERNATIVES

Under the Proposed Action, SpaceX would construct a vertical launch area and a control center area to support up to 12 commercial launches per year. The vehicles to be launched include the Falcon 9, Falcon Heavy (up to two per year), and a variety of smaller reusable suborbital launch vehicles. All Falcon 9 and Falcon Heavy launched would be expected to have commercial payloads, including satellites or experimental payloads. The Falcon 9 and Falcon Heavy may also carry a capsule, such as the SpaceX Dragon Capsule. SpaceX may elect to launch smaller suborbital reusable launch vehicles such as the SpaceX Grasshopper from this site. SpaceX would be required to apply for the appropriate launch licenses and/or experimental permits to be issued by the FAA. Alternatives under consideration include the Proposed Action and the No Action Alternative. Under the No Action Alternative, the FAA would not issue launch licenses and/or experimental permits to SpaceX. Based on comments received during the scoping period, the FAA may propose additional alternatives.

Operational Activities


Falcon 9 on transporter-erector

The Falcon launch vehicle program is designed for minimal vehicle assembly and processing on the launch pad. The goal is to launch within a few days to several weeks of payload arrival at a launch site.

The Falcon 9 orbital vertical launch vehicle is a medium-lift class launch vehicle with a gross lift-off weight of approximately 1,000,000 pounds with a maximum length of 230 feet. The Falcon 9 uses liquid oxygen (LOX) and highly refined kerosene, also known as rocket propellant-1 or refined petroleum-1 (RP-1), as propellants to carry payloads into orbit.

The Falcon Heavy is similar to the Falcon 9, except that it has an additional two boosters "strapped on," each booster being almost identical to the Falcon 9 first stage core. The Falcon Heavy is a heavy lift class launch vehicle with a gross lift-off weight of approximately 3,400,000 pounds. It has an overall maximum length of approximately 230 feet.




Dragon Capsule

A reusable suborbital launch vehicle could consist of a Falcon 9 Stage 1 tank with a maximum propellant (RP-1 and LOX) load of approximately 6,900 gallons.

In addition to standard commercial satellite payloads, the Falcon 9 and Falcon Heavy launch vehicles may carry a spacecraft, the SpaceX Dragon capsule, which is being developed to deliver cargo and experiments to low Earth orbit. The Dragon capsule's dry weight could range from 8,000 to 15,000 pounds depending on its cargo and configuration.

On a per-mission basis, launch campaigns (preparation for and the actual launch event) are expected to last from 2 to 8 weeks. During a launch campaign, up to 100 local and 100 transient employees would be present at the site, including payload support personnel. Between launch campaigns, 30 to 50 employees could be present at the site.

Construction Activities



As part of the Proposed Action, SpaceX would construct new facilities, structures, and utility connections in order to support the launch of the Falcon 9 and Falcon Heavy launch vehicles. The proposed schedule for all construction is a 24-month period from start to finish. The facilities would be located in two areas – a launch site area and a control center area.

The proposed vertical launch area is currently undeveloped and is located directly adjacent to the eastern terminus of the Texas State Highway 4 (Boca Chica Boulevard) and approximately 3 miles north of the Mexican border on the Gulf Coast. It is located approximately 5 miles south of Port Isabel and South Padre Island.

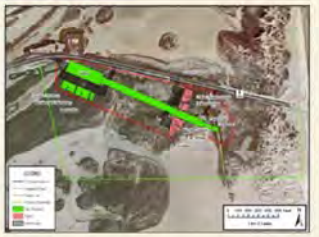
The control center area would be located inland to the west of the vertical launch area, all facilities would be constructed on private land owned or leased by SpaceX. The development of access and supporting utility infrastructure for the vertical launch area and the control center area may occur on lands outside those owned or leased by SpaceX.

Vertical Launch Area Site Layout

At the proposed vertical launch area, the facilities required would include: an integration and processing hangar, a launch pad and stand with its associated flame duct, propellant storage and handling areas, a workshop and office area, and a warehouse for parts storage.

The hangar facility at the vertical launch area would be used for the preparation of the launch vehicle for launch and the final fueling and integration of the payload onto the vehicle.

The launch pad and stand is used to translate the launch vehicle to vertical and to support it on the pad prior to lift-off.



Control Center Area Site Layout



The proposed control center area would include: a control center building and a payload processing facility; it might also include a launch vehicle preparation hangar and satellite fuels storage area.

The control center would be used for command and control of the launch vehicle, payload, and ground systems during launch and test operations. The payload processing facility would be used to conduct final processing of payloads prior to integrating them with the launch vehicle. The launch vehicle preparation hangar would be used to conduct refurbishment of flown stages, or pre-integration preparation of the launch vehicle stages before they go to the pad hangar for final integration. The control center area site layout and exact location have not yet been finalized.

LICENSING & PERMITTING

FAA Licenses, Permits, Regulations, and Approvals

- SpaceX must apply for a launch license or experimental permit.
- SpaceX would be the exclusive user of the site.
- FAA statutory requirements for licenses and permits are described in 14 CFR Chapter III, Parts 400-450.
- FAA conducts a review of the license or permit application including a policy review, payload review, financial determination, environmental review and safety review.
- Successful completion of the environmental review does not guarantee that FAA would issue launch licenses and/or experimental permits to SpaceX.

AST Licensing and Permitting Review

- **Policy Review** – Determines whether a proposed launch would jeopardize U.S. National Security, International Obligations or Foreign policy interests
- **Payload Review** – Determines if a license applicant or payload owner or operator has obtained all required licenses, authorizations, and permits. Does not apply to payloads under the jurisdiction of any other government agency
- **Financial Responsibility Determination** – Proof of financial responsibility is required. This is usually fulfilled by purchase of liability insurance
- **Environmental Review** – Proposal must be reviewed under the NEPA This EIS process fulfills the environmental review portion of the license application.
- **Safety Review** – Determines if an applicant can safely conduct the launch of the proposed launch vehicle(s) and payload(s).



EIS for SpaceX Texas Launch Site | Page 6

THIS PAGE FOR YOUR NOTES

EIS for SpaceX Texas Launch Site | Page 7

Exhibit A-8. Scoping Meeting Poster Displays

WELCOME

Public Scoping Meeting
Environmental Impact Statement
For the SpaceX Texas Launch Site



May 15, 2012
5:00 pm to 8:00 pm
ITEC CENTER

Please Sign In
Scoping is your opportunity to provide comments
to help us improve our analysis

COMMENTS

YOUR INPUT IS IMPORTANT

1 . Please ask questions.
FAA representatives are here to talk to you about your concerns.

2. Please provide comments.
This will help us understand your concerns. There are several ways to submit your commerts. For your convenience, a stenographer is here to record your comments.

3. Stay involved.
Please add your name to the mailing list to receive future notices.

Please submit your comments here

THANK YOU FOR PARTICIPATING!

PROPOSED ACTION

What is the Proposed Action?

The Federal Aviation Administration, Office of Commercial Space Transportation (FAA/AST) is proposing to issue launch licenses and/or experimental permits to Space Exploration Technologies Corp. (SpaceX) to conduct launches of the Falcon 9 and Falcon Heavy orbital vertical launch vehicles and a variety of reusable suborbital launch vehicles from a private site located in Cameron County, TX.

Under the Proposed Action, SpaceX would construct a vertical launch area and a control center area to support up to 12 commercial launches per year.

When?

- Proposed construction of the vertical launch area and control center area would not begin until the EIS is complete.
- Construction at both the vertical launch area and control center area, would be anticipated to last approximately 24 months from start to finish.

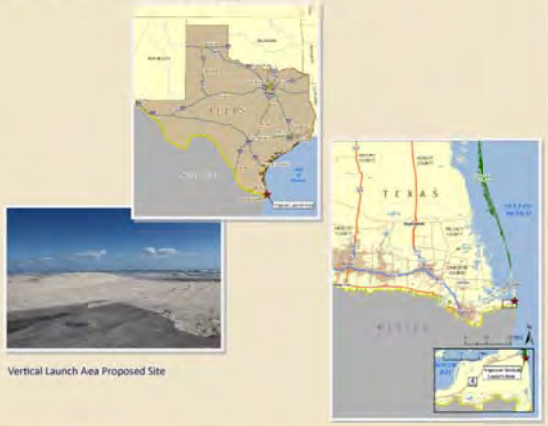
Why?

Under the Commercial Space Launch Act of 1984, the FAA Office of Commercial Space Transportation is the lead Federal agency that ensures, through the issuance of licenses and permits, that launch services provided by private enterprises are consistent with national security and foreign policy interests of the U.S. and do not jeopardize public safety and the safety of property.



Where?

- The proposed vertical launch area site is currently undeveloped and is located directly adjacent to the eastern terminus of Texas State Highway 4 (Boca Chica Boulevard) and approximately 3 miles north of the Mexican border or the Gulf Coast.
- The proposed control center area would be located inland to the west of the vertical launch area.
- All facilities would be constructed on private land owned or leased by SpaceX.



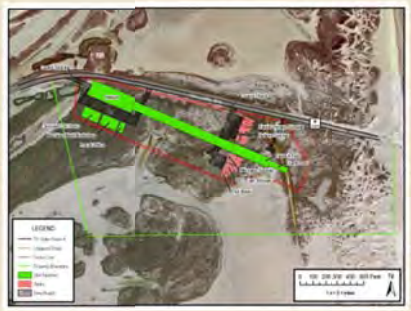
Vertical Launch Aea Proposed Site

The No Action Alternative will be analyzed to serve as a baseline for the Environmental Impact Statement.

PROPOSED ACTION

Construction Activities

Vertical Launch Area Site Layout



- An Integration and Processing Hangar
- A launch pad and stand with its associated flame duct
- Propellant storage and handling areas
- A workshop and office area
- A warehouse for parts storage
- Roads and utilities to support the facilities

Control Center Area Site Layout



- A control center
- A payload processing facility
- A launch vehicle preparation hangar
- A satellite fuels storage area

*The control center area site layout and exact location have not yet been finalized.

Operational Activities

Falcon Launch Vehicle Program

The Falcon launch vehicle program is designed for minimal vehicle assembly and processing on the launch pad.



Falcon 9 on transporter-erector

The Falcon 9 orbital vertical launch vehicle is a medium-lift class launch vehicle with a gross lift-off weight of approximately 1,000,000 pounds with a maximum length of 230 feet.

The Falcon Heavy is similar to the Falcon 9, except that it has an additional two boosters "strapped on," each booster being almost identical to the Falcon 9 first stage core. The Falcon Heavy is a heavy lift class launch vehicle with a gross lift-off weight of approximately 3,400,000 pounds. It has an overall maximum length of approximately 230 feet.





Dragon Capsule

In addition to standard commercial satellite payloads, the Falcon 9 and Falcon Heavy launch vehicles may carry a spacecraft, the SpaceX Dragon capsule, which is being developed to deliver cargo and experiments to low Earth orbit.

Based on comments received during the scoping process, the FAA may propose additional alternatives.

NATIONAL ENVIRONMENTAL POLICY ACT— AREAS OF ANALYSIS

National Environmental Policy Act (NEPA) Process

- NEPA is the national law that requires all federal agencies to evaluate potential environmental impacts of any major actions they may propose and to inform and involve the public in the decision making process
- Findings will be published in a study called an Environmental Impact Statement (EIS) which will include:
  - Purpose and Need of Proposed Action
  - Proposed Action and Alternatives
  - Existing Conditions of the Proposed Site
  - Evaluation of Impacts
- Your input during the Public Scoping Period (no later than May 30, 2012) will assist the FAA in identifying key environmental concerns that need to be further evaluated
- A Draft EIS will be made available for public review and comment
- FAA will review all comments on the Draft EIS and incorporate them into a Final EIS

EIS Process



What is Important to You?



✔ Air quality
✔ Fish, wildlife & plants: threatened & endangered species
✔ Historical, architectural, archaeological & cultural resources



✔ Noise
✔ Light emissions and visual impacts
✔ Water resources: surface waters, wetlands, groundwater, floodplains, Wild & Scenic Rivers, water quality



✔ Section 4(f) properties
✔ Socioeconomics, environmental justice & children's environmental health & safety risks





✔ Compatible Land use, farmlands & coastal resources
✔ Hazardous materials, pollution prevention & solid waste
✔ Natural resources, energy supply & sustainable design

*The listed resources above are not an inclusive list and the environmental parameters addressed in this EIS will be consistent with the requirements of FAA Order 1050.1E, Change 1, *Environmental Impacts: Policies and Procedures.*

The EIS will consider the potential environmental impacts of the Proposed Action and reasonable alternatives.

LICENSING AND PERMITTING

- SpaceX must apply for a launch license or experimental permit.
- SpaceX would be the exclusive user of the site.
- FAA statutory requirements for licenses and permits are described in 14 CFR Chapter III, Parts 400-450.
- FAA conducts a review of the license or permit application including a policy review, payload review, financial determination, environmental review and safety review.
- Successful completion of the environmental review does not guarantee that FAA would issue launch licenses and/or experimental permits to SpaceX.



AST Licensing and Permitting Review



- **Policy Review** – Determines whether a proposed launch would jeopardize U.S. National Security, International Obligations or Foreign policy interests.
- **Payload Review** – Determines if a license applicant or payload owner or operator has obtained all required licenses, authorizations, and permits. Does not apply to payloads under the jurisdiction of any other government agency
- **Financial Responsibility Determination** – Proof of financial responsibility is required. This is usually fulfilled by purchase of liability insurance.
- **Environmental Review** – Proposal must be reviewed under the NEPA. This EIS process fulfills the environmental review portion of the license application.
- **Safety Review** – Determines if an applicant can safely conduct the launch of the proposed launch vehicle(s) and payload(s).

The project must meet all FAA safety, risk, and indemnification requirements.

PUBLIC INVOLVEMENT

Participate Today

There are

5

ways to comment

No later than **MAY 30, 2012**

1. Provide written comments at today's meeting
2. Talk to our stenographer who can record your comments
3. Submit comments electronically to ***faaspacexeis@cardnotec.com***
4. Fax your comments to **(410) 990-0455**
5. Mail your comment form to:

Ms. Stacey M. Zee, Environmental Protection Specialist
Federal Aviation Administration
SpaceX EIS
c/o Cardno TEC Inc.
275 West Street, Suite 110
Annapolis, MD 21401

How Will My Comments be Used?

- Scoping comments will be used to develop areas of study
- All comments will be considered

Participate in the Future

- Check your local repository and newspapers for new information
- Review the Draft EIS findings
- Provide your comments on the Draft EIS
- Participate in the Public Meeting following the publication of the Draft EIS





Your input throughout the EIS process is important.

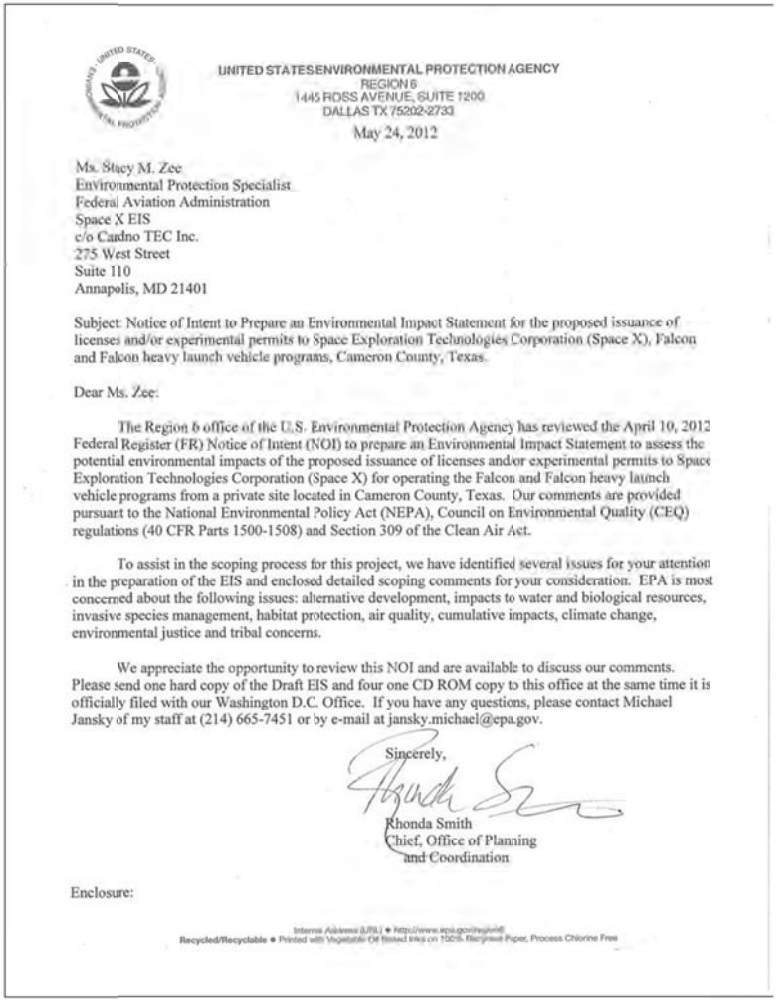

SPACEX
▪ Medium-class vehicle powered by nine Merlin engines
▪ Two-stage vehicle to maximize reliability
▪ SpaceX rockets use liquid oxygen and highly-refined kerosene (which is cleaner than jet fuel)
▪ No toxic propellants are used on the rocket
▪ Hold-before-release system: the vehicle is safely held down until all vehicle systems are confirmed to be operating normally
FALCON 9


SPACEX
▪ Launches would only occur, at most, one time per month
▪ Launch would be audible for less than 5 minutes
▪ Minimal infrastructure:
– Facility footprint is less than 8 acres with remaining site land left undeveloped
– Rocket stored horizontally, and is only visible and on the pad when launches occur
▪ SpaceX is excited to work with community to create jobs, partner with local businesses, and partner with local schools and universities
VERTICAL LAUNCH AREA


SPACEX
VERTICAL LAUNCH AREA WITH FALCON 9 ON PAD


SPACEX
VERTICAL LAUNCH AREA WITH FALCON HEAVY ON PAD

Exhibit A-9. Agency Comments Received during Scoping Period



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS TX 75202-2733

May 24, 2012

Ms. Stacy M. Zee
Environmental Protection Specialist
Federal Aviation Administration
Space X EIS
c/o Cadno TEC Inc.
275 West Street
Suite 110
Annapolis, MD 21401

Subject: Notice of Intent to Prepare an Environmental Impact Statement for the proposed issuance of licenses and/or experimental permits to Space Exploration Technologies Corporation (Space X), Falcon and Falcon heavy launch vehicle programs, Cameron County, Texas.

Dear Ms. Zee:

The Region 6 office of the U.S. Environmental Protection Agency has reviewed the April 10, 2012 Federal Register (FR) Notice of Intent (NOI) to prepare an Environmental Impact Statement to assess the potential environmental impacts of the proposed issuance of licenses and/or experimental permits to Space Exploration Technologies Corporation (Space X) for operating the Falcon and Falcon heavy launch vehicle programs from a private site located in Cameron County, Texas. Our comments are provided pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508) and Section 309 of the Clean Air Act.

To assist in the scoping process for this project, we have identified several issues for your attention in the preparation of the EIS and enclosed detailed scoping comments for your consideration. EPA is most concerned about the following issues: alternative development, impacts to water and biological resources, invasive species management, habitat protection, air quality, cumulative impacts, climate change, environmental justice and tribal concerns.

We appreciate the opportunity to review this NOI and are available to discuss our comments. Please send one hard copy of the Draft EIS and four one CD ROM copy to this office at the same time it is officially filed with our Washington D.C. Office. If you have any questions, please contact Michael Jansky of my staff at (214) 665-7451 or by e-mail at jansky.michael@epa.gov.

Sincerely,

Rhonda Smith
Chief, Office of Planning
and Coordination

Enclosure:

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DETAILED SCOPING COMMENTS
ON THE NOTICE OF INTENT FOR THE FEDERAL AVIATION ADMINISTRATION (FAA)
TO PREPARE AN
ENVIRONMENTAL IMPACT STATEMENT (EIS) FOR THE PROPOSED
CONTRUCTION AND OPERATION
OF THE SPACE X
FALCON 9 AND FALCON HEAVY LAUNCH VEHICLE PROGRAM
CAMERON COUNTY, TEXAS

Proposed Project

In compliance with the National Environmental Policy Act of 1969 (NEPA), as amended, the FAA is to prepare an Environmental Impact Statement to assess the potential environmental impacts of the proposed issuance of licenses and/or experimental permits to Space Exploration Technologies Corporation (Space X) for operating the Falcon 9 and Falcon heavy launch vehicle programs from a private site located in Cameron County, Texas. Under the proposed action, Space X proposes to construct a vertical launch area and a control center area to support up to 12 commercial launches per year.

Statement of Purpose and Need

The DEIS should clearly identify the underlying purpose and need to which the FAA is responding in proposing the alternatives (40 CFR 1502.13). The purpose of the proposed action is typically the specific objectives of the activity, while the need for the proposed action may be to eliminate a broader underlying problem or take advantage of an opportunity.

Recommendation:

The purpose and need should be a clear, objective statement of the rationale for the proposed project. The DEIS should discuss the proposed project in the context of designing launch alternatives with a purpose to provide a safe and reliable vertical launch area and control center area. These alternatives will allow and support up to 12 commercial space launches per year.

Alternatives Analysis

The National Environmental Policy Act requires evaluation of reasonable alternatives, including those that may not be within the jurisdiction of the lead agency (40 CFR Section 1502.14(c)). A robust range of alternatives will include options for avoiding significant environmental impacts. The DEIS should provide a clear discussion of the reasons for the elimination of alternatives which are not evaluated in detail.

The environmental impacts of the proposal and alternatives should be presented in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public (40 CFR 1502.14). The potential environmental impacts of each alternative should be quantified to the greatest extent possible.

Recommendations:

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The DEIS should describe how each alternative was developed, how it addresses each project objective, and how it will be implemented. The alternatives analysis should include a discussion of alternative, environmentally preferable site locations, access roads, and methods of construction.

The DEIS should clearly describe the rationale used to determine whether impacts of an alternative are significant or not. The DEIS should describe the methodology and criteria used for determining the alternative site locations. Thresholds of significance should be determined by considering the context and intensity of an action and its effects (40 CFR 1508.27).

Water Resources

Water Supply and Water Quality

Public drinking water supplies and/or their source areas often exist in many watersheds. Source water is water from streams, rivers, lakes, springs, and aquifers that is used as a supply of drinking water. Source water areas are delineated and mapped by the state for each federally-regulated public water system. The 1996 amendments to the Safe Drinking Water Act require federal agencies to protect sources of drinking water for communities. Therefore, the EPA recommends that the DEIS identify:

- A discussion of the amount of water needed for the proposed project and where this water will be obtained.
- A discussion of availability of groundwater within the basin and annual recharge rates.
- A description of the water right permitting process and the status of water rights within that basin, including an analysis of whether water rights have been over-allocated.
- A discussion of cumulative impacts to groundwater supply within the hydrographic basin, including impacts from other large-scale renewable energy projects that have also been proposed.
- An analysis of different types of technology that can be used to minimize or recycle water.
- A discussion of whether it would be feasible to use other sources of water, including potable water, irrigation canal water, wastewater or deep-aquifer water.
- An analysis of the potential for alternatives to cause adverse aquatic impacts such as impacts to water quality and aquatic habitats.

Recommendations:

The DEIS should address the potential effects of project discharges, if any, on surface water quality. Specific discharges should be identified and potential effects of discharges on designated beneficial uses of affected waters should be analyzed.

The DEIS should describe water reliability for the proposed project and clarify how existing and/or proposed sources may be affected by climate change. At a minimum, the EPA expects a qualitative discussion of impacts to water supply and the adaptability of the project to these changes.

Stormwater Considerations

The DEIS should describe the original (natural) drainage patterns in the project locale, as well as the drainage patterns of the area during project operations. Also, the DEIS should identify whether any components of the proposed project are within a 50 or 100-year floodplain. The DEIS should note that,

2

under the federal Clean Water Act, any construction project disturbing a land area of one or more acres requires a construction stormwater discharge permit.

Recommendations:

The DEIS should document the project's consistency with applicable stormwater permitting requirements. Requirements of a stormwater pollution prevention plan should be reflected as appropriate in the DEIS.

The DEIS should discuss specific mitigation measures that may be necessary or beneficial in reducing adverse impacts to water quality and aquatic resources.

Geographic Extent of Waters of the United States

The project applicant should coordinate with the U.S. Army Corps of Engineers to determine if the proposed project requires a Section 404 permit under the Clean Water Act. Section 404 regulates the discharge of dredged or fill material into waters of the United States, including wetlands and other *special aquatic sites*. The DEIS should describe all Waters of the United States (WUS) that could be affected by the project alternatives, and include maps that clearly identify all such waters within the project area. The discussion should include acreages and channel lengths, habitat types, values and functions of these waters. The EPA recommends that the FFA include a jurisdictional delineation for all WUS, including ephemeral drainages, in accordance with the 1987 *Corps of Engineers Wetlands Delineation Manual* and the December 2006 *Arid West Region Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region*. A jurisdictional delineation will confirm the presence or absence of WUS in the project area and help determine whether or not the proposed project would require a Section 404 permit.

If a permit is required, the EPA will review the project for compliance with *Federal Guidelines for Specification of Disposal Sites for Dredged or Fill Materials* (40 CFR 230), promulgated pursuant to Section 404(b)(1) of the CWA. Pursuant to 40 CFR 230, any permitted discharge into WUS must be the least environmentally damaging practicable alternative available to achieve the project purpose. The Final EIS should include an evaluation of the project alternatives in this context in order to demonstrate the project's compliance with the 404(b)(1) Guidelines. If, under the proposed project, dredged or fill material would be discharged into WUS, the DEIS should discuss alternatives to avoid those discharges.

Recommendation:

The FFA should consult with the USACE to determine if there are jurisdictional waters of the U.S. present at the project site. If jurisdictional WUS are determined to be on the project site, the DEIS should include a final determination of the extent of WUS at the project site and address any other relevant requirements, pursuant to the CWA Section 404 (b)(1).

Clean Water Act Section 303(d)

The CWA requires States to develop a list of impaired waters that do not meet water quality standards, establish priority rankings, and develop action plans, called Total Maximum Daily Loads (TMDL), to improve water quality.

Recommendation:

The DEIS should provide information on CWA Section 303(d) impaired waters in the project area, if any, and efforts to develop and revise TMDLs. The DEIS should describe existing restoration and enhancement efforts for those waters, how the proposed project will coordinate with on-going protection efforts, and any mitigation measures that will be implemented to avoid further degradation of impaired waters.

Biological Resources, Habitat and Wildlife

The DEIS should identify all petitioned and listed threatened and endangered species and critical habitat that might occur within the project area. The document should identify and quantify which species or critical habitat might be directly, indirectly, or cumulatively affected by each alternative and mitigate impacts to these species. Emphasis should be placed on the protection and recovery of species due to their status or potential status under the federal or state Endangered Species Act. Project rights-of-way (ROW) are anthropogenic disturbances which alter the spatial structure of habitat elements, creating linear patches or line corridors which in turn impact ecological integrity by modifying ecological processes (abiotic & biotic) at various scales. ROWs can result in habitat fragmentation and increased habitat edge effects, affecting individual species with different intensity.

Recommendations:

The EPA recommends that the FAA consult with the U.S. Fish and Wildlife Service (USFWS) and prepare a Biological Opinion under Section 7 of the ESA for all impacted threatened or endangered species.

We also recommend that FAA coordinate across field offices and with USFWS and Texas Parks and Wildlife Department to ensure that current and consistent surveying, monitoring, and reporting protocols are applied in protection and mitigation efforts.

The DEIS should provide a recent status update on this topic if these actions have been or will be undertaken. Analysis of impacts and mitigation on covered species should include:

- Baseline conditions of habitats and populations of the covered species.
- A clear description of how avoidance, mitigation and conservation measures will protect and encourage the recovery of the covered species and their habitats in the project area.
- Monitoring, reporting and adaptive management efforts to ensure species and habitat conservation effectiveness.

If the applicant is to acquire compensation lands, the location(s) and management plans for these lands should be discussed in the DEIS.

Recommendations:

Incorporate, into the DEIS, information on the compensatory mitigation proposals (including quantification of acreages, estimates of species protected, costs to acquire compensatory lands, etc.) for unavoidable impacts to waters of the State and biological resources.

identify compensatory mitigation lands or quantify, in the DEIS, available lands for compensatory habitat mitigation for this project as well as reasonably foreseeable projects in the area. Specify, in the DEIS, provisions that will ensure habitat selected for compensatory mitigation will be protected in perpetuity.

incorporate, into the DEIS, mitigation, monitoring, and reporting measures that result from consultation with the USFWS, and the TPWD and that incorporate lessons learned from other water supply projects and recently released guidance to avoid and minimize adverse effects to sensitive biological resources.

The DEIS should describe the potential for habitat fragmentation and obstructions for wildlife movement from the construction of this project and other projects in the area.

The EPA is also concerned about the potential impact of construction, installation, and maintenance activities (deep trenching, grading, filling, and fencing) on habitat. The DEIS should describe the extent of these activities and the associated impacts on habitat and threatened and endangered species. We encourage habitat conservation alternatives that avoid and protect high value habitat and create or preserve linkages between habitat areas to better conserve the covered species.

The EPA is also concerned with management of the project site, specifically vegetation control in order to prevent natural forest succession. Right of way management is usually practiced to protect the system from windfall, contact with trees and branches, and other potential hazards. Additionally access roads are maintained in order to ensure access for maintenance and upkeep of the system components.

Recommendations:

The DEIS should describe the extent of potential impacts from construction, installation, and maintenance activities.

The DEIS should describe the right of way vegetation management techniques to be used and potential associated environmental impacts, especially if mechanical methods or herbicides are to be used.

The DEIS should indicate the location of important wildlife habitat areas. The DEIS should describe what measures will be taken to protect important wildlife habitat areas and to preserve linkages between them.

The DEIS should provide detailed information on any proposed fencing design and placement, and its potential effects on drainage systems on the project site. Any fencing proposed for this project should meet appropriate hydrologic, wildlife protection and movement, and security performance standards. Those standards should be described in the DEIS.

Invasive Species

Human actions are the primary means of invasive species introductions. Construction causes disturbance of soils and vegetation through the movement of people and vehicles along the project area,

access roads, and lay down areas. These activities can contribute to the spread of invasive species. Parts of plants, seeds, and root stocks can contaminate construction equipment and essentially "seed" invasive species wherever the vehicle travels. Invasive species infestations can also occur during periodic maintenance activities especially if these activities include mowing and clearing of vegetation. Once introduced, invasive species will likely spread and impact adjacent properties with the appropriate habitat.

Executive Order 13112, *Invasive Species* (February 3, 1999), mandates that federal agencies take actions to prevent the introduction of invasive species, provide for their control, and minimize the economic, ecological, and human health impacts that invasive species cause. Executive Order 13112 also calls for the restoration of native plants and tree species. If the proposed project will entail new landscaping, the DEIS should describe how the project will meet the requirements of Executive Order 13112.

In addition, we encourage alternative management practices that limit herbicide use (as a last resort), focusing instead on other methods to limit invasive species vegetation and decrease fire risk. Possible alternatives include mowing and weed control fabric, which may need a layer of soil to prevent degradation due to ultraviolet light.

Recommendations:

The DEIS should describe the invasive plant management plan used to monitor and control noxious weeds. If herbicides or pesticides will be used to manage vegetation, the DEIS should disclose the projected quantities and types of chemicals. The invasive plant management plan should identify methods that can be used to limit the introduction and spread of invasive species during and post-construction. These measures can include marking and avoidance of invasives, timing construction activities during periods that would minimize their spread, proper cleaning of equipment, and proper disposal of woody material removed from the ROW.

Because construction measures may not be completely effective in controlling the introduction and spread of invasives, the DEIS should describe post-construction activities that will be required such as surveying for invasive species following restoration of the construction site and measures that will be taken if infestations are found.

Air Quality

The DEIS should provide a detailed discussion of ambient air conditions (baseline or existing conditions), National Ambient Air Quality Standards, criteria pollutant nonattainment areas, and potential air quality impacts of the proposed project (including cumulative and indirect impacts). Such an evaluation is necessary to assure compliance with State and Federal air quality regulations, and to disclose the potential impacts from temporary or cumulative degradation of air quality.

The DEIS should describe and estimate air emissions from potential construction and maintenance activities, as well as proposed mitigation measures to minimize those emissions. The EPA recommends an evaluation of the following measures to reduce emissions of criteria air pollutants and hazardous air pollutants (air toxics).

Recommendations:

- Existing Conditions – The DEIS should provide a detailed discussion of ambient air conditions, National Ambient Air Quality Standards, and criteria pollutant nonattainment areas in the vicinity of the project.

- Quantify Emissions – The DEIS should estimate emissions of criteria pollutants from the proposed project and discuss the timeframe for release of these emissions over the lifespan of the project. The DEIS should describe and estimate emissions from potential construction activities, as well as proposed mitigation measures to minimize these emissions.

- Specify Emission Sources – The DEIS should specify the emission sources by pollutant from mobile sources, stationary sources, and ground disturbance. This source specific information should be used to identify appropriate mitigation measures and areas in need of the greatest attention.

- Construction Emissions Mitigation Plan – The DEIS should include a draft Construction Emissions Mitigation Plan and ultimately adopt this plan in the Record of Decision. In addition to all applicable local, state, or federal requirements, we recommend the following control measures (Fugitive Dust, Mobile and Stationary Source and Administrative) be included in the Construction Emissions Mitigation Plan in order to reduce impacts associated with emissions of particulate matter and other toxics from construction-related activities:

- Fugitive Dust Source Controls: The DEIS should identify the need for a Fugitive Dust Control Plan to reduce Particulate Matter 10 and Fine Particulate Matter 2.5 emissions during construction and operations. We recommend that the plan include these general commitments:
    - Stabilize heavily used unpaved construction roads with a non-toxic soil stabilizer or soil weighting agent that will not result in loss of vegetation, or increase other environmental impacts.
    - During grading, use water, as necessary, on disturbed areas in construction sites to control visible plumes.
    - Vehicle Speed
        - Limit speeds to 25 miles per hour on stabilized unpaved roads as long as such speeds do not create visible dust emissions.
        - Limit speeds to 10 miles per hour or less on unpaved areas within construction sites on un-stabilized (and unpaved) roads.
        - Post visible speed limit signs at construction site entrances.
    - Inspect and wash construction equipment vehicle tires, as necessary, so they are free of dirt before entering paved roadways, if applicable.
    - Provide gravel ramps of at least 20 feet in length at tire washing/cleaning stations, and ensure construction vehicles exit construction sites through treated entrance roadways, unless an alternative route has been approved by appropriate lead agencies, if applicable.
    - Use sandbags or equivalent effective measures to prevent run-off to roadways in construction areas adjacent to paved roadways. Ensure consistency with the project's Storm Water Pollution Prevention Plan, if such a plan is required for the project.
    - Sweep the first 500 feet of paved roads exiting construction sites, other unpaved roads en route from the construction site, or construction staging areas whenever

dirt or runoff from construction activity is visible on paved roads, or at least twice daily (less during periods of precipitation).
    - Stabilize disturbed soils (after active construction activities are completed) with a non-toxic soil stabilizer, soil weighting agent, or other approved soil stabilizing method.
    - Cover or treat soil storage piles with appropriate dust suppressant compounds and disturbed areas that remain inactive for longer than 10 days. Provide vehicles (used to transport solid bulk material on public roadways and that have potential to cause visible emissions) with covers. Alternatively, sufficiently wet and load materials onto the trucks in a manner to provide at least one foot of freeboard.
    - Use wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) where soils are disturbed in construction, access and maintenance routes, and materials stock pile areas. Keep related windbreaks in place until the soil is stabilized or permanently covered with vegetation.

- Mobile and Stationary Source Controls:
    - If practicable, lease new, clean equipment meeting the most stringent of applicable Federal[1] or State Standards[2]. In general, commit to the best available emissions control technology. Tier 4 engines should be used for project construction equipment to the maximum extent feasible[3].
    - Where Tier 4 engines are not available, use construction diesel engines with a rating of 50 hp or higher that meet, at a minimum, the Tier 3 California Emission Standards for Off-Road Compression-Ignition Engines[4], unless such engines are not available.
    - Where Tier 3 engine is not available for off-road equipment larger than 100 hp, use a Tier 2 engine, or an engine equipped with retrofit controls to reduce exhaust emissions of nitrogen oxides and diesel particulate matter to no more than Tier 2 levels.
    - Consider using electric vehicles, natural gas, biodiesel, or other alternative fuels during construction and operation phases to reduce the project's criteria and greenhouse gas emissions.
    - Plan construction scheduling to minimize vehicle trips.
    - Limit idling of heavy equipment to less than 5 minutes and verify through unscheduled inspections.
    - Maintain and tune engines per manufacturer's specifications.

- Administrative Controls:
    - Develop a construction traffic and parking management plan that maintains traffic flow and plan construction to minimize vehicle trips.

[1] EPA's website for nonroad mobile sources is http://www.epa.gov/nonroad/.
[2] For California, see ARB emissions standards, see http://www.arb.ca.gov/msprog/offroad/offroad.htm.
[3] Diesel engines < 25 hp rated power started phasing in Tier 4 Model Years in 2008. Large Tier 4 diesel engines will be phased in depending on the rated power (e.g., 25 hp - <75 hp: 2013; 75 hp - < 175 hp: 2012-2013; 175 hp - < 750 hp: 2011 - 2013; and ≥ 750 hp 2011- 2015).

- Identify any sensitive receptors in the project area, such as children, elderly, and the infirm, and specify the means by which impacts to these populations will be minimized (e.g. locate construction equipment and staging zones away from sensitive receptors and building air intakes).
- Include provisions for monitoring fugitive dust in the fugitive dust control plan and initiate increased mitigation measures to abate any visible dust plumes.

Climate Change

Scientific evidence supports the concern that continued increases in greenhouse gas emissions resulting from human activities will contribute to climate change. Global warming is caused by emissions of carbon dioxide and other heat-trapping gases. On December 7, 2009, the EPA determined that emissions of GHGs contribute to air pollution that "endangers public health and welfare" within the meaning of the Clean Air Act. Higher temperatures and increased winter rainfall will be accompanied by a reduction in snow pack, earlier snowmelts, and increased runoff.[5] Some of the impacts, such as reduced groundwater discharge, and more frequent and severe drought conditions, may impact the proposed projects.

Recommendation:

The DEIS should consider how climate change could potentially influence the proposed project, specifically within sensitive areas, and assess how the projected impacts could be exacerbated by climate change.

Hazardous Materials/Hazardous Waste/Solid Waste

The DEIS should address potential direct, indirect and cumulative impacts of hazardous waste from construction and operation of the proposed launch site and other facilities. The document should identify projected hazardous waste types and volumes, and expected storage, disposal, and management plans. It should address the applicability of state and federal hazardous waste requirements. Appropriate mitigation should be evaluated, including measures to minimize the generation of hazardous waste (i.e., hazardous waste minimization). Alternate industrial processes using less toxic materials should be evaluated as mitigation since such processes could reduce the volume or toxicity of hazardous materials requiring management and disposal as hazardous waste.

Cumulative and Indirect Impacts

The cumulative impacts analysis should identify how resources, ecosystems, and communities in the vicinity of the project have already been, or will be, affected by past, present, or future activities in the project area. These resources should be characterized in terms of their response to change and capacity to withstand stresses. Trends data should be used to establish a baseline for the affected resources, to evaluate the significance of historical degradation, and to predict the environmental effects of the project components.

For the cumulative impacts assessment, we recommend focusing on resources of concern or resources that are "at risk" and/or are significantly impacted by the proposed project, before mitigation. For this project, the FAAR should conduct a thorough assessment of the cumulative impacts to aquatic and

biological resources, especially in the context of the other developments occurring and proposed in the area.

The EPA supports a regional assessment of the potential cumulative effects of other projects in the area to a range of resources, including aquatic, biological, and cultural resources. These findings should help inform current and future development proposed in the region.

Recommendations:

The DEIS should consider the cumulative impacts associated with other development projects proposed in the area and the potential impacts on various resources including: water supply, endangered species, and habitat.

The DEIS should quantify cumulative impacts across resources areas, as well as describe and evaluate feasible mitigation measures to avoid and minimize the identified adverse cumulative impacts. Although these mitigation measures may be outside the jurisdiction of the lead agencies or project proponents, describing them in the DEIS would serve to alert other agencies or officials who can implement these extra measures (CEQ 40 Questions No. 19(b)).

Coordination with Tribal Governments

Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments* (November 6, 2000), was issued in order to establish regular and meaningful consultation and collaboration with tribal officials in the development of federal policies that have tribal implications, and to strengthen the United States government-to-government relationships with Indian tribes.

Recommendation:

The DEIS should describe the process and outcome of government-to-government consultation between the FFA and each of the tribal governments within the project area, issues that were raised (if any), and how those issues were addressed in the selection of the proposed alternative.

National Historic Preservation Act and Executive Order 13007(NRHA)

Consultation for tribal cultural resources is required under Section 106 of the National Historic Preservation Act. Historic properties under the NHPA are properties that are included in the National Register of Historic Places or that meet the criteria for the National Register. Section 106 of the NHPA requires a federal agency, upon determining that activities under its control could affect historic properties, consult with the appropriate State Historic Preservation Officer/Tribal Historic Preservation Officer. Under NEPA, any impacts to tribal, cultural, or other treaty resources must be discussed and mitigated. Section 106 of the NHPA requires that Federal agencies consider the effects of their actions on cultural resources following regulation in 36 CFR 800.

Executive Order 13007, *Indian Sacred Sites* (May 24, 1996), requires federal land managing agencies to accommodate access to, and ceremonial use of, Indian sacred sites by Indian Religious practitioners, and to avoid adversely affecting the physical integrity, accessibility, or use of sacred sites. It is important to note that a sacred site may not meet the National Register criteria for a historic property and that, conversely, a historic property may not meet the criteria for a sacred site.

Recommendation:

The DEIS should address the existence of Indian sacred sites in the project areas. It should address Executive Order 13007, distinguish it from Section 106 of the NHPA, and discuss how the FAA will avoid adversely affecting the physical integrity, accessibility, or use of sacred sites, if they exist. The DEIS should provide a summary of all coordination with Tribes and with the SHPO/THPO, including identification of NRHA eligible sites, and development of a Cultural Resource Management Plan.

Environmental Justice and Impacted Communities

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (February 11, 1994) and the Interagency Memorandum of Understanding on Environmental Justice (August 4, 2011) direct federal agencies to identify and address disproportionately high and adverse human health or environmental effects on minority and low-income populations, allowing those populations a meaningful opportunity to participate in the decision-making process. Guidance[6] by CEQ clarifies the terms low-income and minority population (which includes Native Americans) and describes the factors to consider when evaluating disproportionately high and adverse human health effects.

Recommendations:

The DEIS should include an evaluation of environmental justice populations within the geographic scope of the projects. If such populations exist, the DEIS should address the potential for disproportionate adverse impacts to minority and low-income populations, and the approaches used to foster public participation by these populations. Assessment of the projects impact on minority and low-income populations should reflect coordination with those affected populations.

The DEIS should describe outreach conducted to all other communities that could be affected by the project, since rural communities may be among the most vulnerable to health risks associated with the project.

Coordination with Land Use Planning Activities

The DEIS should discuss how the proposed action would support or conflict with the objectives of federal, state, tribal or local land use plans, policies and controls in the project areas. The term "land use plans" includes all types of formally adopted documents for land use planning, conservation, zoning and related regulatory requirements. Proposed plans not yet developed should also be addressed if they have been formally proposed by the appropriate government body in a written form (CEQ's Forty Questions, #23b).

[6] Environmental Justice Guidance under the National Environmental Policy Act, Appendix A (Guidance for Federal Agencies on Key Terms in Executive Order 12898), CEQ, December 10, 1997.

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United States Department of the Interior
NATIONAL PARK SERVICE
Intermountain Region
12795 West Alameda Parkway
Lakewood, CO 80228

In Reply Refer to:
IMR-NR, IMR-EQ

VIA ELECTRONIC MAIL - NO HARD COPY TO FOLLOW

Ms. Stacey M. Zee
Environmental Protection Specialist
Federal Aviation Administration
SpaceX EIS
c/o Cardno TEC Inc.
275 West Street-Suite 110
Annapolis, MD 21401

Dear Ms. Zee,

Thank you for the opportunity to comment on the Federal Aviation Administration's (FAA) Notice of Intent to prepare an Environmental Impact Statement (EIS) for Space Exploration Technologies (SpaceX's) proposal to launch orbital vehicles from a private site in Cameron County, Texas. We understand that, under the proposed action, SpaceX proposes constructing a vertical launch facility and a control center to support up to 12 launches per year. It is also our understanding that the FAA is the lead federal agency involved in this undertaking, and that SpaceX would be required to apply for launch licenses and/or experimental permits issued by the FAA.

The physical environment that surrounds the site of the proposed action is rich in cultural resources. As such, the National Park Service (NPS) wishes to address some potential effects that the proposed action may have on these cultural resources, and one in particular, the Palmito Ranch Battlefield National Historic Landmark (NHL). NHLs are nationally significant historic places designated by the Secretary of the Interior because they possess exceptional value or quality in illustrating or interpreting the heritage of the United States. NPS provides special expertise in the preservation of historic properties and provides assistance with regards to NHLs.

Palmito Ranch Battlefield NHL, the location of the last battle of the American Civil War, is approximately 1.1 miles from the proposed site of the control center, and approximately 3.2 miles west from the proposed launch facility. The NHL retains its integrity and historic character to such a degree that the lands within the NHL and much of the surrounding area, have seen little change in nearly 150 years. Quoting from the 1997 NHL designation, "Palmito Ranch Battlefield retains exceptional integrity of setting, feeling, association and location, nearly 130 years after the battle which occurred on May 12 and 13, 1865".

The National Historic Preservation Act (NHPA) of 1966 provides direction regarding the management of NHLs, and although this law applies to all historic properties, NHLs possess an extra layer of attention. Specifically, Section 110(f) of NHPA requires that "prior to the approval of any Federal undertaking, which may directly and adversely affect any National Historic Landmark, the head of the responsible Federal agency shall, to the maximum extent possible, undertake such planning and actions as may be necessary to minimize harm to such landmark, and shall afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking." Moreover, as stated in 36 CFR Part 800.10(c), federal agencies are required to notify the Secretary of the Interior (delegated to NPS) of any consultation involving an undertaking at an NHL and invite the Secretary to participate in the consultation where there may be an adverse effect.

As you determine the effects of this project on the Palmito Ranch Battlefield NHL, we recommend that you review the National Register nomination form to better understand why the site is significant and what elements of integrity it possesses. Following our review of the project components, it appears that some of the proposed actions may have adverse effects on the Palmito Ranch Battlefield NHL, including, but not limited to the following.

- The construction of launch facility structures of up to 250 feet in height may adversely affect the viewshed of the NHL. An average person standing about 5'7" tall would be able to see the structures to the east from approximately 87% of the lands within the boundary of the NHL (see attached map).

- Moving the SpaceX launch vehicles and associated materials (including the thousands of gallons each of cooling water, refined rocket fuel, liquid oxygen, and wastewater that must be trucked to or from the site to support each launch mission) via Texas Highway 4 would increase the volume of heavy truck use of this road. The increased heavy truck use may adversely affect the NHL from the associated traffic noise, the potential for an increase in roadside litter, and the potential for environmental damage caused by an accidental spill of a hazardous cargo.

  [Please note that Texas Highway 4 is a two-lane road running east from Brownsville to the Gulf of Mexico at Boca Chica Beach, and forms the northern boundary of the Palmito Ranch Battlefield NHL. Much of Highway 4 approximates the historic roadway that was used by the Union forces to advance and retreat during the Palmito Ranch battle. There are pull-offs along this road that have historical markers for the Palmito Ranch Battlefield and the 1846 Camp Belknap site used during the Mexican War. Immediately north and slightly west of the launch site are the sites of Zachary Taylor's floating bridge that supplied troops during the Mexican American War in 1846 and the 1864-65 U.S. Military Railroad bridge.]

- At of the May 15, 2012 meeting, SpaceX was unable to provide the exact location of the proposed control facility, but it appears that it may be constructed less than 1.5 miles from the NHL boundary, which could have the potential to adversely affect the NHL. Preliminary information provided to date by SpaceX about the size and nature of this facility makes it difficult to assess the associated effects related to the NHL. More information concerning this portion of the proposed action is desired.

- The installation of utility corridors along Highway 4, the potential widening of the roadway, and additional proposed developments may also effect the NHL, and should be considered and addressed.

We would like to recommend that you complete an intensive cultural resources survey of the area of potential effect to determine effects to all historic properties, including the Palmito Ranch Battlefield NHL. Specific to the NHL, we recommend employing a systematic metal detector survey with a shovel testing component. Due to the site's proximity to the dynamic shifting sand dunes that have the potential to bury a site with several feet of sand in any given year, we would also like to recommend that an archeologist be present and monitor any ground disturbing activities in the area of potential effect unidentified or unknown cultural resources can be identified.

We are also concerned that the proposed action may affect Palo Alto Battlefield National Historic Site (NHS), specifically park resources and values including natural soundscapes, cultural resources and visitor use and experience. A soundscape refers to the total acoustic environment of an area and we are mandated to protect this according to NPS Management Policies Section 4.9. The soundscape of a national park, like air, water, scenery, or wildlife, is a valuable resource that can easily be degraded or destroyed by inappropriate sound levels and frequencies. An area's ability to transmit ecologically or culturally significant sounds is function of the amount of extraneous noise intrusion.

We understand that at this stage in the process the FAA would not include information regarding how the environmental impact analysis would be conducted; however, we are aware that typically the FAA uses the day-night average sound level (DNL) metric in their environmental impact assessments. DNL is an energy-based noise averaging metric widely used by the Federal Aviation Administration (FAA) as the primary means for determining the cumulative noise energy exposure of individuals to noise resulting from aviation activities. Hence, thresholds of significance that have been established by the FAA are based on community response.

FAA Order 1050.1E notes that special consideration needs to be given to the evaluation of the significance of noise impacts on noise sensitive areas within national parks. Since assumptions regarding DNL levels are community-based, this metric is not adequate to assess impacts of noise to park resources, values and visitor experience. NPS would find it helpful if the noise impact analysis included supplemental metrics per Section 14.5f, FAA Order 1050.1E, Change 1 and analysis of noise at locations of concern to NPS. It would also be helpful to include the amount of time a launch could be heard by an observer at these locations. NPS would then be able to help FAA better assess the potential noise impacts to Palo Alto Battlefield NHS and Palmito Ranch Battlefield NHL.

In summary, the Palmito Ranch Battlefield NHL and Palo Alto Battlefield NHS are significant national resources that possess exceptional quality in illustrating important aspects of American history. Because NPS has special expertise with regards to these properties, we would like to participate in the development of this project as a cooperating agency.

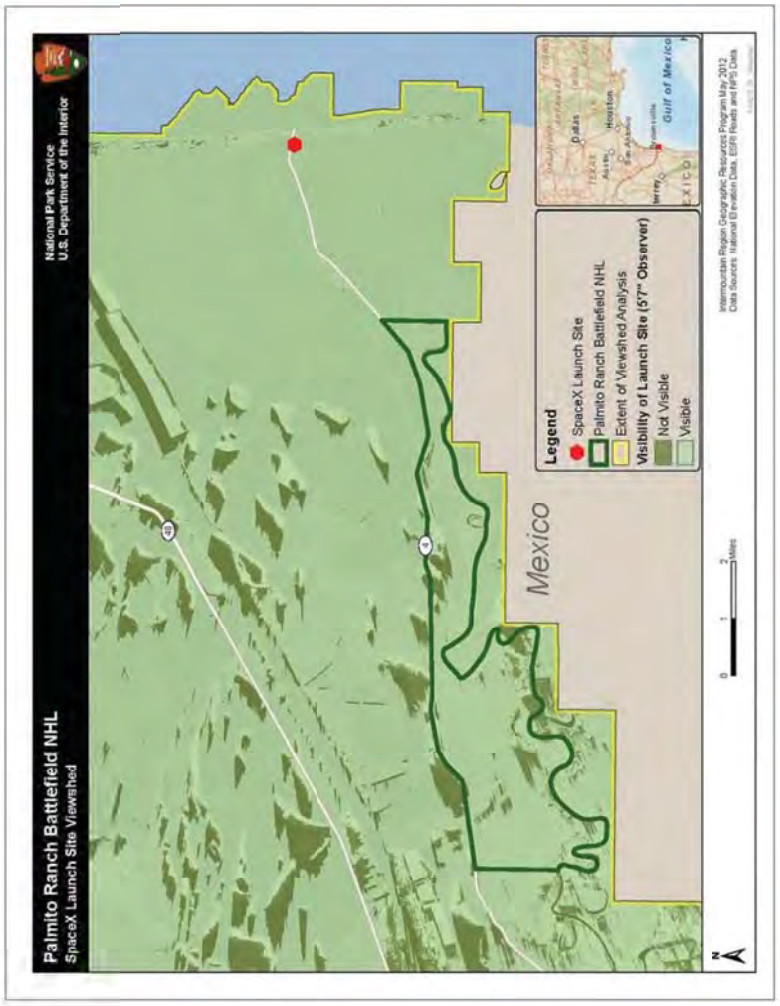
We appreciate the opportunity to provide these comments. If you have any questions regarding the Palmito Ranch Battlefield (NHL), please contact Mark E. Spier, Superintendent, Palo Alto Battlefield National Historic Site, at (956) 541-2785 x 222, mark_spier@nps.gov or Charles Haecker, Program Archeologist, Heritage Partnerships Program, at (505) 988-6757, Charles_haecker@nps.gov.

Sincerely,

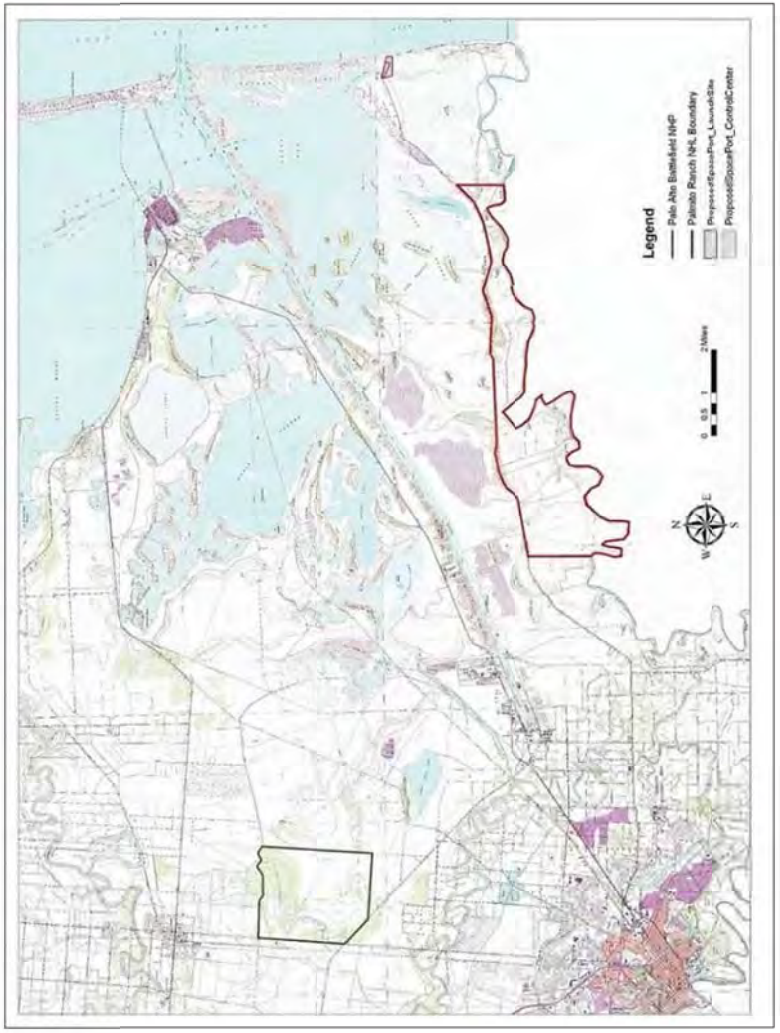


John Wessels
Regional Director,
Intermountain Region

cc:
NPS-IMR, Tammy Whittington, Associate Regional Director, Resource Stewardship and Science
NPS-IMR, Patrick Malone, Assistant Regional Director, Natural Resources
NPS-IMR, Chris Turk, Regional Environmental Quality Coordinator
NPS-IMR, Theresa Ely, Soundscape and Night Sky Coordinator
NPS-PAAL, Mark Spier, Superintendent
NPS-IMR Heritage Partnerships Program, Charles Haecker, Program Archeologist
NPS-WASO-NSNSD, Vicki McCuske, Overflights Program Manager
NPS-WASO EQD
DOI, Lisa Treichel


Palmito Ranch Battlefield NHL
SpaceX Launch Site Viewshed
National Park Service
U.S. Department of the Interior
Legend
SpaceX Launch Site
Palmito Ranch Battlefield NHL
Extent of Viewshed Analysis
Visibility of Launch Site (57" Observer)
Not Visible
Visible
Mexico
Gulf of Mexico
Dallas
Houston
Brownsville
Miles


Legend



TEXAS GENERAL LAND OFFICE
JERRY PATTERSON, COMMISSIONER

May 30, 2012

Ms. Stacey M. Zee, Environmental Protection Specialist
Federal Aviation Administration
Space X EIS
c/o Cardno TEC Inc.
275 West Street—Suite 110
Annapolis, MD 21401

Dear Ms. Zee:

Thank you for the opportunity to commen on the Environmental Impact Statement (EIS) to analyze the potential environmental impacts of Space Exploration Technologies Corporation's (Space X's) proposal to launch the Falcon 9 and Falcon Heavy orbital vertical launch vehicles from a private site located in Cameron County, Texas. The Texas General Land Office (GLO) is the state agency responsible for managing state owned land dedicated to the Permanent School Fund (PSF) and state owned submerged land that is also dedicated to the PSF[1], both of which will be impacted by the proposed project. Management of state owned land entails surface, mineral and wind leasing, while preserving the natural resources. The GLO is charged with implementing and enforcing the Texas Open Beaches Act, which protects the public's right to access and enjoy Gulf beaches in our state.[2] The GLO is also responsible for enforcing the Dune Protection Act that ensures the protection of the dunes along the Gulf of Mexico[3]. The Commissioner of the GLO is responsible for the implementation of the Coastal Management Program (CMP), and determining if federal actions are consistent with the CMP[4].

One of the GLO's primary responsibilities is to generate revenue for the PSF in support of public education. There are state owned uplands dedicated to the PSF immediately northeast of the proposed launch site. One of the concerns is how the proposed project will limit future development of this site, and reduce possible revenue to the PSF. Limitations on future development including access, site design, and building height could have a significant revenue/value impact on the state owned uplands. Please be aware that state owned land dedicated to the PSF does not have many of the local restrictions that apply to private property. The EIS should clearly address limitations and any possible lost revenue to public education that will result from the project.

[1] Texas Natural Resources Code Chapter 33 and 51
[2] Texas Natural Resources Code Chapter 61
[3] Texas Natural Resources Code Chapter 63
[4] Texas Natural Resources Code Chapter 33

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The GLO also leases state owned submerged land, and the revenue is deposited in the PSF to support public education. "Submerged land" means any land extending from the boundary between the land of the state and the littoral owners seaward to the low-water mark on any saltwater lake, bay, inlet, estuary, or inland water within the tidewater limits, and any land lying beneath the body of water, but for the purposes of this chapter only, shall exclude beaches bordering on and the water of the open Gulf of Mexico and the land lying beneath this water.[5] The EIS should address any limitation that will be placed on state owned submerged land, and the potential loss of revenue to the PSF.

The GLO currently has two surface leases in the Gulf of Mexico in Cameron County (attachment 1) for wind powered electrical generation sites. The revenue from these leases is deposited in the PSF. There is also the potential that other locations in the Gulf could be considered for future wind development. The EIS needs to address any impacts to currently leased areas, any limitations on future leases on state owned submerged land, and identify potential loss of revenue to the PSF.

The GLO also manages the oil and gas leasing associated with state land and state owned submerged land[6]. Again the revenue for this leasing is deposited in the PSF for support of public education. There are some areas where the surface has been sold, and the state retains the minerals. Some examples of sites where the state retains the mineral rights that may be impacted by the project are the Cameron County Navigation District and areas northwest of the proposed location. Also, minerals are often pooled or surface locations differ from the mineral site. Any limitations on oil and gas development that will impact the states ability to lease or develop minerals dedicated to the PSF should be identified and quantified in the EIS.

Impacts to coastal natural resources and uses of public land that limit public use are factors the GLO considers in the management of state owned submerged land.[7] The GLO request the EIS clearly identify any impacts to the natural resources on state owned submerged land. This should include secondary impacts from increased traffic and usage. The EIS should clearly identify mitigation for impacts to natural resources on state owned submerged land. Any impacts to resources on state owned submerged land should be mitigated on state owned submerged land[8]. The GLO also requests the EIS identifies any limitations on public use of state owned submerged land.

In regards to beach/dune regulations, the applicant cannot restrict or interfere with the public's right of access and use of the public beaches. This includes closing Highway 4, which is the only access point to Boca Chica Beach. If the applicant is proposing to close this road, they must dedicate an equal or better access road in order to preserve access to the public beach. However, a local government may close a public beach or beach access way for emergency response, which must be limited to the shortest time necessary to respond to the emergency. The EIS should address how the required evacuation and mandatory setback will be in compliance with the Open Beaches Act.

The Beach/Dune rules prohibit the construction of concrete slabs or impervious materials with 200 feet of the natural line of vegetation. In eroding areas, applicants may only pave under the footprint of a habitable structure within a 1000 feet of mean high tide or to the nearest parallel road, which ever is greatest. Any impacts to dunes or dune vegetation will require a dune protection permit issued by Cameron County, and the applicant must apply for a beachfront construction certificate (also issued by Cameron County). The EIS must demonstrate how impacts to dunes and dune vegetation will be minimized, and how unavoidable impacts will be mitigated for on a one to one basis for volume, contours, and vegetative cover.

Under the coastal resources portion of the EIS, the existence of any coastal natural resource areas in addition to any impacts to those areas needs to be identified and documented. Coastal natural resource areas (CNRAs) in Texas include the following: coastal barriers, coastal wetlands, hard substrate reefs, submerged lands, tidal sand or mud flats, waters under tidal influence, coastal historic areas, critical dune areas, coastal preserves, critical erosion areas, oyster reefs, submerged aquatic vegetation, waters of the Gulf of Mexico, coastal shore areas, and Gulf beaches.

The enforceable policies for the Coastal Management Program under 31 TAC §501 (§501.15- §501.34) with regards to affects to CNRAs should be considered and addressed. Particularly as they relate to: development in critical areas, discharge of wastewaters to coastal waters, construction of waterfront facilities and other structures on submerged lands, construction on the beach/dune system, and development within protected areas. The enforceable policies can be found at: http://info.sos.state.tx.us/pls/pub/readtac$ext.ViewTAC?tac_view=5&ti=31&pt=16&ch=501&sch=H&rd=Y .

If you have any questions concerning theses issue please contact me at 512-463-5055 or by e-mail at tony.williams@glo.texas.gov .

Tony Williams
Environmental Review Coordinator
Texas Gereral Land Office

[5] Texas Natural Resources Code §33.004(11)
[6] Texas Natural Resources Code Chapter 52
[7] Texas Natural Resources Code §33.001(a), (b) & (c)
[8] Texas Administrative Code 31.155.3(g)(3)



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Carter P. Smith
Executive Director

May 29, 2012

Ms. Stacey M. Zee
Federal Aviation Administration
c/o Cardno TEC Incorporated
275 West Street, Suite 110
Annapolis, MD 21409

RE: Natural resource issues regarding Space Exploration Technologies' proposed construction of a vertical launch area and control center, Cameron County, Texas

Dear Ms. Zee:

This letter is in response to your request for information concerning the impacts upon fish, wildlife and plant resources associated with the proposed development of a vertical launch area and control center in Cameron County, Texas. The Federal Aviation Administration (FAA) Office of Commercial Space Transportation will prepare an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA) to evaluate the potential environmental impacts of the proposed issuance of launch licenses and/or experimental permits to the applicant, Space Exploration Technologies Corporation (SpaceX).

Texas Parks and Wildlife Department (TPWD) is the agency with primary responsibility for protecting the state's fish and wildlife resources (Texas Parks and Wildlife Code §12.0011(a)). Furthermore, TPWD is charged with providing information on fish and wildlife resources to any local, state, and federal agencies or private organizations that make decisions affecting those resources (Texas Parks and Wildlife Code §12.0011(b)(3)).

Project Description

SpaceX proposes to construct a vertical launch area, control center, and utility connections in southern Cameron County near the terminus of State Highway (SH) 4 to support up to 12 commercial space vehicle launches per year. The vehicles to be launched include the Falcon 9, Falcon Heavy (up to two per year), and a variety of smaller reusable suborbital launch vehicles. The Falcon 9 is a medium-lift class launch vehicle with a gross lift-off weight of approximately one-million pounds with a maximum length of 230 feet. It uses liquid oxygen and highly refined kerosene, also known as rocket propellant-1 or refined petroleum-1, as propellants to carry payloads into orbit. The Falcon Heavy is similar to the Falcon 9, except it has two additional boosters "strapped on." The Falcon Heavy

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is a heavy-lift class launch vehicle with a gross lift-off weight of approximately 3.4 million pounds. It has an overall length of approximately 230 feet.

Permanent structures at the launch area site would consist of a hangar, a launch pad and stand with associated flame duct, four lighting towers, propellant storage tanks and handling areas, a workshop, an office, a warehouse for parts storage and an elevated water storage tank. The footprint of the facilities developed at the launch site is anticipated to be less than eight acres with the rest of the property remaining undeveloped.

The control center would be located on private property approximately 1.5 miles west of the launch area on the north side of SH 4. The control area would consist of a control center building, a payload processing facility, parking lots, and possibly a launch vehicle preparation hangar. Access roads, security fences, guard shacks and utility connections would also be included at both the launch site and control center locations.

The launch area site is bounded to the north, west and east by property owned by TPWD (Boca Chica State Park) and leased to the U.S. Fish and Wildlife Service (USFWS) as part of its Lower Rio Grande Valley National Wildlife Refuge complex. The site currently proposed to be developed for the control center is bounded to the east and south by the same TPWD-owned property.

TPWD staff has reviewed the information provided and offers the following comments and recommendations.

Rare and Protected Species

Based on the project as presented, the TPWD annotated county list of rare species for Cameron County, and presently known Texas Natural Diversity Database (TXNDD) records for the general project areas, the following listed species could be impacted by proposed project activities *if suitable habitat is present*.

Federal- and State-Listed Endangered

Northern Aplomado Falcon (*Falco femoralis septentrionalis*)
* Jaguarundi (*Herpailurus yaguarondi*)
* Ocelot (*Leopardus pardalis*)
Atlantic hawksbill turtle (*Eretmochelys imbricata*)
Kemp's Ridley sea turtle (*Lepidochelys kempii*)
Leatherback sea turtle (*Dermochelys coriacea*)

Federal- and State-Listed Threatened
* Piping Plover (*Charadrius melodus*)
* Green sea turtle (*Chelonia mydas*)
Loggerhead sea turtle (*Caretta caretta*)

Federal Candidate for Listing
Sprague's Pipit (*Anthus spragueii*)

State-Listed Threatened
Sheep frog (*Hypopachus variolosus*)
American Peregrine Falcon (*Falco peregrinus anatum*) (Federally Delisted; DL)
Gray Hawk (*Asturina nitida*)
* Peregrine Falcon (*Falco peregrinus*) (DL)
Reddish Egret (*Egretta rufescens*)
Sooty Tern (*Sterna fuscata*)
Texas Bottei's Sparrow (*Aimophila botterii texana*)
White-tailed Hawk (*Buteo albicaudatus*)
Wood Stork (*Mycteria americana*)
Zone-tailed Hawk (*Buteo albonotatus*)
Southern yellow bat (*Lasiurus ega*)
Black-striped snake (*Coniophanes imperialis*)
Northern cat-eyed snake (*Leptodeira septentrionalis septentrionalis*)
Speckled racer (*Drymobius margaritiferus*)
Texas horned lizard (*Phrynosoma cornutum*)
Texas indigo snake (*Drymarchon melanurus erebennus*)
Texas tortoise (*Gopherus berlandieri*)

Species of Concern
Brown Pelican (*Pelecanus occidentalis*) (DL)
Snowy Plover (*Charadrius alexandrinus*)
Western Snowy Plover (*Charadrius alexandrines nivosus*)
Keeled earless lizard (*Holbrookia propinqua*)
Bailey's ballmoss (*Tillandsia baileyi*)
Green Island echeandia (*Echeandia texensis*)
* Lila de los llanos (*Echeandia chandleri*)

Special Features and Natural Communities
* South Bay Coastal Preserve
* Rookery
* Sea Oats-Bitter Panicum Series (*Uniola paniculata-Panicum amarum* Series)
* Texas ebony-Snake-eyes Series (*Pithecellobium ebano-Phaulothamnus spinescens* Series)
* Texas ebony-Snake-eyes-Berlandier Fiddlewood Series (*Pithecellobium ebano-Phaulethamnus spinescens-Citharexylum berlandieri* Series)

Please be aware that the TXNDD is intended to assist users in avoiding harm to rare species or significant ecological features. Absence of information in an area does not imply that a species is absent from that area. Given the small proportion of public versus private land in Texas, the TXNDD does not include a representative inventory of rare resources in the state. Although it is based on the best data available to TPWD regarding rare species, the data from the TXNDD do not provide a definitive statement as to the presences, absence or condition of special species, natural communities, or other significant features within your project area. These data are not inclusive and **cannot be used as presence/absence data**. They represent species that could potentially be in your project area. This information cannot be substituted for on-the-ground surveys.

Please review the most current TPWD county list for Cameron County, as other rare species could be present depending upon habitat availability. These lists are available online at http://www.tpwd.state.tx.us/gis/ris/es/default.aspx.

For the USFWS rare species lists please visit: http://ecos.fws.gov/tess_public/serviet/gov.doi.tess_public.serviets.EntryPage.

Federal Regulations

Endangered Species Act (ESA)

Federally-listed animal species and their habitat are protected from "take" on any property by the ESA. Take of a federally-listed species can be allowed if it is

*

Data from the TXNDD has documented occurrences of the species shown above, preceded by an asterisk, on and/or possibly within five miles of the project sites. Element occurrence records and a map are included for planning reference (Attachment 1).

"incidental" to an otherwise lawful activity and must be permitted in accordance with Section 7 or 10 of the ESA. Federally-listed plants are not protected from take except on lands under federal/state jurisdiction or for which a federal/state nexus (i.e., permits or funding) exists. Any take of a federally-listed species or its habitat without the required take permit (or allowance) from the USFWS is a violation of the ESA.

The proposed project is located on a privately owned tract of land that is bounded on three sides by a tract of land owned by TPWD and managed by the USFWS as part of the Rio Grande Valley Wildlife Corridor, a long-standing program aimed at preserving, restoring, and managing habitat for wildlife including threatened and endangered species. This tract of land lies at the eastern terminus of an approximately 200,000-acre network of state, federal, nonprofit and private conservation lands. The Rio Grande Valley Wildlife Corridor initiative extends from Falcon Lake in the west to Boca Chica at the mouth of the Rio Grande into the Gulf of Mexico. This initiative has been an active project of TPWD, USFWS, many private landowners, local communities and nonprofit conservation organizations such as Audubon, The Nature Conservancy, Valley Land Fund, and others since the 1970s.

Within or near the proposed project areas, occurrences of federally-listed Ocelots, Jaguarundi, Piping Plover, and Green sea turtles have been documented. Additionally, suitable nesting habitat for all five species of sea turtles is available on the beach less than one-quarter mile east of the proposed launch site. In addition to the direct loss of habitat resulting from the construction of the project, TPWD is concerned that the quality and natural resource value of the surrounding properties will also be diminished as a result of the project.

Recommendation: The Draft EIS (DEIS) will evaluate impacts to biological resources, including threatened and endangered species. TPWD is especially concerned with the direct impact noise, heat, vibration, fencing, and hazardous material spills may have on federally-listed species and recommends that the DEIS thoroughly evaluate these items.

In particular, the DEIS should evaluate the impact these modifications to the landscape will have on daily and/or seasonal migrations of wildlife through the area (e.g., effect of lighting on Kemps Ridley and fencing on ocelot movements through the area) and whether listed species will be displaced permanently from the area.

TPWD recommends that if any fences are constructed around the SpaceX property (excluding the launch pad) they should be designed to allow wildlife to pass while restricting vehicles, humans and debris (e.g., plastic trash). Fences will require regular inspections and maintenance to keep them intact and free of windblown debris. The DEIS should address fence design, inspection and maintenance.

Noise, heat, and vibration impacts, from both space vehicle launches and routine daily activities at the control center and launch site, should be evaluated with respect to wildlife. The DEIS should provide specific references regarding the impact of launch-associated vibrations on nesting success of sea turtles.

Migratory Bird Treaty Act (MBTA)

The MBTA implicitly prohibits intentional and unintentional take of migratory birds, including their nests and eggs, except as permitted by the USFWS. Although not documented in the TXNDD, many bird species that are protected by the MBTA are known to reside in or migrate through the proposed project areas.

The proposed project area is within the Central Flyway, a route through which over 500 species of birds migrate annually. This translates into millions of trans- and circum-Gulf birds using the Central Flyway during spring and fall. The Lower Rio Grande Valley is at the northernmost range for many species of Neo-Tropical migrants and at the southernmost range for a number of raptors and shorebirds that winter in South Texas. The mud and sand flats surrounding the site (and into which the launch pad's flame duct would discharge) are used by numerous shorebirds, including the federally-listed (threatened) Piping Plover, during the winter. Areas surrounding the project are managed or preserved as high quality wildlife habitat that provides for foraging, loafing and nesting sites for birds.

Recommendation: The DEIS should address the direct impacts that construction and operation of the control center and space launch site may have on birds. Impacts from noise, heat, vibrations, permanent lights, and hazardous material spills should be evaluated. Also, proposed permanent structures should be designed to avoid and/or minimize potential bird impacts. For example, structures or substrates that attract birds by providing perches or suitable nesting sites and structures requiring guy wires should be excluded from project designs. And, recent studies

indicate birds in migration may be attracted to permanently lighted facilities during times of low visibility (e.g., storms and dense fog).

The DEIS should address shorebird use in the project area, especially for Plovers, Long-billed Curlews, Red Knots and ground nesting birds. Grassland birds may also utilize the proposed project site for nesting. The DEIS should address proposed plans to avoid and or minimize potential impacts to nesting and wintering birds. Specifically, the DEIS should include a detailed discussion of the effects of a permanently lit facility on bird use in the area.

During construction, TPWD recommends scheduling any necessary vegetation clearing or trampling outside of the April 1–July 15 migratory bird nesting season in order to fully comply with the MBTA. SpaceX and its contractors should be made aware of the potential of encountering migratory birds on the proposed project site (especially nesting grassland and shore birds) and be instructed to avoid negatively impacting them. If vegetation clearing must occur during the nesting season, nest surveys should be conducted by a qualified biologist prior to commencing work. If active nests are observed, TPWD recommends leaving a 150-foot buffer of vegetation around the nests until the young have fledged or the nest is abandoned.

Clean Water Act

The Clean Water Act (CWA) provides for the federal protection and regulation of surface water quality. The CWA regulates point and nonpoint sources of water pollution, including the placement of "fill" in jurisdictional waters.

Coordination with the U.S. Army Corps of Engineers regarding potential impacts to jurisdictional wetlands has been initiated.

Recommendation: In addition to jurisdictional wetlands, TPWD is concerned with the loss of the function and value of all wetlands. The DEIS should address loss of all wetlands, regardless of jurisdictional status, and include compensation for losses.

State Regulations

Parks and Wildlife Code

State law prohibits any take of state-listed species. Laws and regulations pertaining to state-lised endangered or threatened animals are contained in Chapters 67 and 68 of the Texas Parks and Wildlife (TPW) Code; laws pertaining to endangered or threatened plants are contained in Chapter 88 of the TPW Code. There are penalties, which may include fines and/or jail time in addition to payment of restitution values, associated with take of state-listed species (see Attachment 2-Protection of State-listed Species).

Due to the diversity of habitat types available in the project area, suitable habitat for a number of state-listed species occurs in the proposed project area and adjacent areas. Suitable habitat for several state-listed reptiles is known to occur in or near the project area. TPWD has concerns regarding the physical and behavioral barriers that may be created, as the development of the launch site, control center and increased traffic along SH 4 will further fragment the habitat. Specifically, TPWD is concerned with direct impacts to the following state-threatened reptiles: Texas horned lizard (*Phrynosoma cornutum*), Texas indigo snake (*Drymarchon melanurus erebennus*), and Texas tortoise (*Gopherus berlandieri*).

Recommendation: TPWD recommends the availability of suitable habitat for state-listed species be evaluated in the DEIS. Potential occurrence, impacts, and proposed impact avoidance strategies, if necessary, should also be included in the DEIS. This may best be accomplished by conducting species-specific surveys and through continued coordination with TPWD biologists.

Many of the tidal flats near the proposed project area consist of topographic features called lomas, small mounds unique to the south Texas coast formed from wind-blown silt and clay that form "miniature ecosystems" of wooded islands that support assemblages of rare plants adapted to the saline environment. Rare plants (i.e., lila de los llanos, *Echeandia texensis*) and terrestrial plant communities unique to lomas have been documented near the proposed project site.

Recommendation: TPWD recommends that areas affected by the project be surveyed for the presence of rare plants. Surveys should be conducted by a qualified botanist familiar with rare plants of south Texas. The DEIS should address any potential impacts the project may have on rare plants.

Protection of Public Parks and Recreational Lands

TPW Code §26.001 states that a department, agency, political subdivision, county, or municipality of this state may not approve any program or project that requires the use or taking of public lands unless it determines that there is "no feasible and prudent alternative to the use or taking of such land," and the project "includes all reasonable planning to minimize harm to the land…resulting from the use or taking." Chapter 26 requires that before a state agency can approve any project that will result in the use or taking of public land designated and used as a park, that state agency must provide certain notices to the public, conduct a hearing, and render a finding that there is no feasible and prudent alternative and that the project includes all reasonable planning to minimize harm to the park. Chapter 26 is modeled on a federal statute, known as "section 4(f)" and codified at 49 U.S.C. §303. In fact, much of Chapter 26 is taken word for word from section 4(f). Chapter 26 requirements must also be met by the Texas Parks and Wildlife Commission (Commission) before it can grant an easement to cross TPWD property. The Commission is not obligated to grant approval for an easement. If an easement is granted, a fee and mitigation for possible adverse impacts would be required. The process of seeking Commission approval of an easement would likely require at least several months.

The proposed SpaceX launch site is situated on a 50-acre privately owned tract bounded on three sides by the 1,054-acre Boca Chica State Park. Boca Chica State Park is owned by TPWD but leased to USFWS, which manages this site. Available maps have conflicting information but indicate that TPWD *may* own a narrow (20 – 40-foot-wide) strip of land on the south side of SH 4 between the SpaceX tract and the roadway.

> **Recommendation:** TPWD recommends the DEIS include copies of accurate land surveys of the property to be developed by SpaceX. TPWD would also appreciate receiving copies of the survey. If a narrow strip of land between SH 4 and the SpaceX property is owned by TPWD, coordination with TPWD would be required per Chapter 26 to develop the project as currently proposed.

SH 4 may need to be widened to accommodate spectators and increased traffic to and from the proposed facilities. It is also possible that an effort would be made to acquire TPWD owned land to expand SH 4. Additionally, it is not clear if proposed utility corridors (water, electricity) would require the use of adjacent public lands that serve as parks, recreation areas, scientific areas, wildlife refuges, or historic sites.

> **Recommendation:** The DEIS should address compensation for taking public land and other natural resources related issues associated with any anticipated improvements to SH 4.
>
> When routing utilities, TPWD strongly discourages a route that crosses land owned or managed by TPWD and recommends the applicant consider alternative routes. If any utilities to support SpaceX are anticipated to be located within or across land owned or managed by TPWD, compliance with Chapter 26 and approval from the Commission will be required.

Indirect Impacts to Natural Resources

As currently configured, the proposed SpaceX launch site would be approximately 300 feet from TPWD property; the control center would be immediately adjacent to TPWD property along Eichorn Boulevard. TPWD is concerned that the impacts of launching a space vehicle could significantly reduce the natural resource conservation value of some or all of the state owned property.

> **Recommendation:** As part of the indirect impact analysis included in the DEIS, potential impacts to fish, wildlife and plant resources on state property that may be affected by the launching of space vehicles should be evaluated. Specifically, the DEIS should describe the expected impacts (e.g., noise, heat, vibration, fuel emissions) on vegetation and wildlife. For expected impacts for which no data exists to assist in predicting their significance (e.g., vibrations to sea turtles nests, noise and light on ocelot movement), TPWD recommends SpaceX propose and conduct research to help predict and minimize those impacts. The DEIS should also address mitigation and/or compensation for lost value of TPWD owned land.

To ensure human safety, it is anticipated that a zone, potentially up to 1.5 miles from the launch site, will be cleared for several hours during launches. According to information presented at the agency scoping meeting in Brownsville, Texas, on May 15, 2012, in order to maintain and secure a 1.5-mile clear zone around the launch site, security sweeps would be conducted that could include the use of helicopters, sirens, air cannons, fencing and on-the-ground security personnel.

> **Recommendation:** In addition to evaluating the direct impacts associated with launching space vehicles, the DEIS should address the indirect impacts associated with securing the area prior to launches (e.g., noise, vegetation trampling).

TPWD owned land would be included in the 1.5-mile clear zone that would require evacuation during launches. Recreational use of the TPWD lands as currently planned would need to be revised. Also, beach access and access to near-shore waters of the Gulf of Mexico east of the launch pad would also be restricted during launches.

> **Recommendation:** The DEIS should address mitigation and/or compensation for the loss of recreational value as well as the procedure for evacuating TPWD owned land and enforcing security.

The launch site is located among grasslands and mixed thorn-scrub communities that are extremely susceptible to wildfires. TPWD is concerned with the potential impacts of unintentional fires resulting from launch failures, accidental fires, careless spectators, etc. and the effect they could have on the sensitive resources on adjacent properties.

> **Recommendation:** The DEIS should include contingency plans to address potential wildfires.

The proposed launch site, which is located in a wash-over pass, would contain tanks of liquid oxygen, nitrogen, helium, and rocket propellant-1. Fuel would be stored on site for several months prior to a launch.

> **Recommendation:** TPWD is concerned with the potential for significant contamination of very sensitive resources in the event of a catastrophic event (i.e., hurricane). The DEIS should thoroughly address fuel storage and clean up procedures in the event of a catastrophic event.

Comments made at public scoping meetings by city and county officials focused on the anticipated increase in tourism due to public interest in attending launches at the proposed SpaceX site. Local officials anticipate as many as 10,000 spectators will attend the launches. Approximately 15 miles of SH 4 west of the SpaceX launch site is bounded to the north and south by TPWD or USFWS property. The proposed project does not include plans to accommodate up to 10,000 spectators or propose a plan to prevent impacts to the adjacent properties owned by TPWD and USFWS. TPWD is concerned with the potential significant impacts of spectators parking along the sides of SH 4, driving off-road through the tidal flats, and leaving litter along the roads. Additionally, TPWD has concerns that spectators may attempt to view launches by entering the very shallow South Bay Coastal Preserve in boats and impacting sensitive seagrass meadows.

> **Recommendaton:** TPWD recommends that plans to strictly control traffic be developed and enforced. SH 4 is not currently designed to accommodate this anticipated increase in traffic volume.
>
> Traffic should either be completely prevented from entering the conservation areas or managed with physical barriers (e.g., fences or bollards) and enforcement to prevent visitors from entering TPWD owned land. The DEIS should address how the sensitive resources of adjacent properties will be protected and how the protection will be enforced. If installing fencing on TPWD is necessary to protect fish and wildlife resources, the fences should be designed to allow wildlife passage and the DEIS should address compensation.
>
> Plans to provide parking for spectators should be established prior to the first launch. The DEIS should address traffic and parking scenarios, alternatives, and associated impacts.

TPWD appreciates the opportunity to provide comments and recommendations during the scoping phase for this project. Questions may be directed to Clayton Wolf, Wildlife Division Director, at (512) 389-8092. Thank you.

Sincerely,

Ross Melinchuk
Deputy Executive Director, Natural Resources

RM:KB:RH.gg

Attachments (2)



Code Key for Printouts from
Texas Parks and Wildlife Department
Texas Natural Diversity Database (TXNDD)

This information is for your assistance only; due to continuing data updates, vulnerability of private land to trespass and of species to disturbance or collection, **please refer all requesters to our office to obtain the most current information available.** Also, please note, identification of a species in a given area does not necessarily mean that species currently exists at the point or area indicated.

LEGAL STATUS AND CONSERVATION RANKS

FEDERAL STATUS (as determined by the US Fish and Wildlife Service)

LE	Listed Endangered
LT	Listed Threatened
PE	Proposed to be listed Endangered
PT	Proposed to be listed Threatened
PDL	Proposed to be Delisted (Note: Listing status retained while proposed)
SAE, SAT	Listed Endangered on basis of Similarity of Appearance, Listed Threatened on basis of Similarity of Appearance
DL	Delisted Endangered/Threatened
C	Candidate. USFWS has substantial information on biological vulnerability and threats to support proposing to list as threatened or endangered. Data are being gathered on habitat needs and/or critical habitat designations.
C*	C, but lacking known occurrences
C**	C, but lacking known occurrences, except in captivity/cultivation
XE	Essential Experimental Population
XN	Non-essential Experimental Population
Blank	Species is not federally listed

TX PROTECTION (as determined by the Texas Parks and Wildlife Department)

E	Listed Endangered
T	Listed Threatened
Blank	Species not state-listed

GLOBAL RANK (as determined by NatureServe)

G1	Critically imperiled globally, extremely rare, typically 5 or fewer viable occurrences
G2	Imperiled globally, very rare, typically 6 to 20 viable occurrences
G3	Very rare and local throughout range or found locally in restricted range, typically 21 to 100 viable occurrences
G4	Apparently secure globally
G5	Demonstrably secure globally
GH	Of historical occurrence through itsrange
GU	Possibly in peril range-wide, but status uncertain
G#G#	Ranked within a range as status uncertain
GX	Apparently extinct throughout range
Q	Rank qualifier denoting taxonomic assignment is questionable
#?	Rank qualifier denoting uncertain rank
C	In captivity or cultivation only
G#T#	"G" refers to species rank; "T" refes to variety or subspecies rank

STATE (SUBNATIONAL) RANK (as determined by the Texas Parks and Wildlife Department)

S1	Critically imperiled in state, extremely rare, vulnerable to extirpation, typically 5 or fewer viable occurrences
S2	Imperiled in state, very rare, vulnerble to extirpation, typically 6 to 20 viable occurrences
S3	Rare or uncommon in state, typically 21 to 100 viable occurrences
S4	Apparently secure in State
S5	Demonstrably secure in State
S#S#	Ranked within a range as status uncertain
SH	Of historical occurrence in state andmay be rediscovered
SU	Unrankable – due to lack of information or substantially conflicting information
SX	Apparently extirpated from State
SNR	Unranked – State status not yet assesed
SNA	Not applicable – species id not a suiable target for conservation activities
?	Rank qualifier denoting uncertain rank in State

Revised 1 Apr 2008



ELEMENT OCCURRENCE RECORD

Element Occurrence Record (EOR) Spatial and tabular record of an area of land and/or water in which a species, natural community, or other significant feature of natural diversity is, or was, present and associated information; may be a single contiguous area or may be comprised of discrete patches or subpopulations

Occurrence # Unique number assigned to each occurrence of each element when added to the NDD

LOCATION INFORMATION

Watershed Code Eight digit numerical code determined by US Geological Survey (USGS)

Watershed Name of watershed as determined by USGS

Quadrangle Name of USGS topographical map

Directions Directions to geographic location where occurrence was observed, as described by observer or in source

SURVEY INFORMATION

First/Last Observation Date a particular occurrence was first/last observed; refers only to species occurrence as noted in source and does not imply the first/last date the species was present

Survey Date If conducted, date of survey

EO Type State rank qualifier:

- **M** Migrant - species occurring regularly on migration at staging areas, or concentration along particular corridors; status refers to the transient population in the State
- **B** Qualifier indicating basic rank refers to the breeding population in State
- **N** Qualifier indicating basic rank refers to the non-breeding population in State

EO Rank

A	Excellent	**AI**	Excellent, Introduced
B	Good	**BI**	Good, Introduced
C	Marginal	**CI**	Marginal, Introduced
D	Poor	**DI**	Poor, Introduced
E	Extant/Present	**EI**	Extant, Introduced
H	Historical/No Field Information	**HI**	Historical, Introduced
X	Destroyed/Extirpated	**XI**	Destroyed, Introduced
O	Obscure	**OI**	Obscure, Introduced

EO Rank Date Latest date EO rank was determined or revised

Observed Area Acres, unless indicated otherwise

COMMENTS

Description General physical description of area and habitat where occurrence is located, including associated species, soils, geology, and surrounding land use

Comments Comments concerning the quality or condition of the element occurrence at time of survey

Protection Comments Observer comments concerning legal protection of the occurrence

Management Comments Observer comments concerning management recommendations appropriate for occurrence conservation

DATA

EO Data Biological data; may include number of individuals, vigor, flowering/fruiting data, nest success, behaviors observed, or unusual characteristic, etc.

SITE

Site Name Title given to site by surveyor

MANAGED AREA INFORMATION

Managed Area Name Place name or (on EOR printout) name of area when the EC is located within or partially within an area identified for conservation, such as State or Federal lands, nature preserves, parks, etc.

Alias Additional names the property is known by

Acres Total acreage of property, including non-contiguous tracts

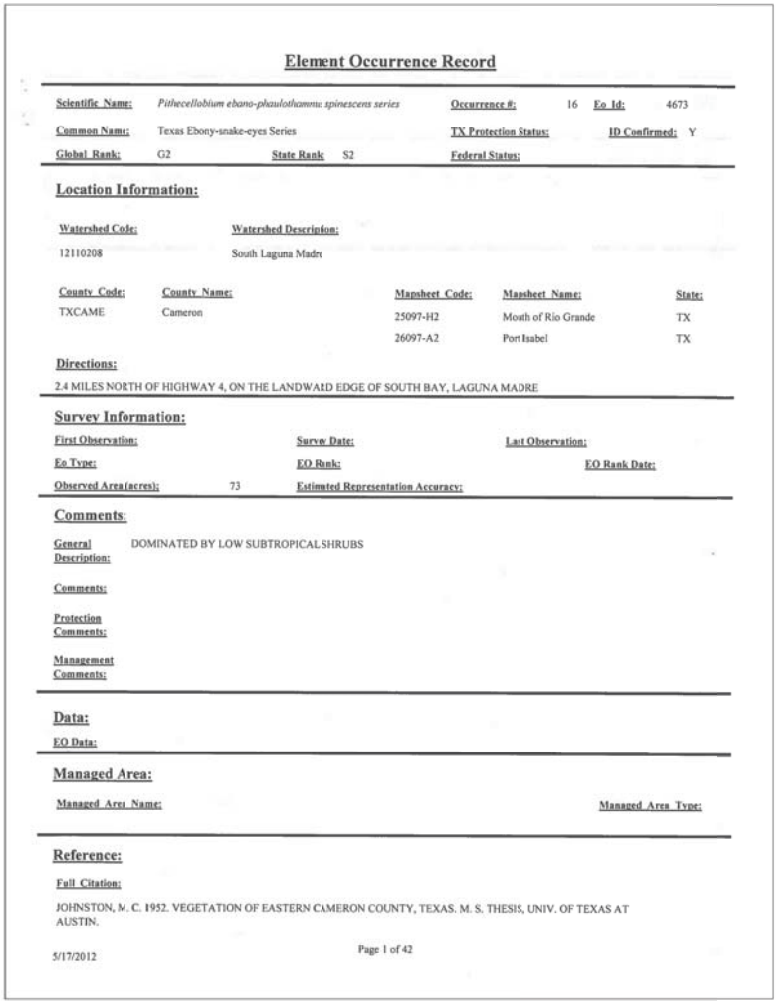
Manager Contact name, address, and telephone number for area or nearest area land steward

Please use one of the following citations to credit the source for the printout information:

Texas Natural Diversity Database. [year of printouts]. Wildlife Diversity Program of Texas Parks & Wildlife Department. [day month year of printouts].

Texas Natural Diversity Database. [year of printouts]. Element occurrence printouts for [scientific name] *records # [occurrence number(s)]. Wildlife Diversity Program of Texas Parks & Wildlife Department. [day month year of printouts]. *Use of record #'s is optional.

Revised 1 Apr 2008



Element Occurrence Record

Scientific Name: *Pithecellobium ebano-phaulothamnus spinescens series* **Occurrence #:** 16 **Eo Id:** 4673

Common Name: Texas Ebony-snake-eyes Series **TX Protection Status:** **ID Confirmed:** Y

Global Rank: G2 **State Rank** S2 **Federal Status:**

Location Information:

Watershed Code:	Watershed Description:
12110208	South Laguna Madre

County Code:	County Name:	Mapsheet Code:	Mapsheet Name:	State:
TXCAME	Cameron	25097-H2	Mouth of Rio Grande	TX
		26097-A2	Port Isabel	TX

Directions:

2.4 MILES NORTH OF HIGHWAY 4, ON THE LANDWAID EDGE OF SOUTH BAY, LAGUNA MADRE

Survey Information:

First Observation: **Survey Date:** **Last Observation:**

Eo Type: **EO Rank:** **EO Rank Date:**

Observed Area(acres): 73 **Estimated Representation Accuracy:**

Comments:

General Description: DOMINATED BY LOW SUBTROPICAL SHRUBS

Comments:

Protection Comments:

Management Comments:

Data:

EO Data:

Managed Area:

Managed Area Name: **Managed Area Type:**

Reference:

Full Citation:

JOHNSTON, M. C. 1952. VEGETATION OF EASTERN CAMERON COUNTY, TEXAS. M. S. THESIS, UNIV. OF TEXAS AT AUSTIN.

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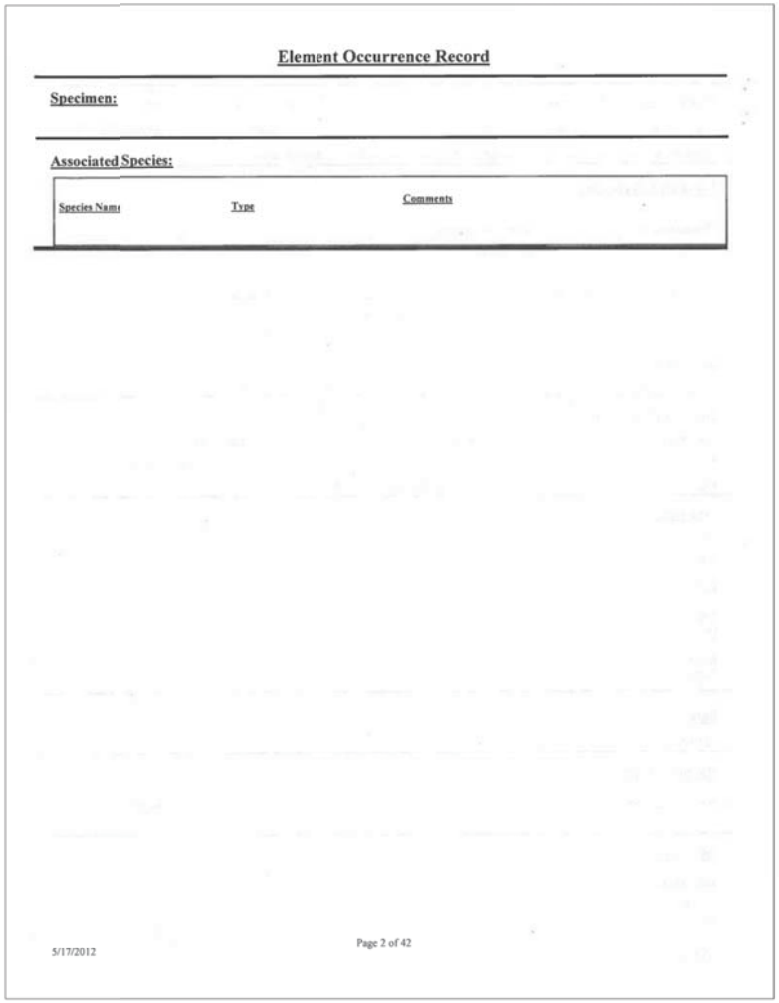

Element Occurrence Record

Specimen:

Associated Species:

Species Nam	Type	Comments

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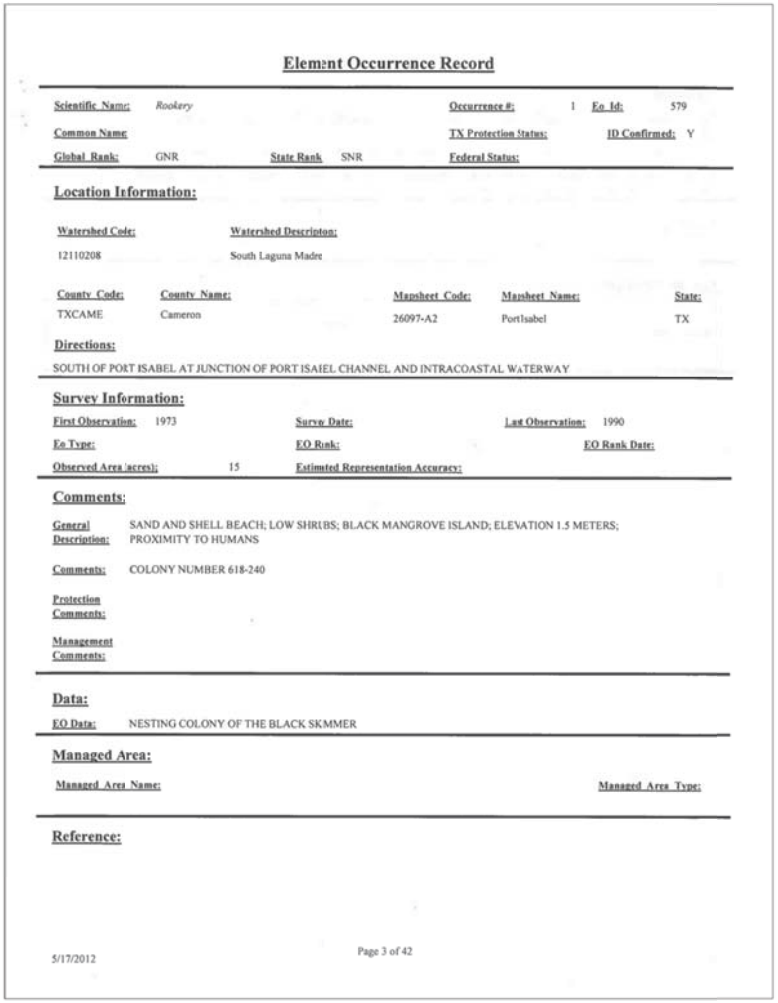

Element Occurrence Record

Scientific Name: *Rookery* Occurrence #: 1 Eo Id: 579

Common Name: TX Protection Status: ID Confirmed: Y

Global Rank: GNR State Rank SNR Federal Status:

Location Information:

Watershed Code:	Watershed Description:
12110208	South Laguna Madre

County Code:	County Name:	Mapsheet Code:	Mapsheet Name:	State:
TXCAME	Cameron	26097-A2	Portlsabel	TX

Directions:

SOUTH OF PORT ISABEL AT JUNCTION OF PORT ISAIEL CHANNEL AND INTRACOASTAL WATERWAY

Survey Information:

First Observation: 1973 Survey Date: Last Observation: 1990

Eo Type: EO Rank: EO Rank Date:

Observed Area (acres): 15 Estimated Representation Accuracy:

Comments:

General Description: SAND AND SHELL BEACH; LOW SHRUBS; BLACK MANGROVE ISLAND; ELEVATION 1.5 METERS; PROXIMITY TO HUMANS

Comments: COLONY NUMBER 618-240

Protection Comments:

Management Comments:

Data:

EO Data: NESTING COLONY OF THE BLACK SKMMER

Managed Area:

Managed Area Name: Managed Area Type:

Reference:

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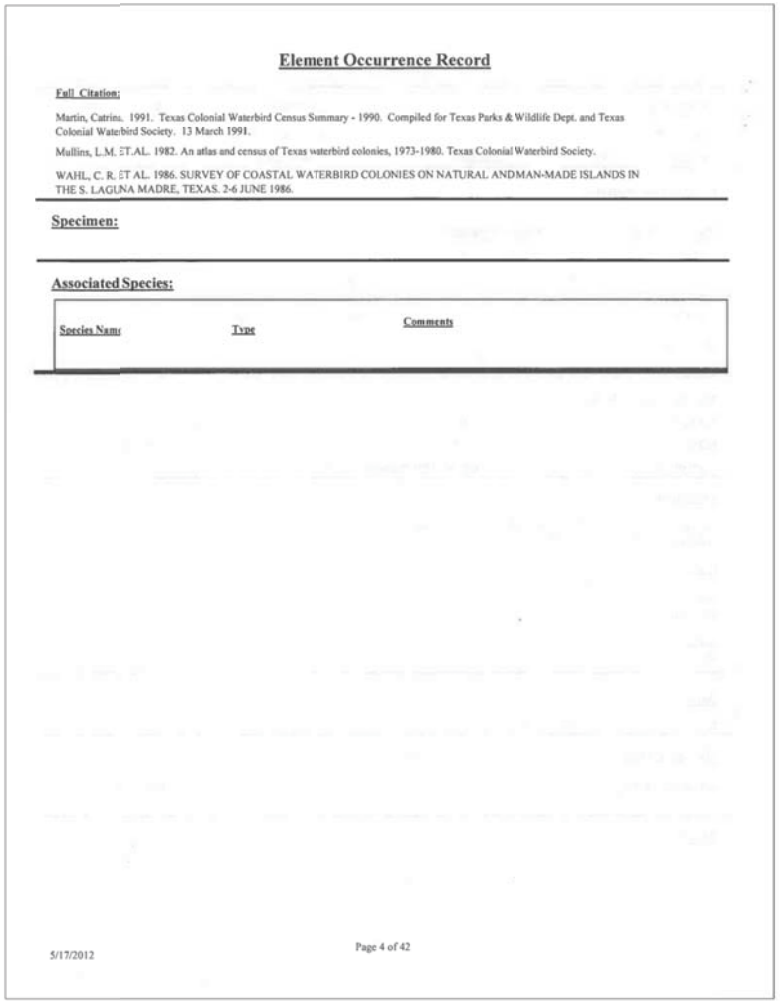

Element Occurrence Record

Full Citation:

Martin, Catrins. 1991. Texas Colonial Waterbird Census Summary - 1990. Compiled for Texas Parks & Wildlife Dept. and Texas Colonial Waterbird Society. 13 March 1991.

Mullins, L.M. ET.AL. 1982. An atlas and census of Texas waterbird colonies, 1973-1980. Texas Colonial Waterbird Society.

WAHL, C. R. ET AL. 1986. SURVEY OF COASTAL WATERBIRD COLONIES ON NATURAL ANDMAN-MADE ISLANDS IN THE S. LAGUNA MADRE, TEXAS. 2-6 JUNE 1986.

Specimen:

Associated Species:

Species Nam	Type	Comments

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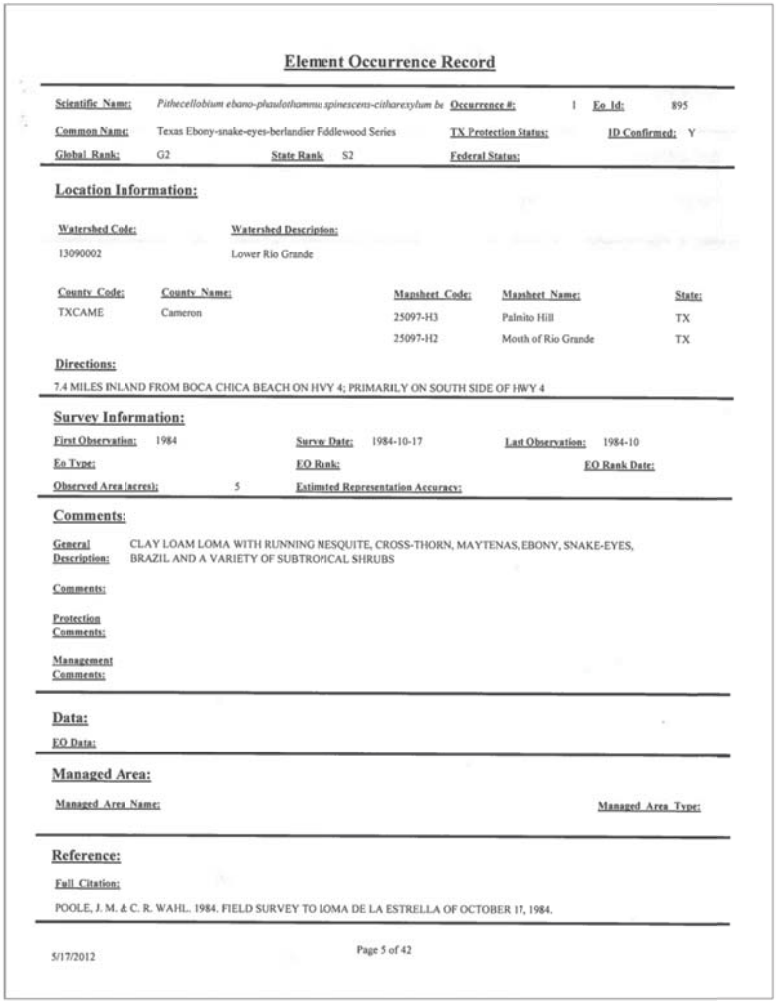

Element Occurrence Record

Scientific Name: *Pithecellobium ebano-phaulothamnu spinescens-citharexylum be* **Occurrence #:** 1 **Eo Id:** 895

Common Name: Texas Ebony-snake-eyes-berlandier Fddlewood Series **TX Protection Status:** **ID Confirmed:** Y

Global Rank: G2 **State Rank** S2 **Federal Status:**

Location Information:

Watershed Code:	Watershed Description:
13090002	Lower Rio Grande

County Code:	County Name:	Mapsheet Code:	Mapsheet Name:	State:
TXCAME	Cameron	25097-H3	Palnito Hill	TX
		25097-H2	Moth of Rio Grande	TX

Directions:

7.4 MILES INLAND FROM BOCA CHICA BEACH ON HVY 4; PRIMARILY ON SOUTH SIDE OF HWY 4

Survey Information:

First Observation: 1984 **Survey Date:** 1984-10-17 **Last Observation:** 1984-10

Eo Type: **EO Rank:** **EO Rank Date:**

Observed Area (acres): 5 **Estimted Representation Accuracy:**

Comments:

General Description: CLAY LOAM LOMA WITH RUNNING NESQUITE, CROSS-THORN, MAYTENAS,EBONY, SNAKE-EYES, BRAZIL AND A VARIETY OF SUBTROPICAL SHRUBS

Comments:

Protection Comments:

Management Comments:

Data:

EO Data:

Managed Area:

Managed Area Name: **Managed Area Type:**

Reference:

Full Citation:

POOLE, J. M. & C. R. WAHL. 1984. FIELD SURVEY TO IOMA DE LA ESTRELLA OF OCTOBER 17, 1984.

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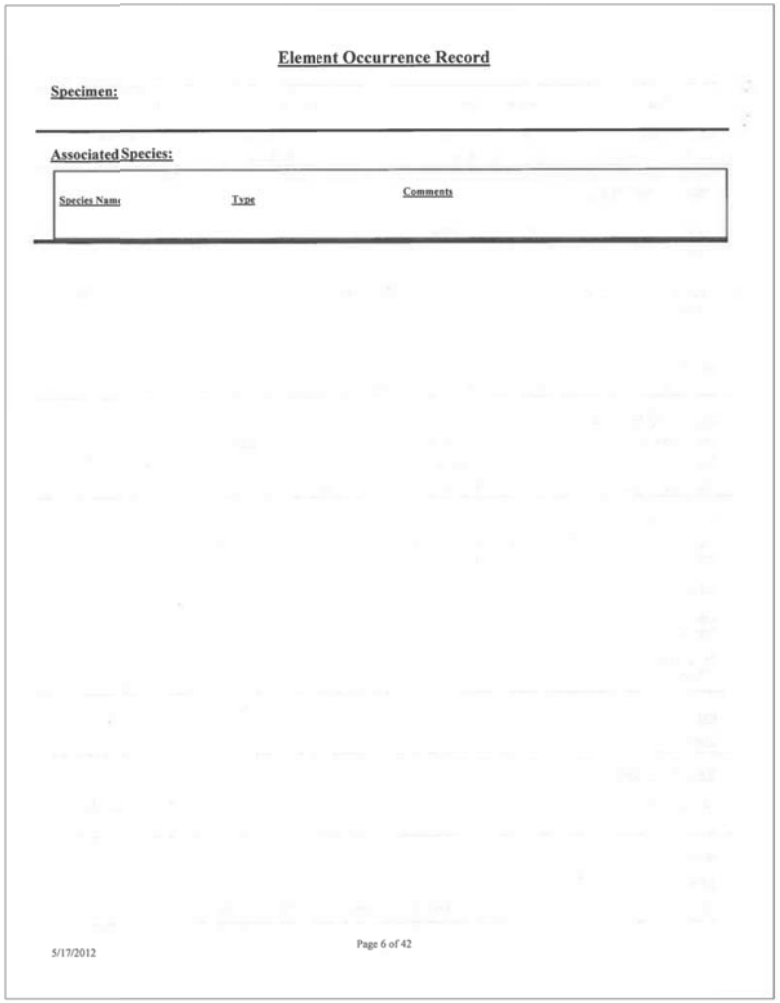

Element Occurrence Record

Specimen:

Associated Species:

Species Name	Type	Comments

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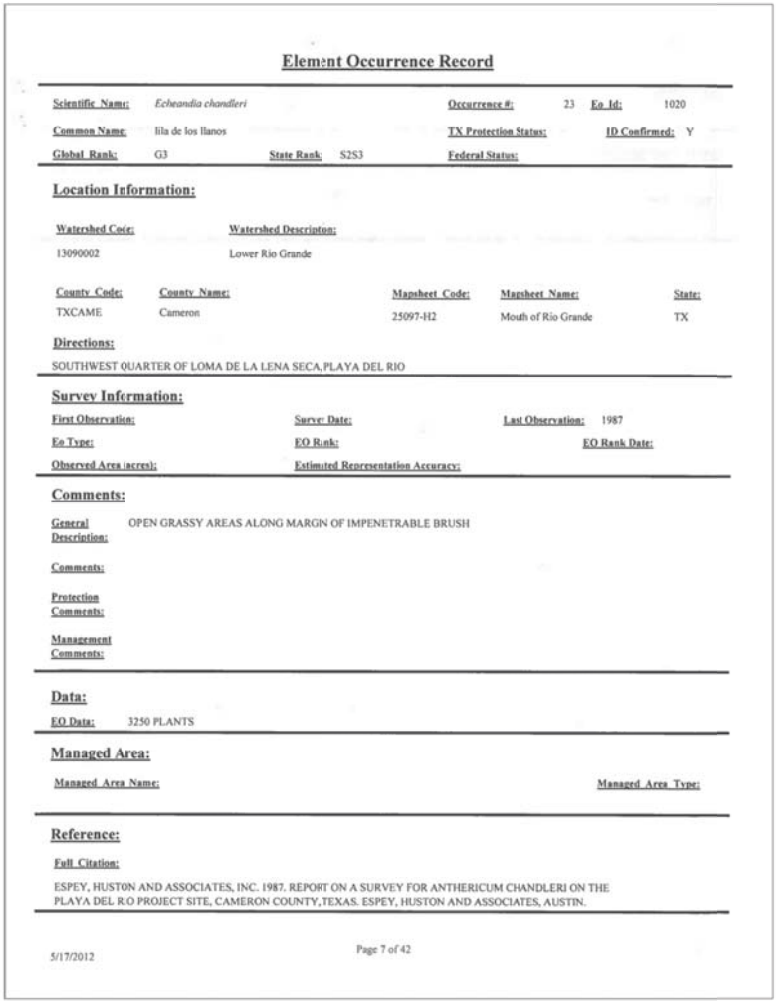

Element Occurrence Record

Scientific Name: *Echeandia chandleri* **Occurrence #:** 23 **Eo Id:** 1020

Common Name: lila de los llanos **TX Protection Status:** **ID Confirmed:** Y

Global Rank: G3 **State Rank:** S2S3 **Federal Status:**

Location Information:

Watershed Code:	Watershed Description:
13090002	Lower Rio Grande

County Code:	County Name:	Mapsheet Code:	Mapsheet Name:	State:
TXCAME	Cameron	25097-H2	Mouth of Rio Grande	TX

Directions:

SOUTHWEST QUARTER OF LOMA DE LA LENA SECA,PLAYA DEL RIO

Survey Information:

First Observation: **Survey Date:** **Last Observation:** 1987

Eo Type: **EO Rank:** **EO Rank Date:**

Observed Area (acres): **Estimated Representation Accuracy:**

Comments:

General Description: OPEN GRASSY AREAS ALONG MARGIN OF IMPENETRABLE BRUSH

Comments:

Protection Comments:

Management Comments:

Data:

EO Data: 3250 PLANTS

Managed Area:

Managed Area Name: **Managed Area Type:**

Reference:

Full Citation:

ESPEY, HUSTON AND ASSOCIATES, INC. 1987. REPORT ON A SURVEY FOR ANTHERICUM CHANDLERI ON THE PLAYA DEL R.O PROJECT SITE, CAMERON COUNTY,TEXAS. ESPEY, HUSTON AND ASSOCIATES, AUSTIN.

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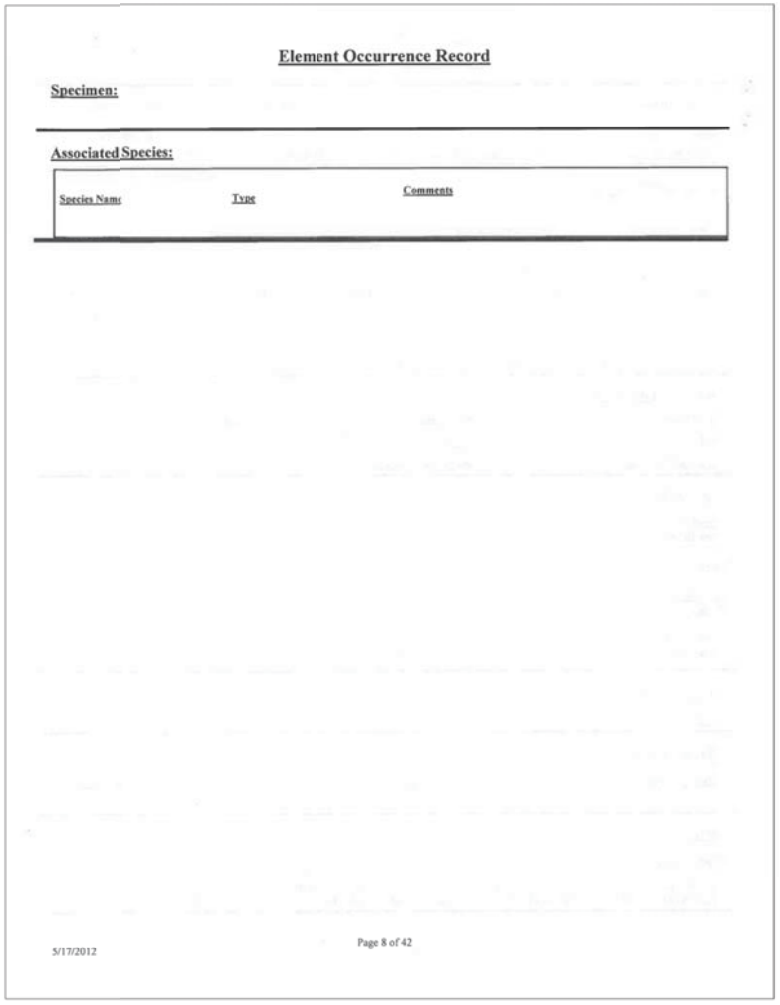

Element Occurrence Record

Specimen:

Associated Species:

Species Nam	Type	Comments

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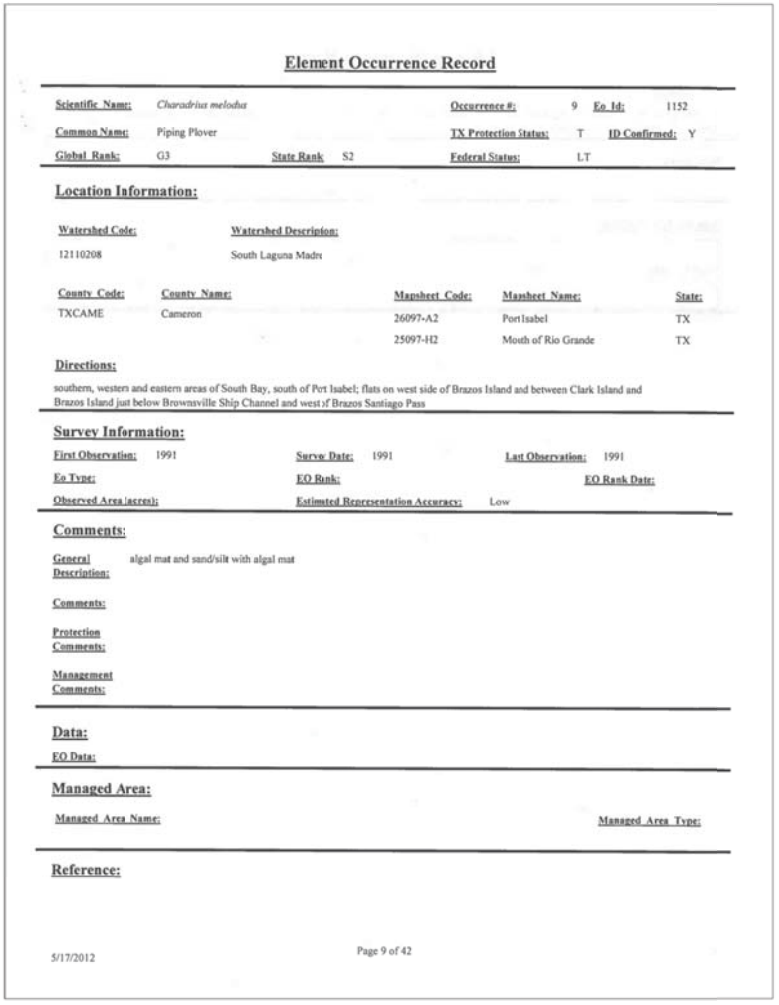

Element Occurrence Record

Scientific Name: *Charadrius melodus* **Occurrence #:** 9 **Eo Id:** 1152

Common Name: Piping Plover **TX Protection Status:** T **ID Confirmed:** Y

Global Rank: G3 **State Rank** S2 **Federal Status:** LT

Location Information:

Watershed Code: 12110208 **Watershed Description:** South Laguna Madre

County Code:	County Name:	Mapsheet Code:	Mapsheet Name:	State:
TXCAME	Cameron	26097-A2	Port Isabel	TX
		25097-H2	Mouth of Rio Grande	TX

Directions:

southern, western and eastern areas of South Bay, south of Port Isabel; flats on west side of Brazos Island and between Clark Island and Brazos Island just below Brownsville Ship Channel and west of Brazos Santiago Pass

Survey Information:

First Observation: 1991 **Survey Date:** 1991 **Last Observation:** 1991

Eo Type: **EO Rank:** **EO Rank Date:**

Observed Area (acres): **Estimated Representation Accuracy:** Low

Comments:

General Description: algal mat and sand/silt with algal mat

Comments:

Protection Comments:

Management Comments:

Data:

EO Data:

Managed Area:

Managed Area Name: **Managed Area Type:**

Reference:

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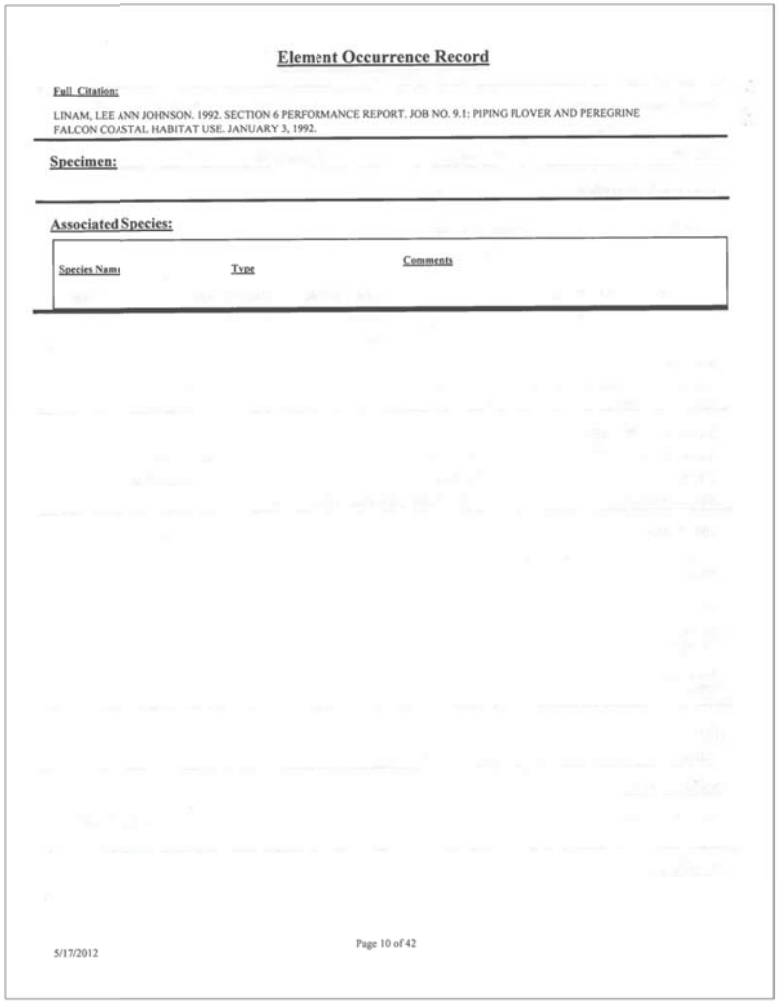

Element Occurrence Record

Full Citation:

LINAM, LEE ANN JOHNSON. 1992. SECTION 6 PERFORMANCE REPORT. JOB NO. 9.1: PIPING FLOVER AND PEREGRINE FALCON COASTAL HABITAT USE. JANUARY 3, 1992.

Specimen:

Associated Species:

Species Name	Type	Comments

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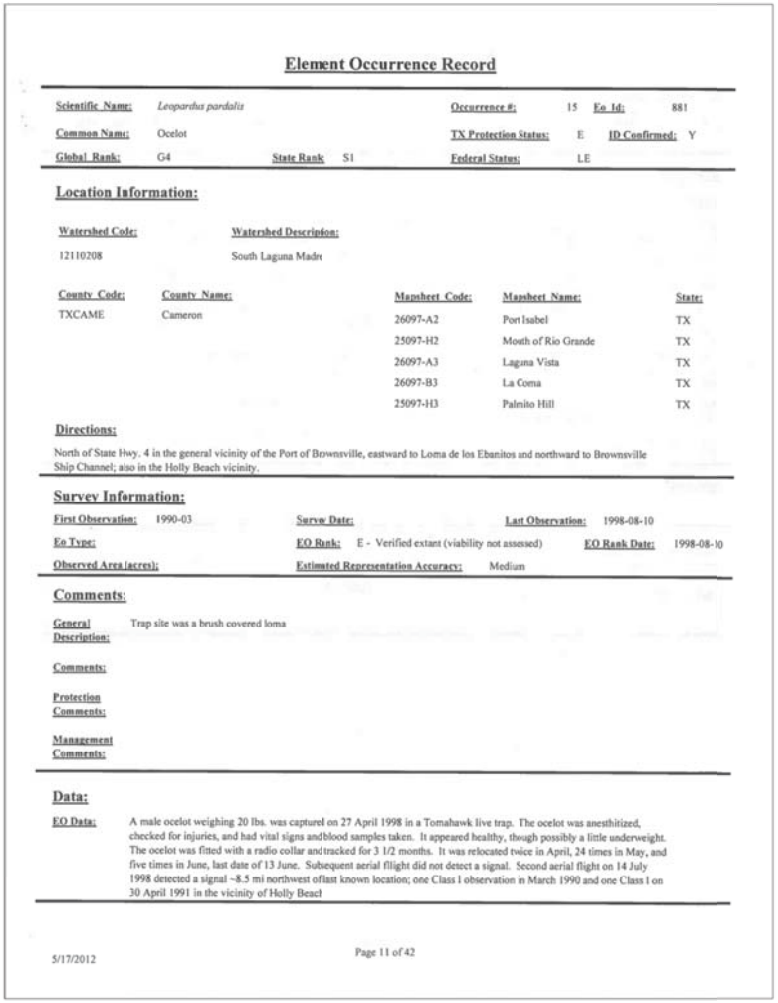

Element Occurrence Record

Scientific Name: *Leopardus pardalis* **Occurrence #:** 15 **Eo Id:** 881

Common Name: Ocelot **TX Protection Status:** E **ID Confirmed:** Y

Global Rank: G4 **State Rank** S1 **Federal Status:** LE

Location Information:

Watershed Code: 12110208 **Watershed Description:** South Laguna Madre

County Code:	County Name:	Mapsheet Code:	Mapsheet Name:	State:
TXCAME	Cameron	26097-A2	Port Isabel	TX
		25097-H2	Mouth of Rio Grande	TX
		26097-A3	Laguna Vista	TX
		26097-B3	La Coma	TX
		25097-H3	Palmito Hill	TX

Directions:

North of State Hwy. 4 in the general vicinity of the Port of Brownsville, eastward to Loma de los Ebanitos and northward to Brownsville Ship Channel; also in the Holly Beach vicinity.

Survey Information:

First Observation: 1990-03 **Survey Date:** **Last Observation:** 1998-08-10

Eo Type: **EO Rank:** E - Verified extant (viability not assessed) **EO Rank Date:** 1998-08-10

Observed Area (acres): **Estimated Representation Accuracy:** Medium

Comments:

General Description: Trap site was a brush covered loma

Comments:

Protection Comments:

Management Comments:

Data:

EO Data: A male ocelot weighing 20 lbs. was capturel on 27 April 1998 in a Tomahawk live trap. The ocelot was anesthitized, checked for injuries, and had vital signs andblood samples taken. It appeared healthy, though possibly a little underweight. The ocelot was fitted with a radio collar andtracked for 3 1/2 months. It was relocated twice in April, 24 times in May, and five times in June, last date of 13 June. Subsequent aerial flight did not detect a signal. Second aerial flight on 14 July 1998 detected a signal ~8.5 mi northwest oflast known location; one Class I observation n March 1990 and one Class I on 30 April 1991 in the vicinity of Holly Beacl

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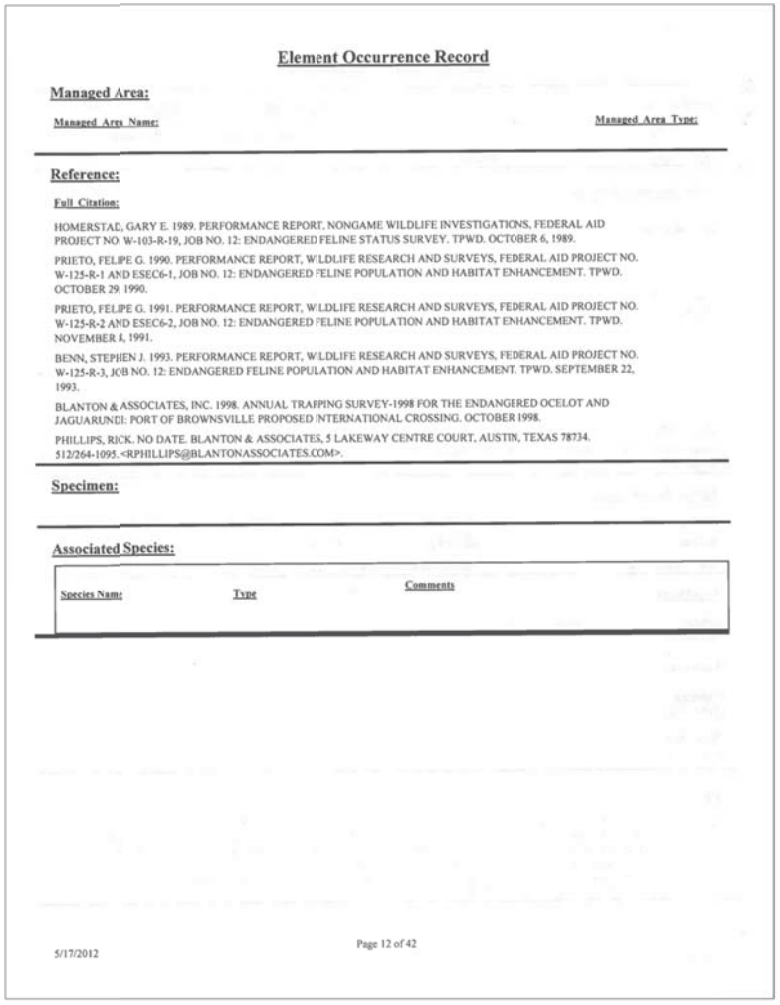

Element Occurrence Record

Managed Area:

Managed Area Name: | Managed Area Type:

Reference:

Full Citation:

HOMERSTAD, GARY E. 1989. PERFORMANCE REPORT, NONGAME WILDLIFE INVESTIGATIONS, FEDERAL AID PROJECT NO. W-103-R-19, JOB NO. 12: ENDANGERED FELINE STATUS SURVEY. TPWD. OCTOBER 6, 1989.

PRIETO, FELIPE G. 1990. PERFORMANCE REPORT, WILDLIFE RESEARCH AND SURVEYS, FEDERAL AID PROJECT NO. W-125-R-1 AND ESEC6-1, JOB NO. 12: ENDANGERED FELINE POPULATION AND HABITAT ENHANCEMENT. TPWD. OCTOBER 29 1990.

PRIETO, FELIPE G. 1991. PERFORMANCE REPORT, WILDLIFE RESEARCH AND SURVEYS, FEDERAL AID PROJECT NO. W-125-R-2 AND ESEC6-2, JOB NO. 12: ENDANGERED FELINE POPULATION AND HABITAT ENHANCEMENT. TPWD. NOVEMBER 1, 1991.

BENN, STEPHEN J. 1993. PERFORMANCE REPORT, WILDLIFE RESEARCH AND SURVEYS, FEDERAL AID PROJECT NO. W-125-R-3, JOB NO. 12: ENDANGERED FELINE POPULATION AND HABITAT ENHANCEMENT. TPWD. SEPTEMBER 22, 1993.

BLANTON & ASSOCIATES, INC. 1998. ANNUAL TRAPPING SURVEY-1998 FOR THE ENDANGERED OCELOT AND JAGUARUNDI: PORT OF BROWNSVILLE PROPOSED INTERNATIONAL CROSSING. OCTOBER 1998.

PHILLIPS, RICK. NO DATE. BLANTON & ASSOCIATES, 5 LAKEWAY CENTRE COURT, AUSTIN, TEXAS 78734. 512/264-1095.<RPHILLIPS@BLANTONASSOCIATES.COM>.

Specimen:

Associated Species:

Species Nam:	Type	Comments

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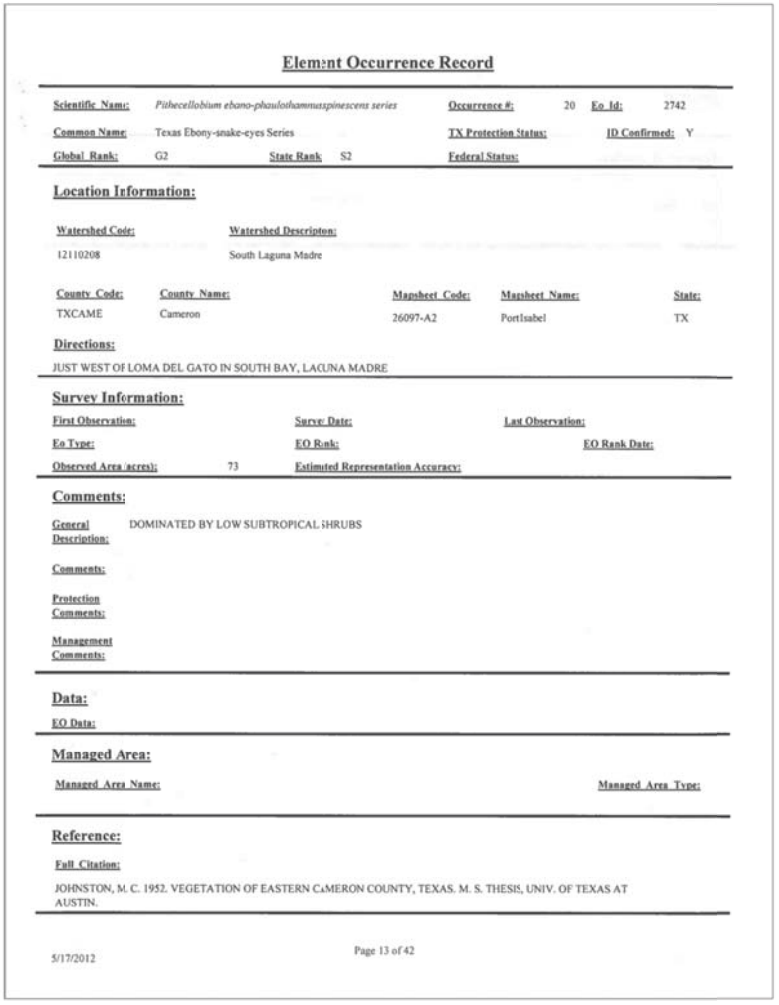

Element Occurrence Record

Scientific Nam: *Pithecellobium ebano-phaulothamnuspinescens series* Occurrence #: 20 Eo Id: 2742

Common Name: Texas Ebony-snake-eyes Series TX Protection Status: ID Confirmed: Y

Global Rank: G2 State Rank: S2 Federal Status:

Location Information:

Watershed Code:	Watershed Descripton:	County Code:	County Name:	Mapsheet Code:	Mapsheet Name:	State:
12110208	South Laguna Madre	TXCAME	Cameron	26097-A2	Portlsabel	TX

Directions:

JUST WEST OF LOMA DEL GATO IN SOUTH BAY, LAGUNA MADRE

Survey Information:

First Observation: Surve Date: Last Observation:

Eo Type: EO Rank: EO Rank Date:

Observed Area (acres): 73 Estimated Representation Accuracy:

Comments:

General Description: DOMINATED BY LOW SUBTROPICAL SHRUBS

Comments:

Protection Comments:

Management Comments:

Data:

EO Data:

Managed Area:

Managed Area Name: | Managed Area Type:

Reference:

Full Citation:

JOHNSTON, M. C. 1952. VEGETATION OF EASTERN CAMERON COUNTY, TEXAS. M. S. THESIS, UNIV. OF TEXAS AT AUSTIN.

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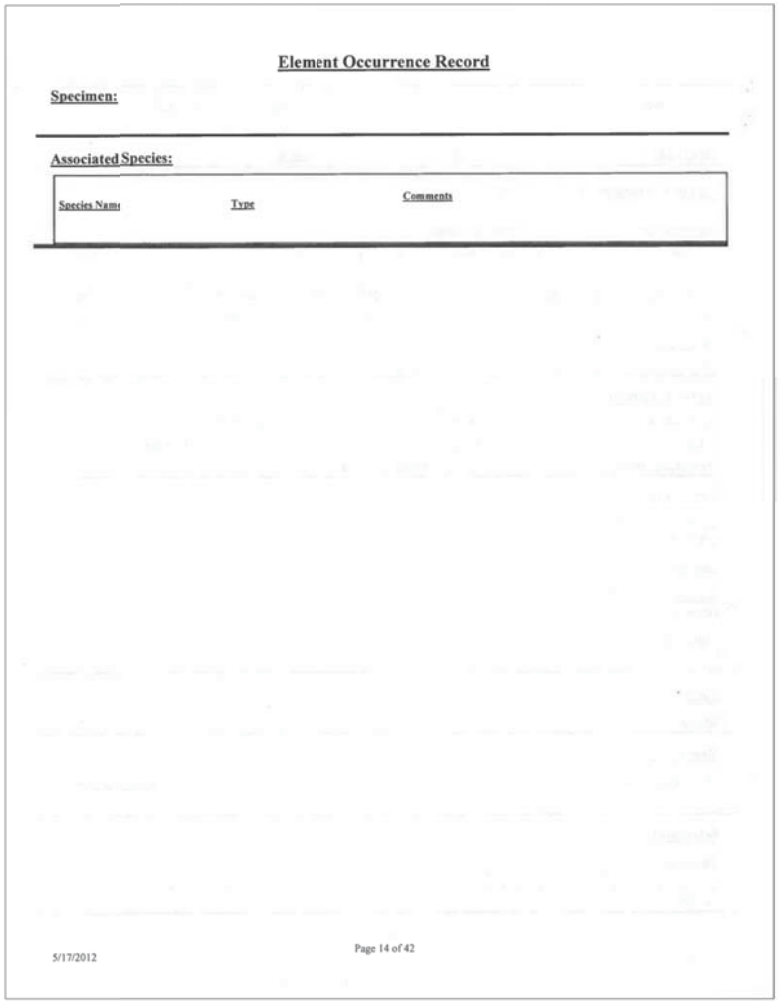

Element Occurrence Record

Specimen:

Associated Species:

Species Nam	Type	Comments

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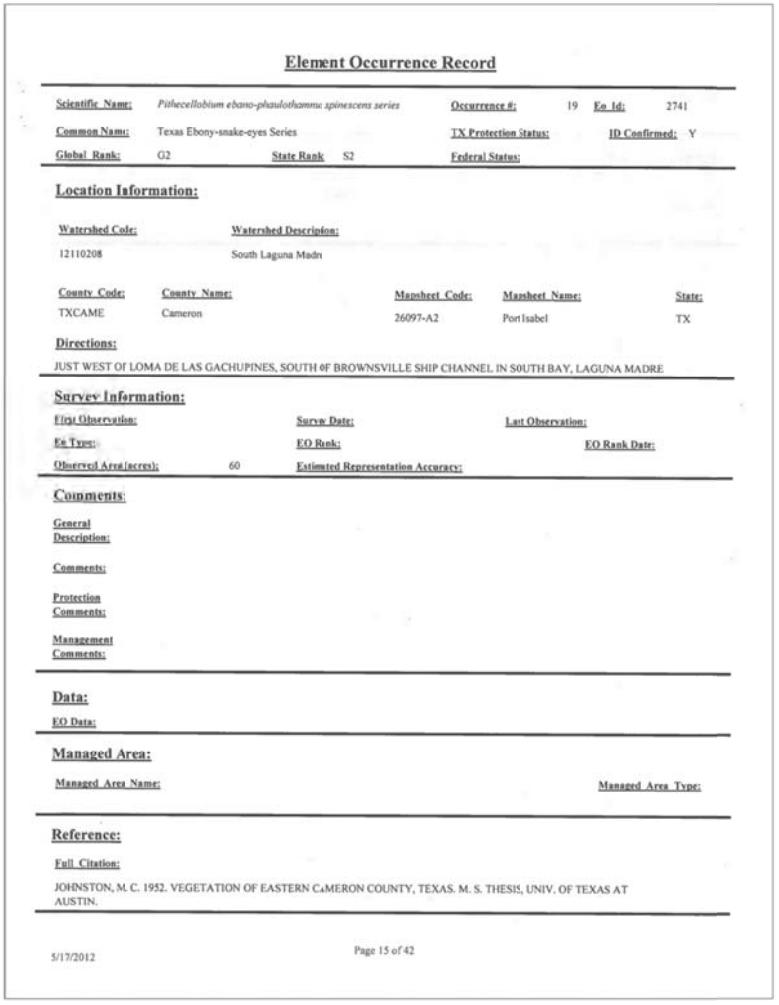


Element Occurrence Record

Scientific Name: *Pithecellobium ebano-phaulothamnus spinescens series* **Occurrence #:** 19 **Eo Id:** 2741

Common Name: Texas Ebony-snake-eyes Series **TX Protection Status:** **ID Confirmed:** Y

Global Rank: G2 **State Rank** S2 **Federal Status:**

Location Information:

Watershed Code: 12110208 **Watershed Description:** South Laguna Madr

County Code: TXCAME **County Name:** Cameron **Mapsheet Code:** 26097-A2 **Mapsheet Name:** Port Isabel **State:** TX

Directions:

JUST WEST OF LOMA DE LAS GACHUPINES, SOUTH OF BROWNSVILLE SHIP CHANNEL IN SOUTH BAY, LAGUNA MADRE

Survey Information:

First Observation: **Survey Date:** **Last Observation:**

Eo Type: **EO Rank:** **EO Rank Date:**

Observed Area (acres): 60 **Estimated Representation Accuracy:**

Comments:

General Description:

Comments:

Protection Comments:

Management Comments:

Data:

EO Data:

Managed Area:

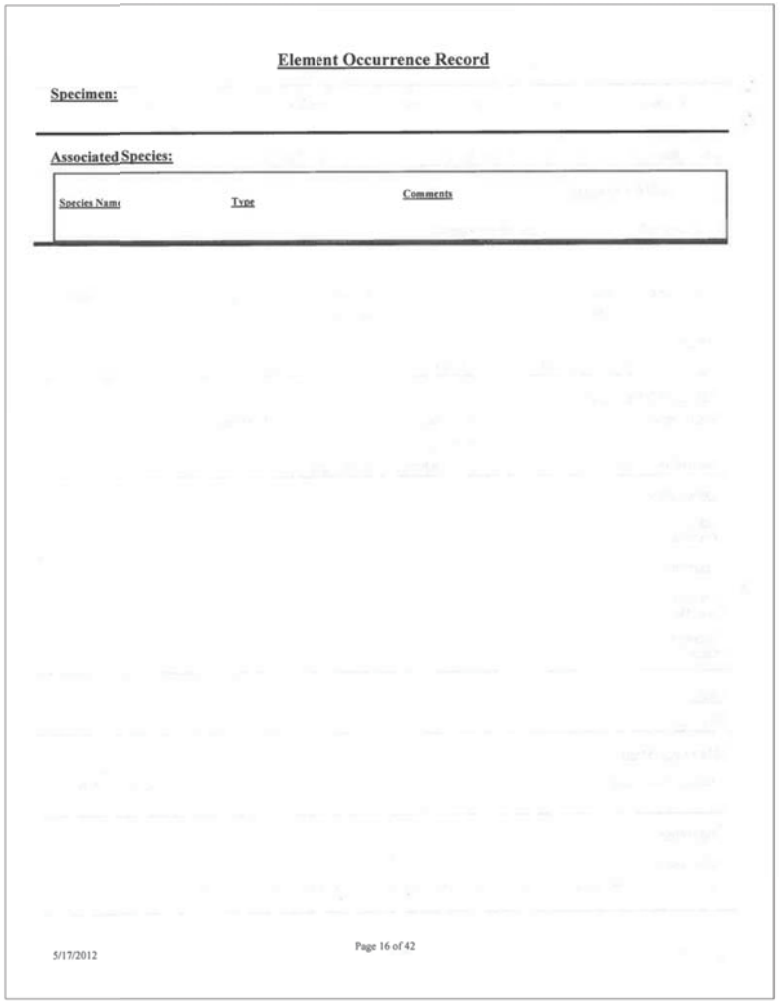
Managed Area Name: **Managed Area Type:**

Reference:

Full Citation:

JOHNSTON, M. C. 1952. VEGETATION OF EASTERN CAMERON COUNTY, TEXAS. M. S. THESIS, UNIV. OF TEXAS AT AUSTIN.

5/17/2012 Page 15 of 42



Element Occurrence Record

Specimen:

Associated Species:

Species Nam	Type	Comments

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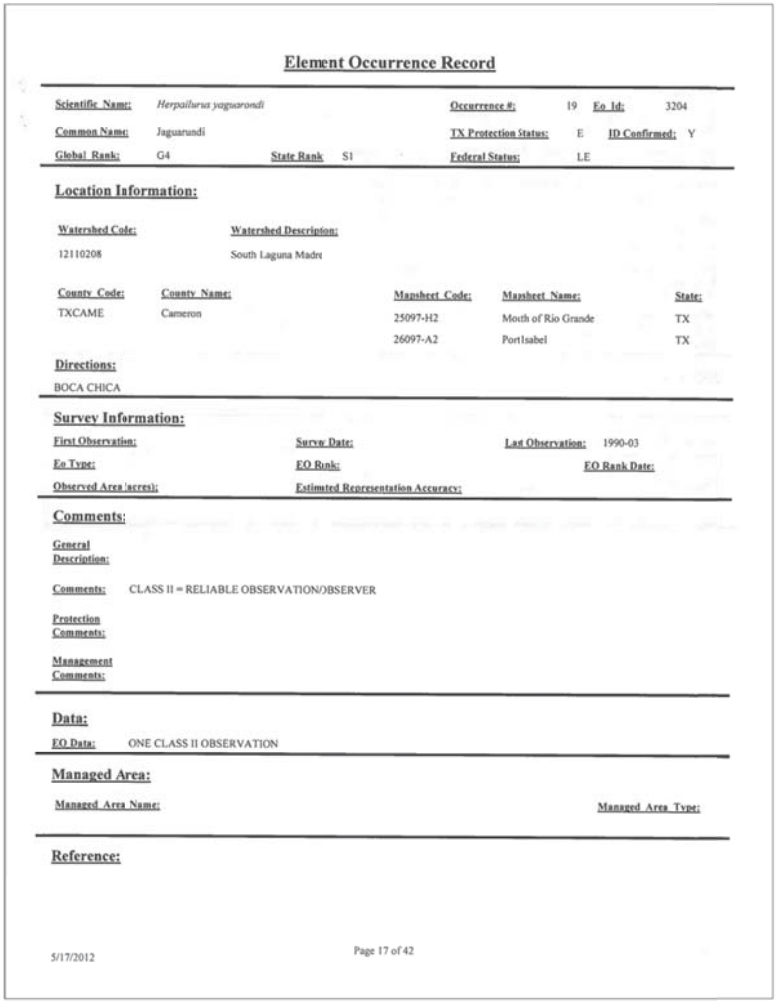


Element Occurrence Record

Scientific Name: *Herpailurus yaguarondi* **Occurrence #:** 19 **Eo Id:** 3204
Common Name: Jaguarundi **TX Protection Status:** E **ID Confirmed:** Y
Global Rank: G4 **State Rank** S1 **Federal Status:** LE

Location Information:

Watershed Code:	Watershed Description:
1211020S	South Laguna Madre

County Code:	County Name:	Mapsheet Code:	Mapsheet Name:	State:
TXCAME	Cameron	25097-H2	Moth of Rio Grande	TX
		26097-A2	Portlsabel	TX

Directions:
BOCA CHICA

Survey Information:

First Observation: **Survey Date:** **Last Observation:** 1990-03
Eo Type: **EO Rank:** **EO Rank Date:**
Observed Area (acres): **Estimted Representation Accuracy:**

Comments:

General Description:

Comments: CLASS II = RELIABLE OBSERVATION/OBSERVER

Protection Comments:

Management Comments:

Data:

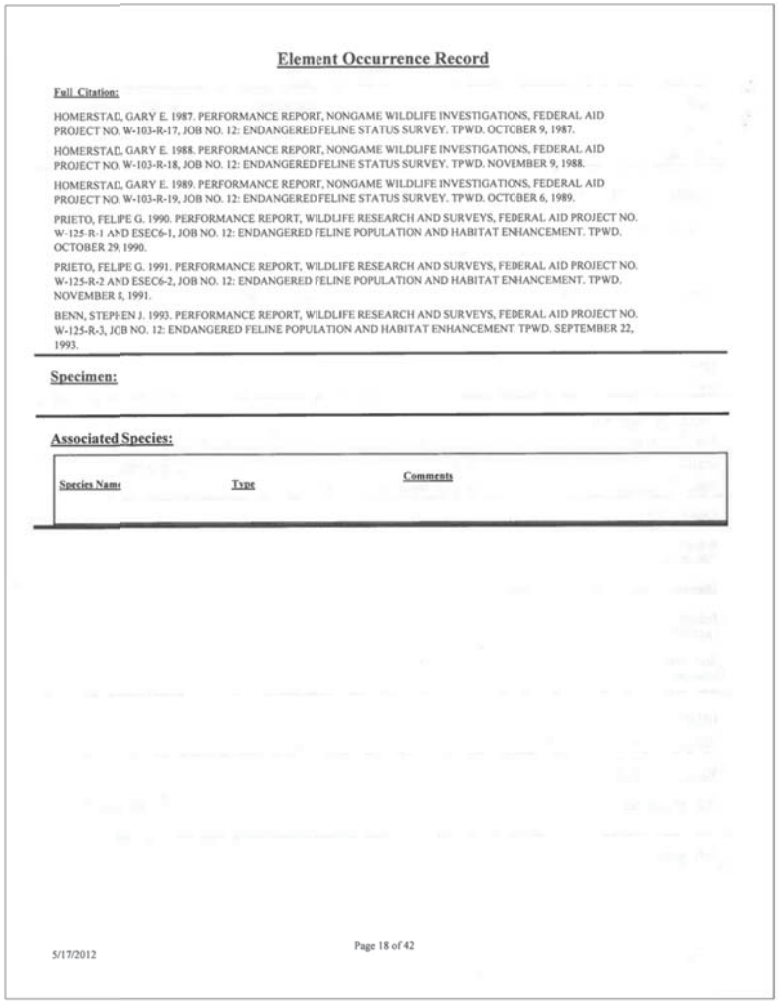
EO Data: ONE CLASS II OBSERVATION

Managed Area:

Managed Area Name: **Managed Area Type:**

Reference:

5/17/2012 Page 17 of 42



Element Occurrence Record

Full Citation:

HOMERSTAD, GARY E. 1987. PERFORMANCE REPORT, NONGAME WILDLIFE INVESTIGATIONS, FEDERAL AID PROJECT NO. W-103-R-17, JOB NO. 12: ENDANGEREDFELINE STATUS SURVEY. TPWD. OCTOBER 9, 1987.

HOMERSTAD, GARY E. 1988. PERFORMANCE REPORT, NONGAME WILDLIFE INVESTIGATIONS, FEDERAL AID PROJECT NO. W-103-R-18, JOB NO. 12: ENDANGEREDFELINE STATUS SURVEY. TPWD. NOVEMBER 9, 1988.

HOMERSTAD, GARY E. 1989. PERFORMANCE REPORT, NONGAME WILDLIFE INVESTIGATIONS, FEDERAL AID PROJECT NO. W-103-R-19, JOB NO. 12: ENDANGEREDFELINE STATUS SURVEY. TPWD. OCTOBER 6, 1989.

PRIETO, FELIPE G. 1990. PERFORMANCE REPORT, WILDLIFE RESEARCH AND SURVEYS, FEDERAL AID PROJECT NO. W-125-R-1 AND ESEC6-1, JOB NO. 12: ENDANGERED FELINE POPULATION AND HABITAT ENHANCEMENT. TPWD. OCTOBER 29, 1990.

PRIETO, FELIPE G. 1991. PERFORMANCE REPORT, WILDLIFE RESEARCH AND SURVEYS, FEDERAL AID PROJECT NO. W-125-R-2 AND ESEC6-2, JOB NO. 12: ENDANGERED FELINE POPULATION AND HABITAT ENHANCEMENT. TPWD. NOVEMBER 8, 1991.

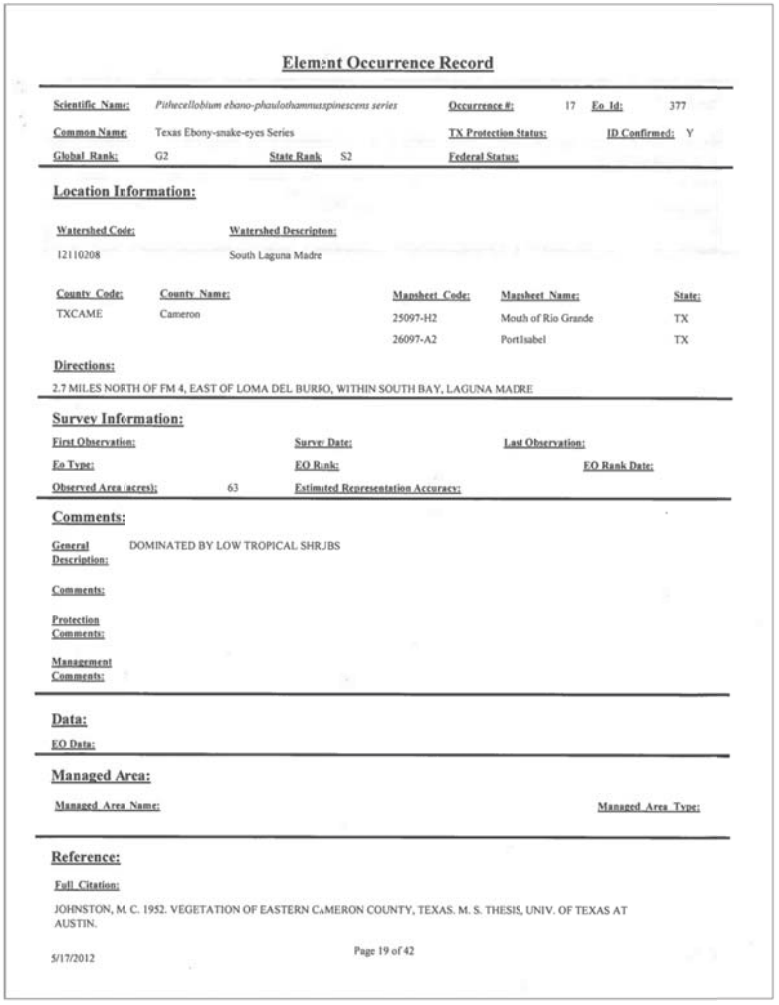
BENN, STEPHEN J. 1993. PERFORMANCE REPORT, WILDLIFE RESEARCH AND SURVEYS, FEDERAL AID PROJECT NO. W-125-R-3, JOB NO. 12: ENDANGERED FELINE POPULATION AND HABITAT ENHANCEMENT. TPWD. SEPTEMBER 22, 1993.

Specimen:

Associated Species:

Species Name	Type	Comments

5/17/2012 Page 18 of 42



Element Occurrence Record

Scientific Name: *Pithecellobium ebano-phaulothamnusspinescens series* **Occurrence #:** 17 **Eo Id:** 377

Common Name: Texas Ebony-snake-eyes Series **TX Protection Status:** **ID Confirmed:** Y

Global Rank: G2 **State Rank** S2 **Federal Status:**

Location Information:

Watershed Code:	Watershed Description:
12110208	South Laguna Madre

County Code:	County Name:	Mapsheet Code:	Mapsheet Name:	State:
TXCAME	Cameron	25097-H2	Mouth of Rio Grande	TX
		26097-A2	Portlsabel	TX

Directions:

2.7 MILES NORTH OF FM 4, EAST OF LOMA DEL BURRO, WITHIN SOUTH BAY, LAGUNA MADRE

Survey Information:

First Observation: **Survey Date:** **Last Observation:**

Eo Type: **EO Rank:** **EO Rank Date:**

Observed Area (acres): 63 **Estimated Representation Accuracy:**

Comments:

General Description: DOMINATED BY LOW TROPICAL SHRUBS

Comments:

Protection Comments:

Management Comments:

Data:

EO Data:

Managed Area:

Managed Area Name: **Managed Area Type:**

Reference:

Full Citation:

JOHNSTON, M. C. 1952. VEGETATION OF EASTERN CAMERON COUNTY, TEXAS. M. S. THESIS, UNIV. OF TEXAS AT AUSTIN.

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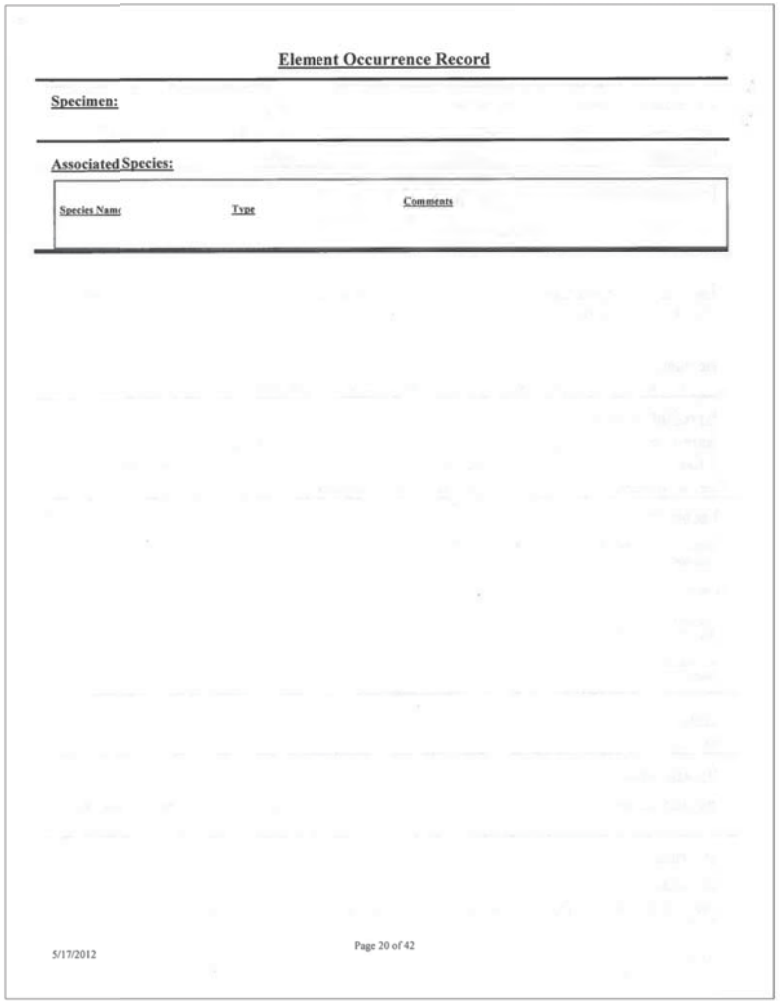

Element Occurrence Record

Specimen:

Associated Species:

Species Name	Type	Comments

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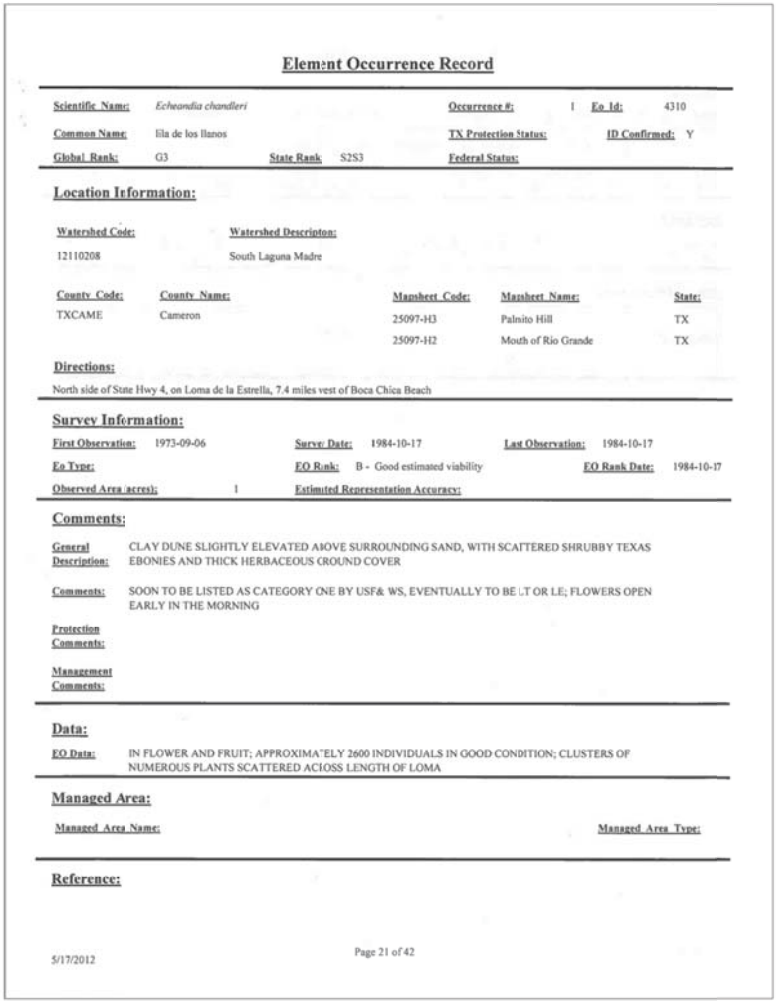

Element Occurrence Record

Scientific Name: *Echeandia chandleri* **Occurrence #:** 1 **Eo Id:** 4310

Common Name: lila de los llanos **TX Protection Status:** **ID Confirmed:** Y

Global Rank: G3 **State Rank** S2S3 **Federal Status:**

Location Information:

Watershed Code:	Watershed Description:
12110208	South Laguna Madre

County Code:	County Name:	Mapsheet Code:	Mapsheet Name:	State:
TXCAME	Cameron	25097-H3	Palnito Hill	TX
		25097-H2	Mouth of Rio Grande	TX

Directions:

North side of State Hwy 4, on Loma de la Estrella, 7.4 miles west of Boca Chica Beach

Survey Information:

First Observation: 1973-09-06 **Survey Date:** 1984-10-17 **Last Observation:** 1984-10-17

Eo Type: **EO Rank:** B - Good estimated viability **EO Rank Date:** 1984-10-17

Observed Area (acres): 1 **Estimated Representation Accuracy:**

Comments:

General Description: CLAY DUNE SLIGHTLY ELEVATED ABOVE SURROUNDING SAND, WITH SCATTERED SHRUBBY TEXAS EBONIES AND THICK HERBACEOUS GROUND COVER

Comments: SOON TO BE LISTED AS CATEGORY ONE BY USF& WS, EVENTUALLY TO BE LT OR LE; FLOWERS OPEN EARLY IN THE MORNING

Protection Comments:

Management Comments:

Data:

EO Data: IN FLOWER AND FRUIT; APPROXIMATELY 2600 INDIVIDUALS IN GOOD CONDITION; CLUSTERS OF NUMEROUS PLANTS SCATTERED ACROSS LENGTH OF LOMA

Managed Area:

Managed Area Name: **Managed Area Type:**

Reference:

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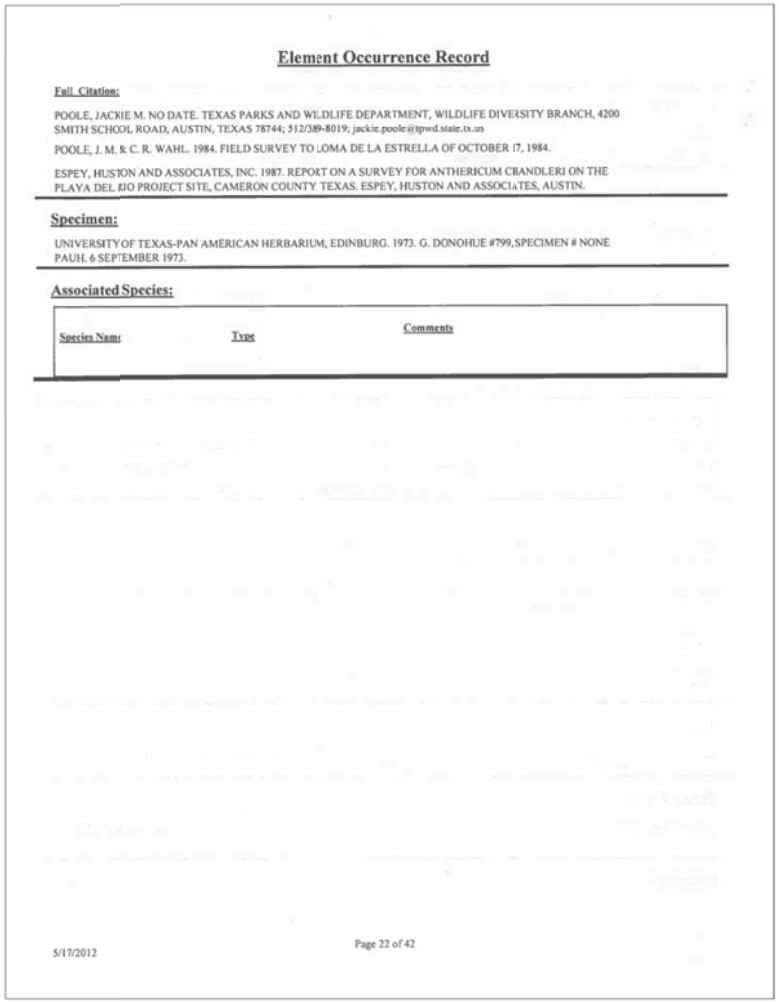

Element Occurrence Record

Full Citation:

POOLE, JACKIE M. NO DATE. TEXAS PARKS AND WILDLIFE DEPARTMENT, WILDLIFE DIVERSITY BRANCH, 4200 SMITH SCHOOL ROAD, AUSTIN, TEXAS 78744; 512/389-8019; jackie.poole@tpwd.state.tx.us

POOLE, J. M. & C. R. WAHL. 1984. FIELD SURVEY TO LOMA DE LA ESTRELLA OF OCTOBER 17, 1984.

ESPEY, HUSTON AND ASSOCIATES, INC. 1987. REPORT ON A SURVEY FOR ANTHERICUM CHANDLERI ON THE PLAYA DEL RIO PROJECT SITE, CAMERON COUNTY TEXAS. ESPEY, HUSTON AND ASSOCIATES, AUSTIN.

Specimen:

UNIVERSITY OF TEXAS-PAN AMERICAN HERBARIUM, EDINBURG. 1973. G. DONOHUE #799, SPECIMEN # NONE PAUH. 6 SEPTEMBER 1973.

Associated Species:

Species Nam	Type	Comments

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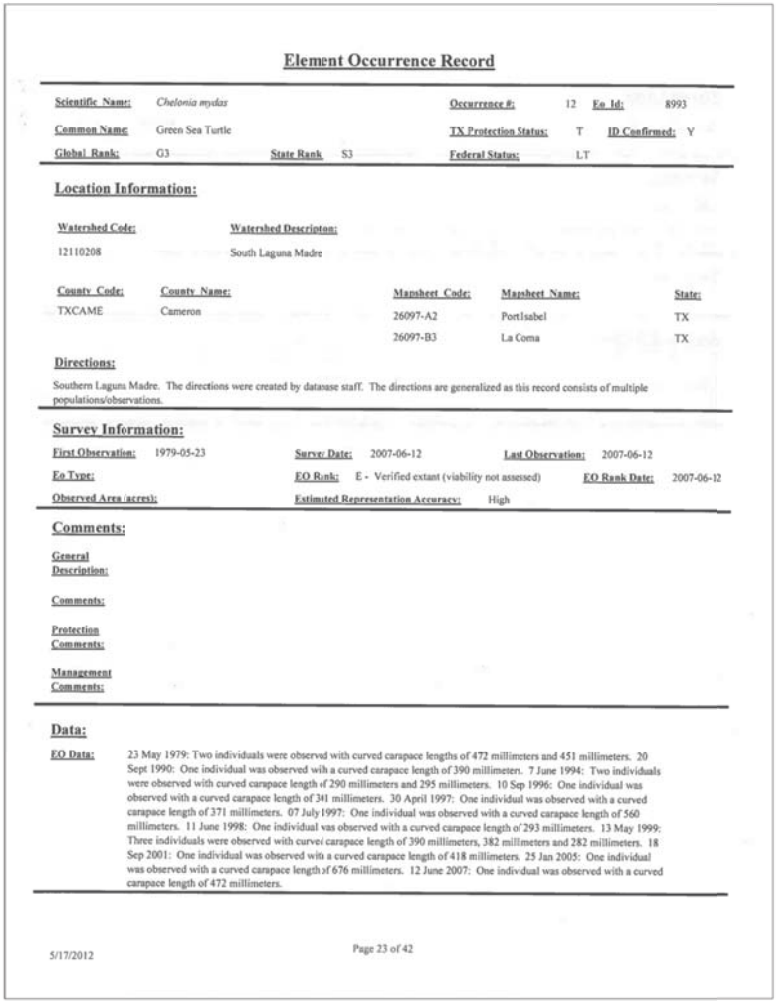

Element Occurrence Record

Scientific Name: *Chelonia mydas* **Occurrence #:** 12 **Eo Id:** 8993

Common Name: Green Sea Turtle **TX Protection Status:** T **ID Confirmed:** Y

Global Rank: G3 **State Rank** S3 **Federal Status:** LT

Location Information:

Watershed Code:	Watershed Descripton:
12110208	South Laguna Madre

County Code:	County Name:	Mapsheet Code:	Mapsheet Name:	State:
TXCAME	Cameron	26097-A2	Portlsabel	TX
		26097-B3	La Coma	TX

Directions:

Southern Laguna Madre. The directions were created by datasae staff. The directions are generalized as this record consists of multiple populations/observations.

Survey Information:

First Observation: 1979-05-23 **Survey Date:** 2007-06-12 **Last Observation:** 2007-06-12

Eo Type: **EO Rank:** E - Verified extant (viability not assessed) **EO Rank Date:** 2007-06-12

Observed Area (acres): **Estimated Representation Accuracy:** High

Comments:

General Description:

Comments:

Protection Comments:

Management Comments:

Data:

EO Data: 23 May 1979: Two individuals were observed with curved carapace lengths of 472 millimeters and 451 millimeters. 20 Sept 1990: One individual was observed with a curved carapace length of 390 millimeter. 7 June 1994: Two individuals were observed with curved carapace length of 290 millimeters and 295 millimeters. 10 Sep 1996: One individual was observed with a curved carapace length of 341 millimeters. 30 April 1997: One individual was observed with a curved carapace length of 371 millimeters. 07 July 1997: One individual was observed with a curved carapace length of 560 millimeters. 11 June 1998: One individual was observed with a curved carapace length of 293 millimeters. 13 May 1999: Three individuals were observed with curved carapace length of 390 millimeters, 382 millmeters and 282 millimeters. 18 Sep 2001: One individual was observed with a curved carapace length of 418 millimeters. 25 Jan 2005: One individual was observed with a curved carapace length of 676 millimeters. 12 June 2007: One indivdual was observed with a curved carapace length of 472 millimeters.

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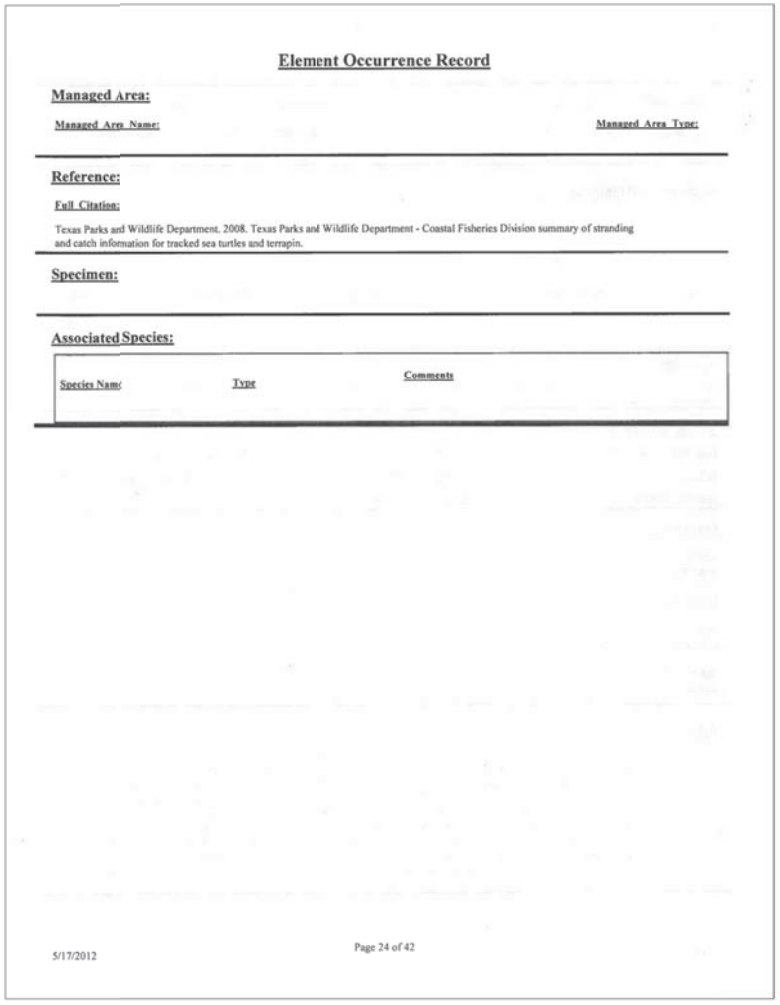


Element Occurrence Record

Managed Area:

Managed Area Name: | Managed Area Type:

Reference:

Full Citation:

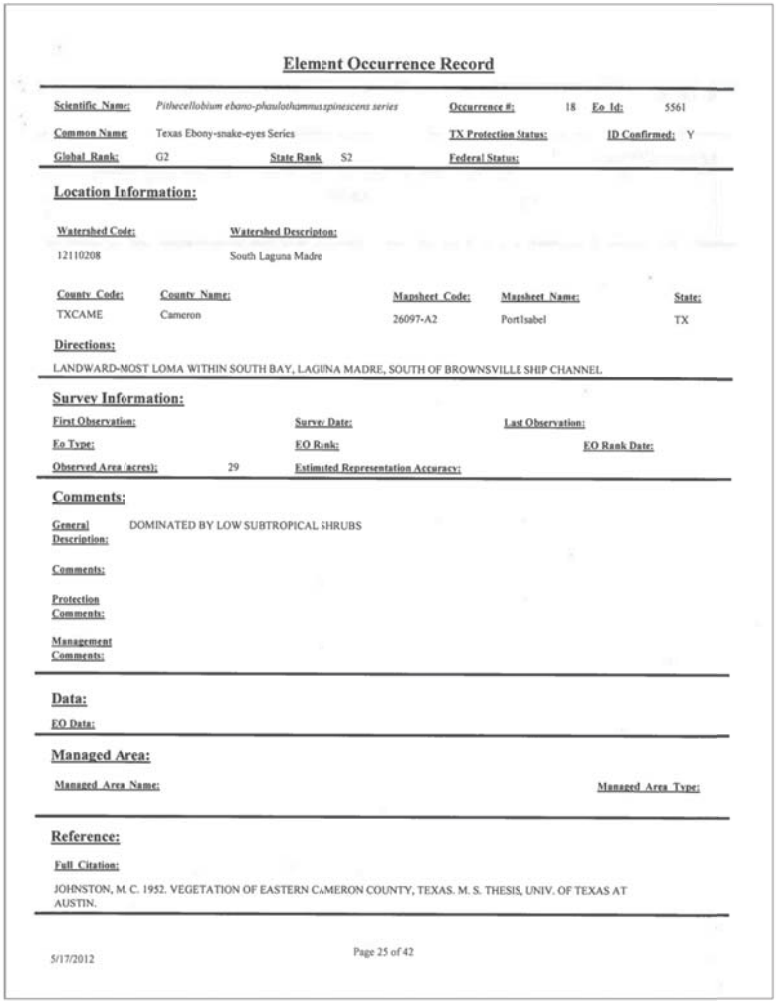
Texas Parks and Wildlife Department. 2008. Texas Parks and Wildlife Department - Coastal Fisheries Division summary of stranding and catch information for tracked sea turtles and terrapin.

Specimen:

Associated Species:

Species Name	Type	Comments

5/17/2012 Page 24 of 42



Element Occurrence Record

Scientific Name: *Pithecellobium ebano-phaulothamnus spinescens series* | Occurrence #: 18 | Eo Id: 5561

Common Name: Texas Ebony-snake-eyes Series | TX Protection Status: | ID Confirmed: Y

Global Rank: G2 | State Rank S2 | Federal Status:

Location Information:

Watershed Code:	Watershed Description:
12110208	South Laguna Madre

County Code:	County Name:	Mapsheet Code:	Mapsheet Name:	State:
TXCAME	Cameron	26097-A2	Portlsabel	TX

Directions:

LANDWARD-MOST LOMA WITHIN SOUTH BAY, LAGUNA MADRE, SOUTH OF BROWNSVILLE SHIP CHANNEL.

Survey Information:

First Observation: | Survey Date: | Last Observation:

Eo Type: | EO Rank: | EO Rank Date:

Observed Area (acres): 29 | Estimated Representation Accuracy:

Comments:

General Description: DOMINATED BY LOW SUBTROPICAL SHRUBS

Comments:

Protection Comments:

Management Comments:

Data:

EO Data:

Managed Area:

Managed Area Name: | Managed Area Type:

Reference:

Full Citation:

JOHNSTON, M C. 1952. VEGETATION OF EASTERN CAMERON COUNTY, TEXAS. M. S. THESIS, UNIV. OF TEXAS AT AUSTIN.

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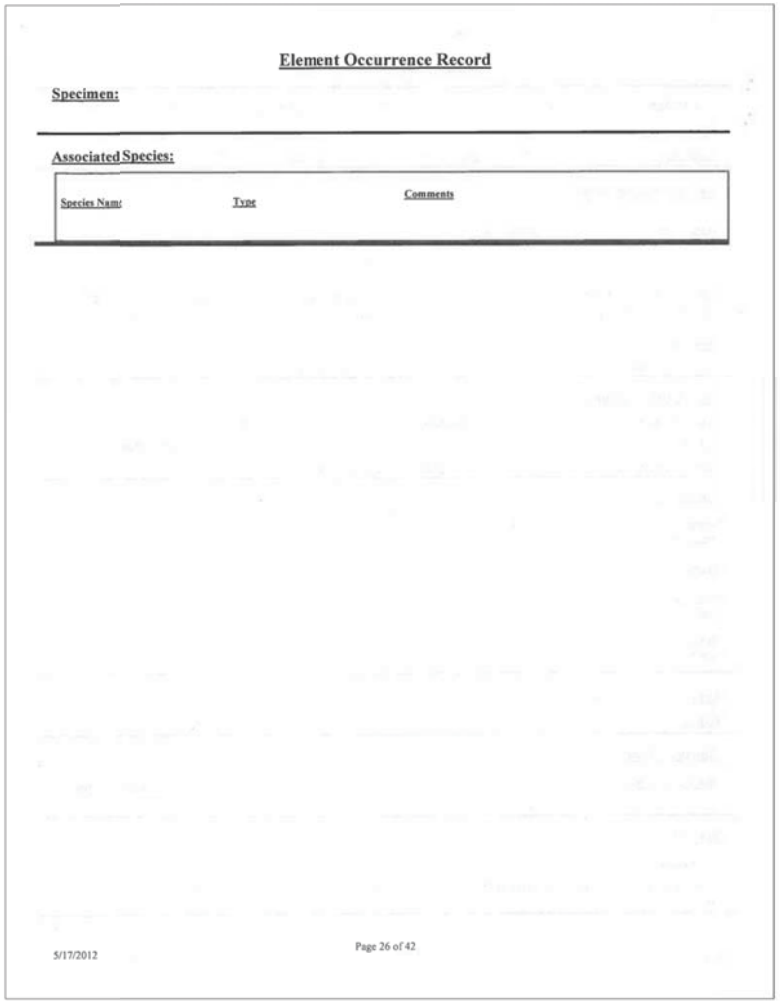

Element Occurrence Record

Specimen:

Associated Species:

Species Nam:	Type	Comments

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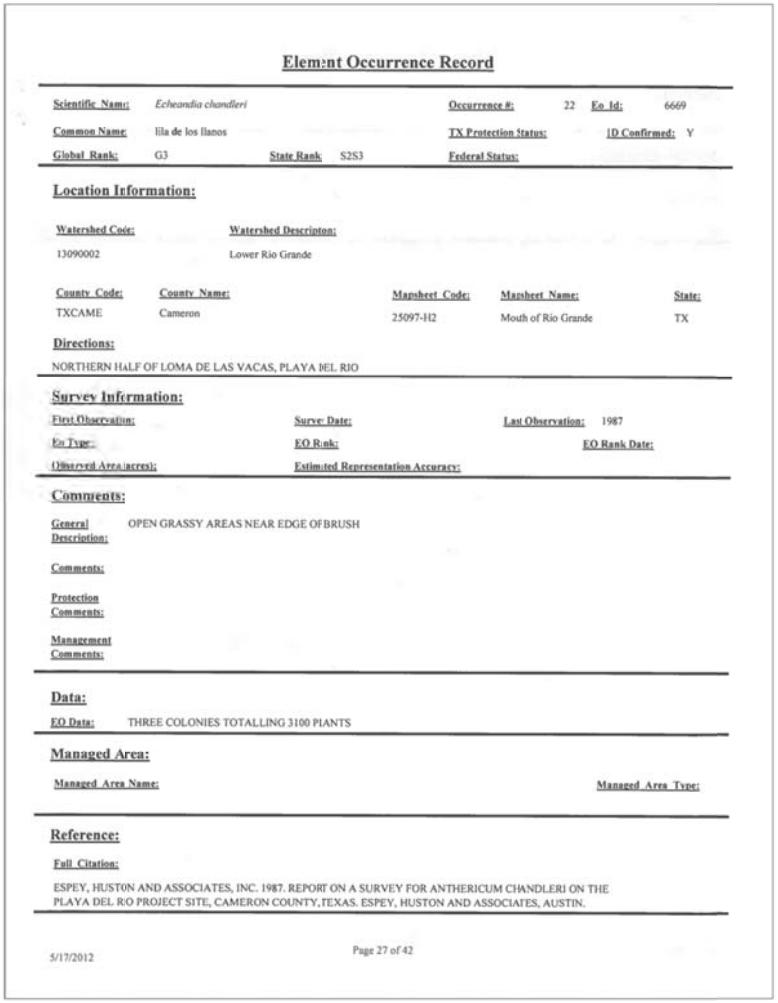

Element Occurrence Record

Scientific Nam: *Echeandia chandleri* Occurrence #: 22 Eo Id: 6669
Common Name: lila de los llanos TX Protection Status: ID Confirmed: Y
Global Rank: G3 State Rank: S2S3 Federal Status:

Location Information:

Watershed Code:	Watershed Descripton:
13090002	Lower Rio Grande

County Code:	County Name:	Mapsheet Code:	Mapsheet Name:	State:
TXCAME	Cameron	25097-H2	Mouth of Rio Grande	TX

Directions:
NORTHERN HALF OF LOMA DE LAS VACAS, PLAYA DEL RIO

Survey Information:
First Observation: Surve Date: Last Observation: 1987
Eo Type: EO Rnk: EO Rank Date:
Observed Area (acres): Estimated Representation Accuracy:

Comments:
General Description: OPEN GRASSY AREAS NEAR EDGE OF BRUSH
Comments:
Protection Comments:
Management Comments:

Data:
EO Data: THREE COLONIES TOTALLING 3100 PLANTS

Managed Area:
Managed Area Name: Managed Area Type:

Reference:
Full Citation:
ESPEY, HUSTON AND ASSOCIATES, INC. 1987. REPORT ON A SURVEY FOR ANTHERICUM CHANDLERI ON THE PLAYA DEL RIO PROJECT SITE, CAMERON COUNTY, TEXAS. ESPEY, HUSTON AND ASSOCIATES, AUSTIN.

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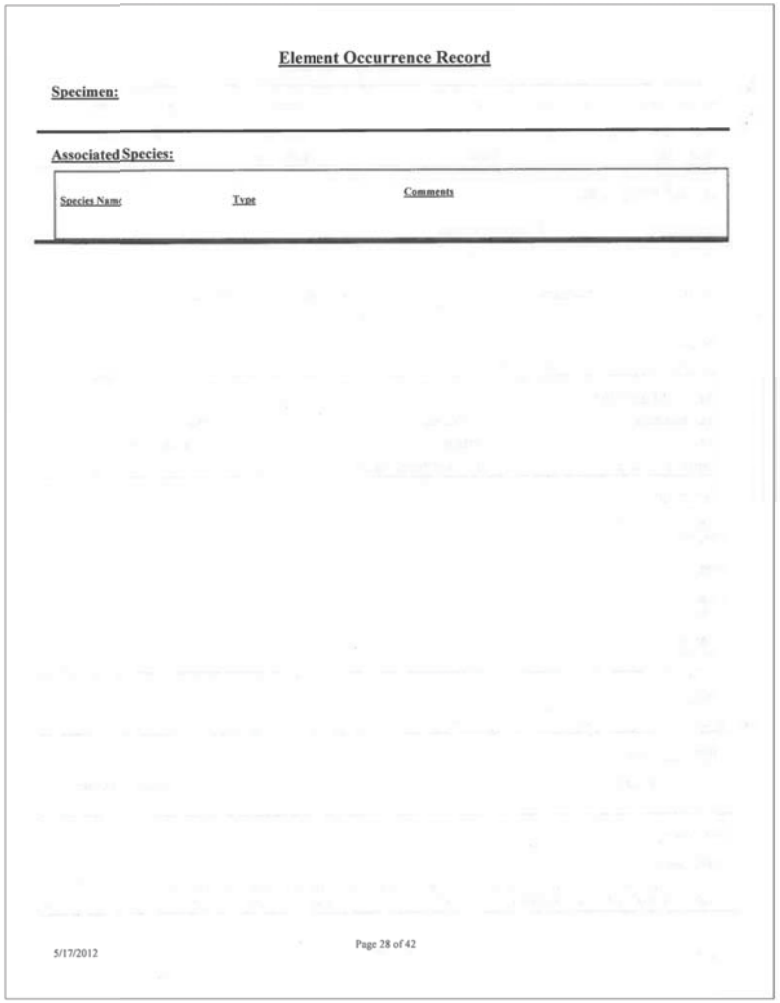

Element Occurrence Record

Specimen:

Associated Species:

Species Name	Type	Comments

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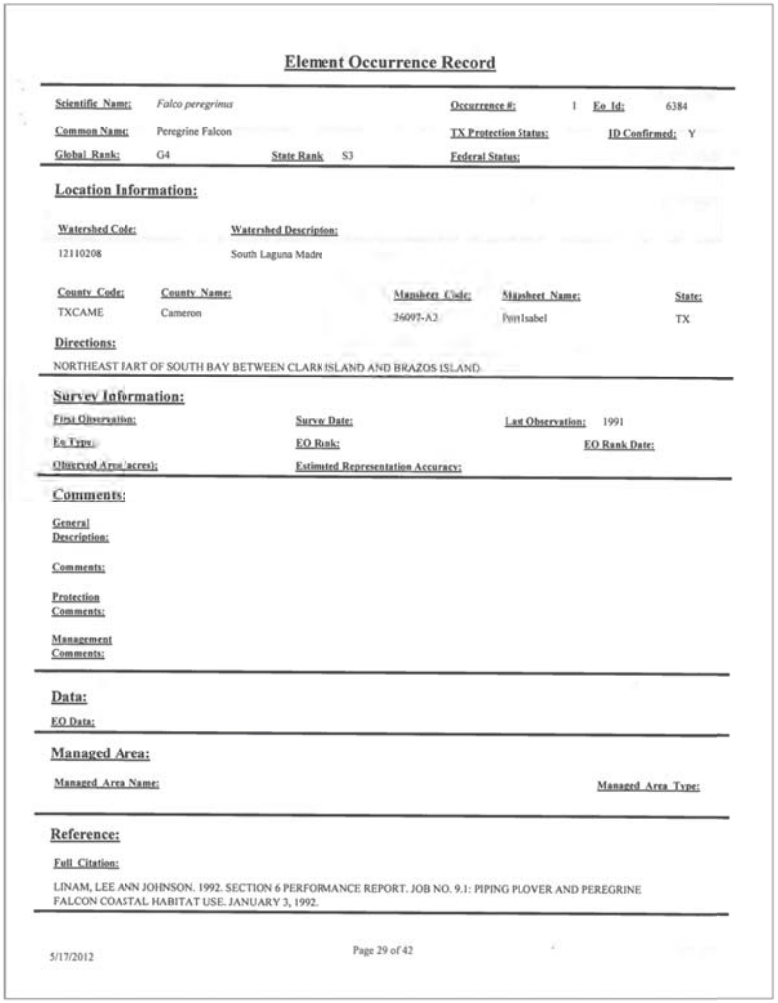

Element Occurrence Record

Scientific Name: *Falco peregrinus* **Occurrence #:** 1 **Eo Id:** 6384
Common Name: Peregrine Falcon **TX Protection Status:** **ID Confirmed:** Y
Global Rank: G4 **State Rank** S3 **Federal Status:**

Location Information:

Watershed Code: 12110208 **Watershed Description:** South Laguna Madre

County Code: TXCAME **County Name:** Cameron **Mapsheet Code:** 26097-A2 **Mapsheet Name:** Pointisabel **State:** TX

Directions:
NORTHEAST FART OF SOUTH BAY BETWEEN CLARK ISLAND AND BRAZOS ISLAND.

Survey Information:
First Observation: **Survey Date:** **Last Observation:** 1991
Eo Type: **EO Rank:** **EO Rank Date:**
Observed Area (acres): **Estimated Representation Accuracy:**

Comments:
General Description:
Comments:
Protection Comments:
Management Comments:

Data:
EO Data:

Managed Area:
Managed Area Name: **Managed Area Type:**

Reference:
Full Citation:
LINAM, LEE ANN JOHNSON. 1992. SECTION 6 PERFORMANCE REPORT. JOB NO. 9.1: PIPING PLOVER AND PEREGRINE FALCON COASTAL HABITAT USE. JANUARY 3, 1992.

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Element Occurrence Record

Specimen:

Associated Species:

Species Nam:	Type	Comments

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Element Occurrence Record

Scientific Name: *Pithecellobium ebano-phaulothamnus spinescens series* **Occurrence #:** 15 **Eo Id:** 7026

Common Name: Texas Ebony-snake-eyes Series **TX Protection Status:** **ID Confirmed:** Y

Global Rank: G2 **State Rank** S2 **Federal Status:**

Location Information:

Watershed Code: 12110208 **Watershed Descripton:** South Laguna Madre

County Code:	County Name:	Mapsheet Code:	Mapsheet Name:	State:
TXCAME	Cameron	25097-H2	Mouth of Rio Grande	TX

Directions:

SECOND LOMA WITHIN SOUTH BAY, LAGUNA MADRE, NORTH OF FM 4, 1.4 MILES NORTH OF FM 4

Survey Information:

First Observation: **Survey Date:** **Last Observation:**

Eo Type: **EO Rank:** **EO Rank Date:**

Observed Area (acres): 68 **Estimated Representation Accuracy:**

Comments:

General Description: DOMINATED BY LOW SUBTROPICAL SHRUBS

Comments:

Protection Comments:

Management Comments:

Data:

EO Data:

Managed Area:

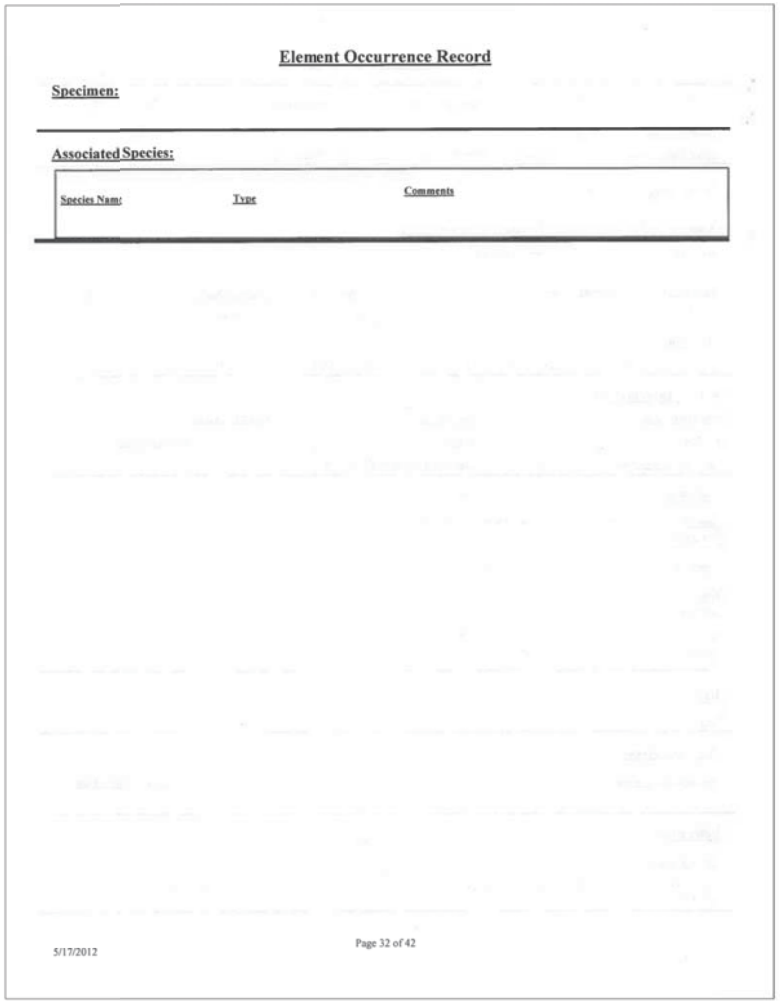
Managed Area Name: **Managed Area Type:**

Reference:

Full Citation:

JOHNSTON, M. C. 1952. VEGETATION OF EASTERN CAMERON COUNTY, TEXAS. M. S. THESIS, UNIV. OF TEXAS AT AUSTIN.

5/17/2012 Page 31 of 42



Element Occurrence Record

Specimen:

Associated Species:

Species Nam:	Type	Comments

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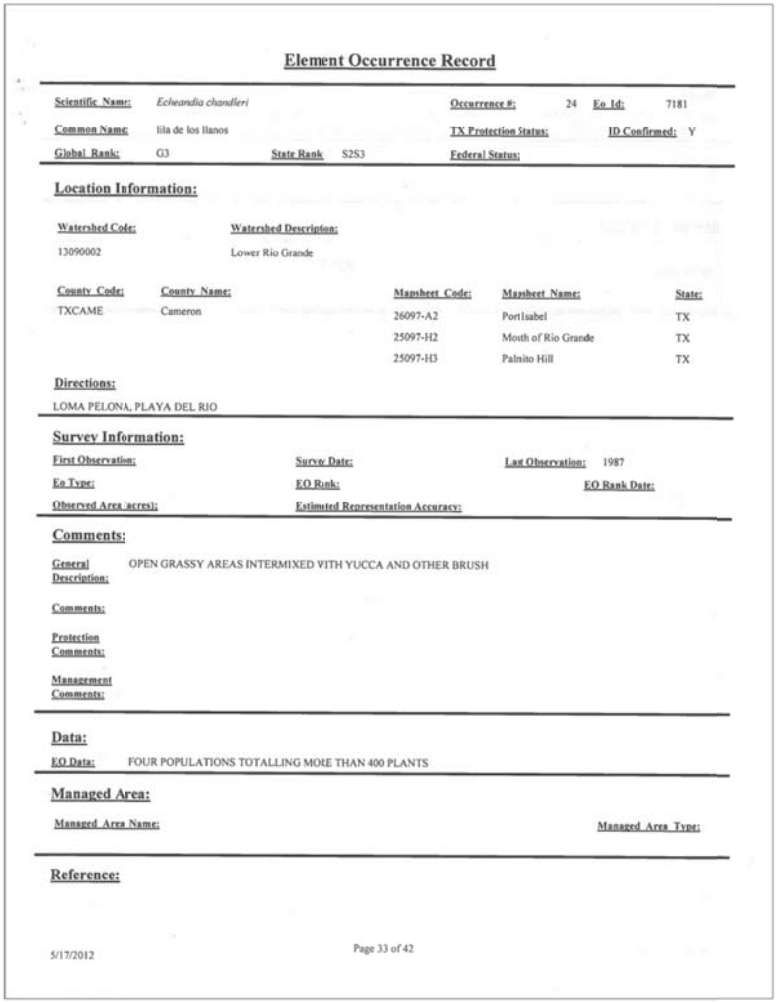

Element Occurrence Record

Scientific Name: *Echeandia chandleri* **Occurrence #:** 24 **Eo Id:** 7181

Common Name: lila de los llanos **TX Protection Status:** **ID Confirmed:** Y

Global Rank: G3 **State Rank** S2S3 **Federal Status:**

Location Information:

Watershed Code: 13090002 **Watershed Description:** Lower Rio Grande

County Code:	County Name:	Mapsheet Code:	Mapsheet Name:	State:
TXCAME	Cameron	26097-A2	Portlsabel	TX
		25097-H2	Moth of Rio Grande	TX
		25097-H3	Palnito Hill	TX

Directions:

LOMA PELONA, PLAYA DEL RIO

Survey Information:

First Observation: **Survey Date:** **Last Observation:** 1987

Eo Type: **EO Rank:** **EO Rank Date:**

Observed Area (acres): **Estimated Representation Accuracy:**

Comments:

General Description: OPEN GRASSY AREAS INTERMIXED WITH YUCCA AND OTHER BRUSH

Comments:

Protection Comments:

Management Comments:

Data:

EO Data: FOUR POPULATIONS TOTALLING MOE THAN 400 PLANTS

Managed Area:

Managed Area Name: **Managed Area Type:**

Reference:

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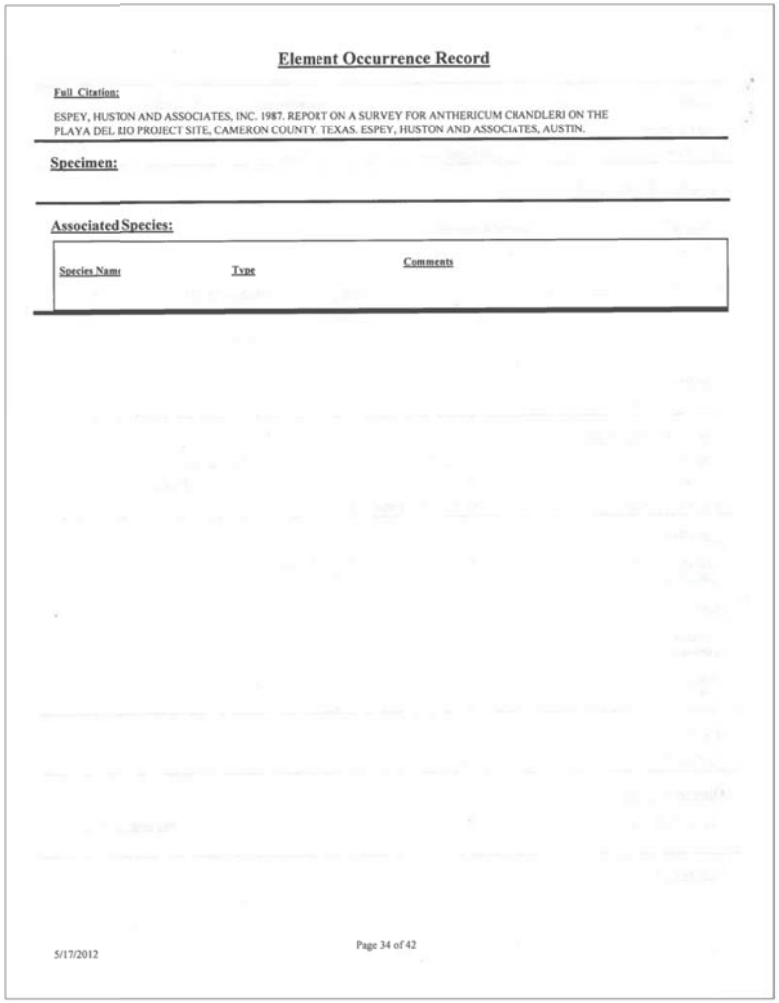

Element Occurrence Record

Full Citation:

ESPEY, HUSTON AND ASSOCIATES, INC. 1987. REPORT ON A SURVEY FOR ANTHERICUM CHANDLERI ON THE PLAYA DEL RIO PROJECT SITE, CAMERON COUNTY, TEXAS. ESPEY, HUSTON AND ASSOCIATES, AUSTIN.

Specimen:

Associated Species:

Species Name	Type	Comments

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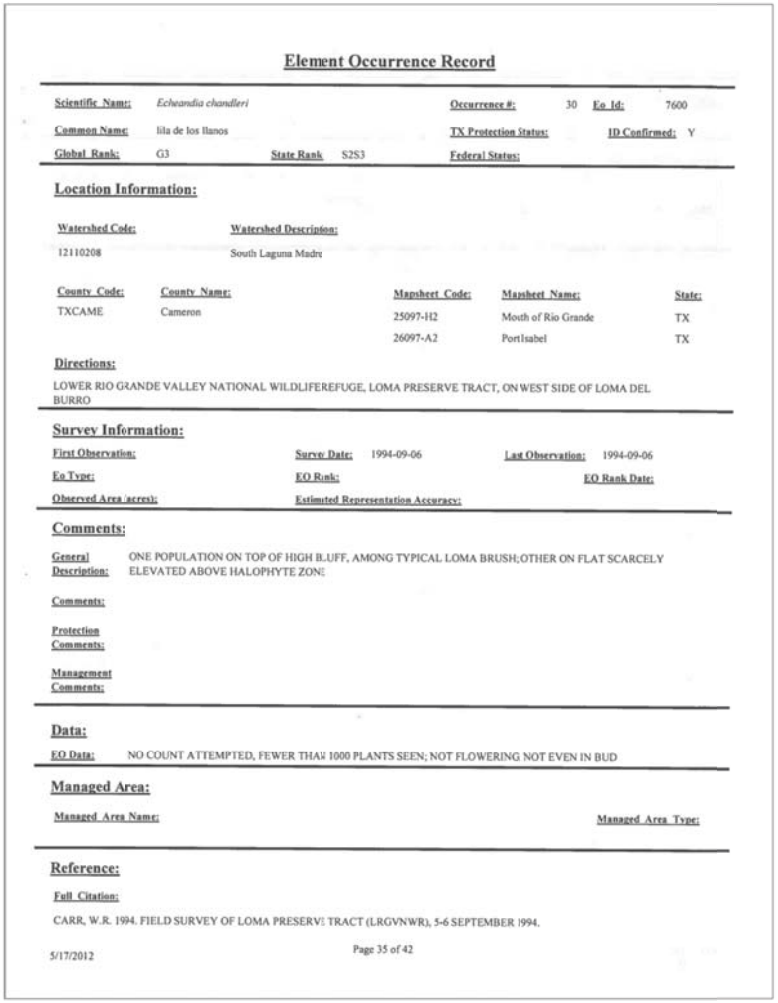

Element Occurrence Record

Scientific Name: *Echeandia chandleri* **Occurrence #:** 30 **Eo Id:** 7600

Common Name: lila de los llanos **TX Protection Status:** **ID Confirmed:** Y

Global Rank: G3 **State Rank** S2S3 **Federal Status:**

Location Information:

Watershed Code:	Watershed Description:
12110208	South Laguna Madre

County Code:	County Name:	Mapsheet Code:	Mapsheet Name:	State:
TXCAME	Cameron	25097-H2	Moth of Rio Grande	TX
		26097-A2	Portlsabel	TX

Directions:

LOWER RIO GRANDE VALLEY NATIONAL WILDLIFEREFUGE, LOMA PRESERVE TRACT, ON WEST SIDE OF LOMA DEL BURRO

Survey Information:

First Observation: **Survey Date:** 1994-09-06 **Last Observation:** 1994-09-06

Eo Type: **EO Rank:** **EO Rank Date:**

Observed Area (acres): **Estimated Representation Accuracy:**

Comments:

General Description: ONE POPULATION ON TOP OF HIGH BLUFF, AMONG TYPICAL LOMA BRUSH;OTHER ON FLAT SCARCELY ELEVATED ABOVE HALOPHYTE ZONE

Comments:

Protection Comments:

Management Comments:

Data:

EO Data: NO COUNT ATTEMPTED, FEWER THAN 1000 PLANTS SEEN; NOT FLOWERING NOT EVEN IN BUD

Managed Area:

Managed Area Name: **Managed Area Type:**

Reference:

Full Citation:

CARR, W.R. 1994. FIELD SURVEY OF LOMA PRESERVE TRACT (LRGVNWR), 5-6 SEPTEMBER 1994.

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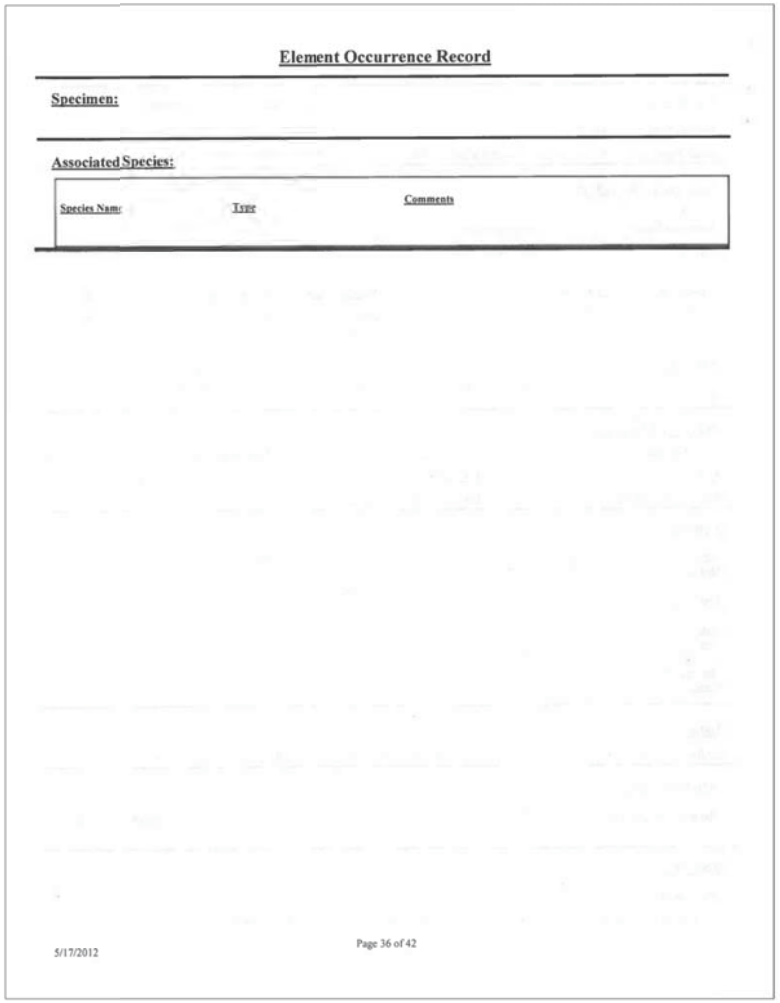

Element Occurrence Record

Specimen:

Associated Species:

Species Nam:	Type	Comments

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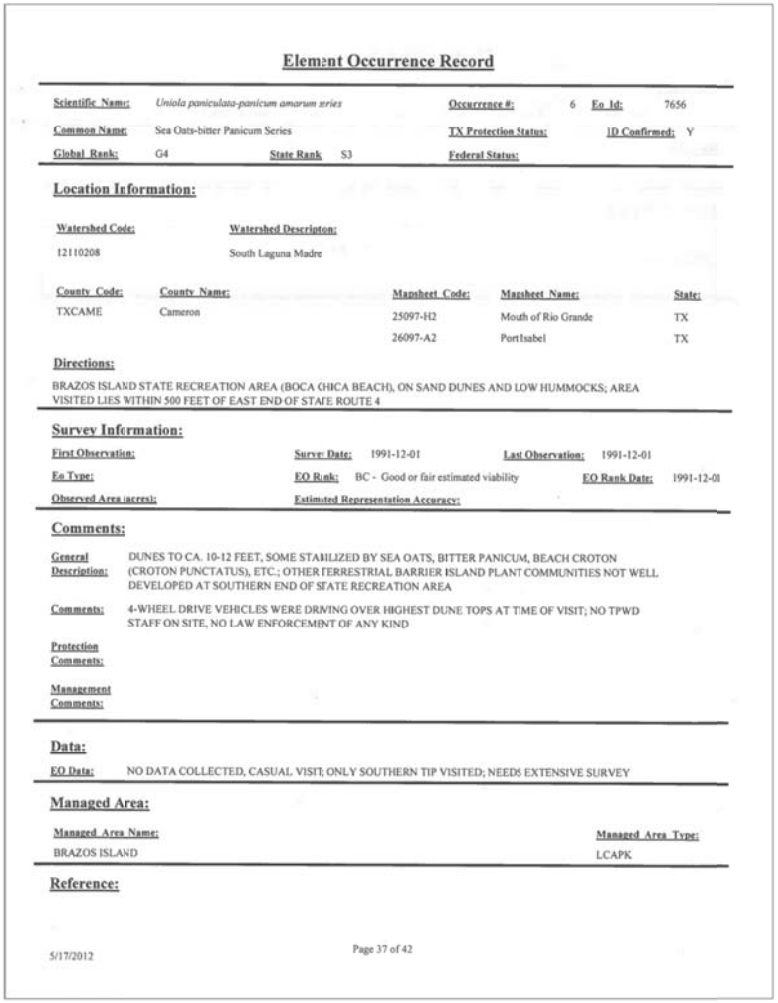

Element Occurrence Record

Scientific Name: *Uniola paniculata-panicum amarum series* **Occurrence #:** 6 **Eo Id:** 7656

Common Name: Sea Oats-bitter Panicum Series **TX Protection Status:** **ID Confirmed:** Y

Global Rank: G4 **State Rank** S3 **Federal Status:**

Location Information:

Watershed Code: 12110208 **Watershed Descripton:** South Laguna Madre

County Code:	County Name:	Mapsheet Code:	Mapsheet Name:	State:
TXCAME	Cameron	25097-H2	Mouth of Rio Grande	TX
		26097-A2	Portlsabel	TX

Directions:

BRAZOS ISLAND STATE RECREATION AREA (BOCA CHICA BEACH), ON SAND DUNES AND LOW HUMMOCKS; AREA VISITED LIES WITHIN 500 FEET OF EAST END OF STATE ROUTE 4

Survey Information:

First Observation: **Survey Date:** 1991-12-01 **Last Observation:** 1991-12-01

Eo Type: **EO Rank:** BC - Good or fair estimated viability **EO Rank Date:** 1991-12-01

Observed Area (acres): **Estimated Representation Accuracy:**

Comments:

General Description: DUNES TO CA. 10-12 FEET, SOME STABILIZED BY SEA OATS, BITTER PANICUM, BEACH CROTON (CROTON PUNCTATUS), ETC.; OTHER TERRESTRIAL BARRIER ISLAND PLANT COMMUNITIES NOT WELL DEVELOPED AT SOUTHERN END OF STATE RECREATION AREA

Comments: 4-WHEEL DRIVE VEHICLES WERE DRIVING OVER HIGHEST DUNE TOPS AT TIME OF VISIT; NO TPWD STAFF ON SITE, NO LAW ENFORCEMENT OF ANY KIND

Protection Comments:

Management Comments:

Data:

EO Data: NO DATA COLLECTED, CASUAL VISIT; ONLY SOUTHERN TIP VISITED; NEEDS EXTENSIVE SURVEY

Managed Area:

Managed Area Name:	Managed Area Type:
BRAZOS ISLAND	LCAPK

Reference:

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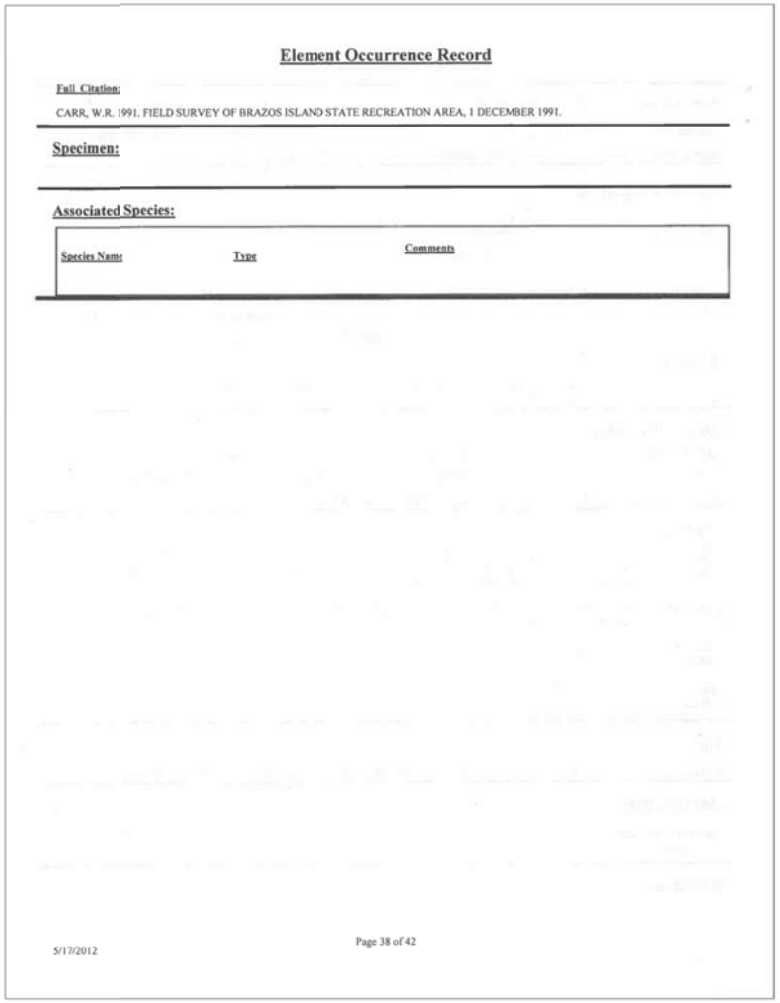

Element Occurrence Record

Full Citation:

CARR, W.R. 1991. FIELD SURVEY OF BRAZOS ISLAND STATE RECREATION AREA, 1 DECEMBER 1991.

Specimen:

Associated Species:

Species Nam:	Type	Comments

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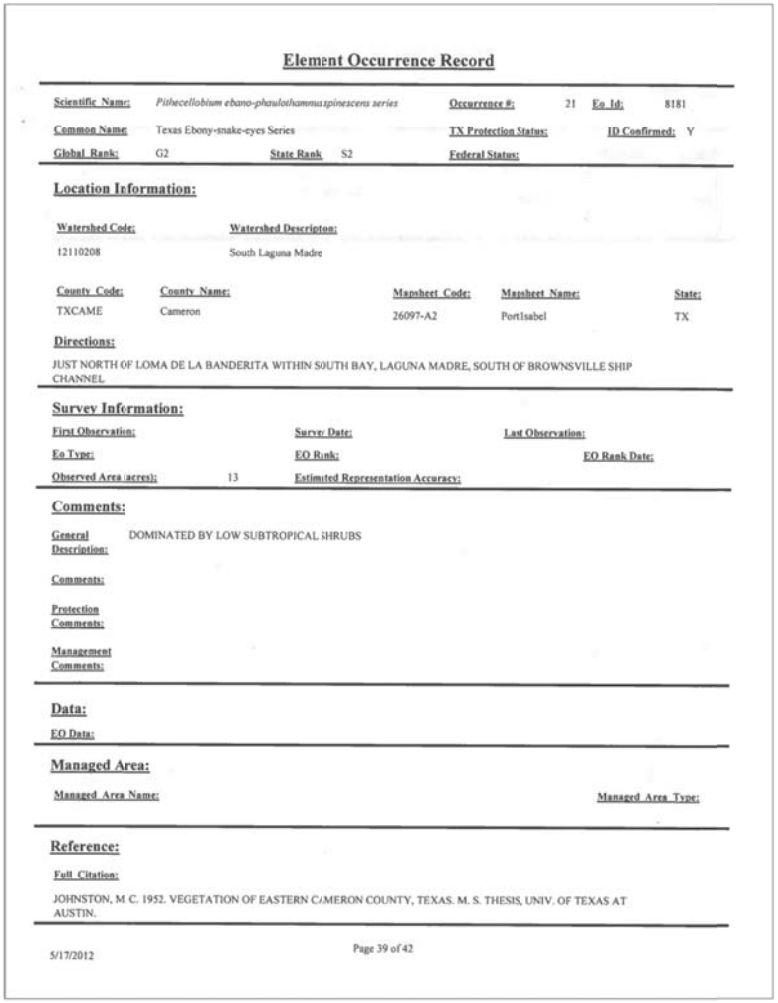

Element Occurrence Record

Scientific Name: *Pithecellobium ebano-phaulothamnus spinescens series* **Occurrence #:** 21 **Eo Id:** 8181

Common Name: Texas Ebony-snake-eyes Series **TX Protection Status:** **ID Confirmed:** Y

Global Rank: G2 **State Rank** S2 **Federal Status:**

Location Information:

Watershed Code: 12110208 **Watershed Descripton:** South Laguna Madre

County Code:	County Name:	Mapsheet Code:	Mapsheet Name:	State:
TXCAME	Cameron	26097-A2	Portlsabel	TX

Directions:

JUST NORTH OF LOMA DE LA BANDERITA WITHIN SOUTH BAY, LAGUNA MADRE, SOUTH OF BROWNSVILLE SHIP CHANNEL

Survey Information:

First Observation: **Survey Date:** **Last Observation:**

Eo Type: **EO Rank:** **EO Rank Date:**

Observed Area (acres): 13 **Estimated Representation Accuracy:**

Comments:

General Description: DOMINATED BY LOW SUBTROPICAL SHRUBS

Comments:

Protection Comments:

Management Comments:

Data:

EO Data:

Managed Area:

Managed Area Name: **Managed Area Type:**

Reference:

Full Citation:

JOHNSTON, M C. 1952. VEGETATION OF EASTERN CAMERON COUNTY, TEXAS. M. S. THESIS, UNIV. OF TEXAS AT AUSTIN.

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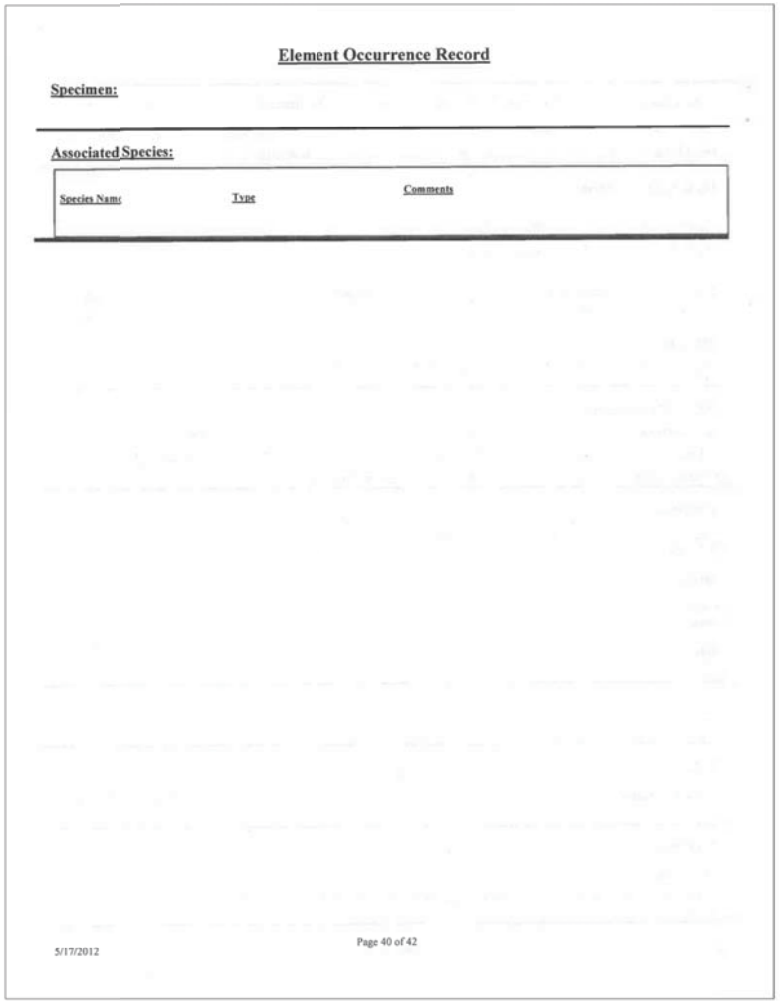

Element Occurrence Record

Specimen:

Associated Species:

Species Nam	Type	Comments

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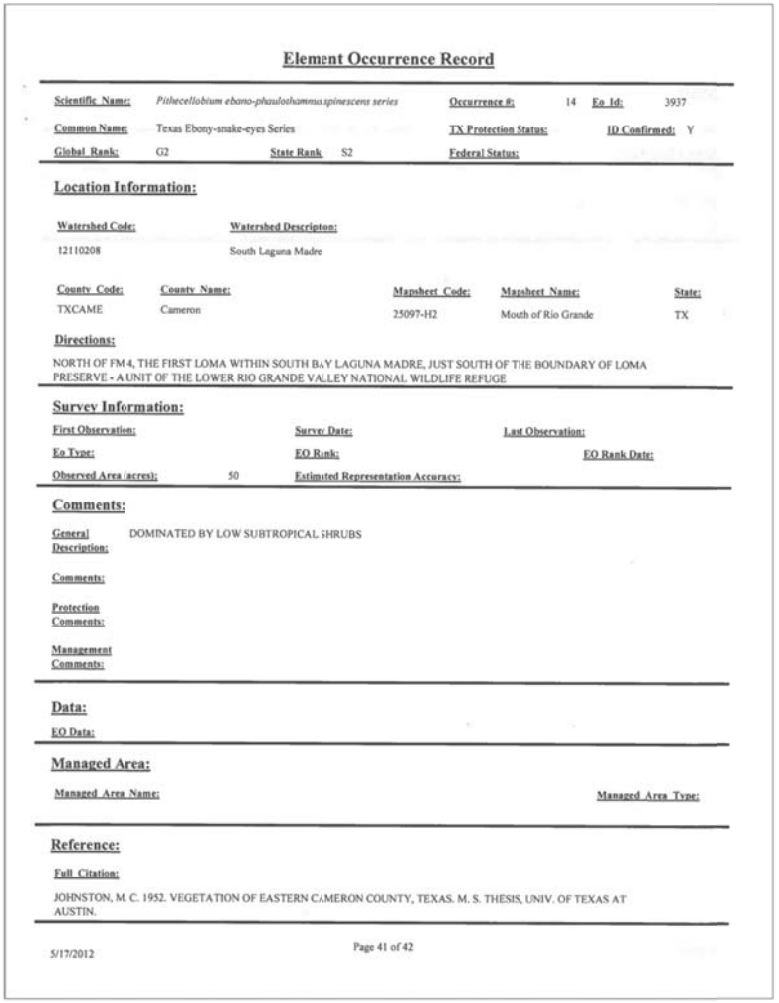

Element Occurrence Record

Scientific Name: *Pithecellobium ebano-phaulothamnus spinescens series* **Occurrence #:** 14 **Eo Id:** 3937

Common Name: Texas Ebony-snake-eyes Series **TX Protection Status:** **ID Confirmed:** Y

Global Rank: G2 **State Rank** S2 **Federal Status:**

Location Information:

Watershed Code: 12110208 **Watershed Descripton:** South Laguna Madre

County Code:	County Name:	Mapsheet Code:	Mapsheet Name:	State:
TXCAME	Cameron	25097-H2	Mouth of Rio Grande	TX

Directions:

NORTH OF FM 4, THE FIRST LOMA WITHIN SOUTH BAY LAGUNA MADRE, JUST SOUTH OF THE BOUNDARY OF LOMA PRESERVE - A UNIT OF THE LOWER RIO GRANDE VALLEY NATIONAL WILDLIFE REFUGE

Survey Information:

First Observation: **Survey Date:** **Last Observation:**

Eo Type: **EO Rank:** **EO Rank Date:**

Observed Area (acres): 50 **Estimated Representation Accuracy:**

Comments:

General Description: DOMINATED BY LOW SUBTROPICAL SHRUBS

Comments:

Protection Comments:

Management Comments:

Data:

EO Data:

Managed Area:

Managed Area Name: **Managed Area Type:**

Reference:

Full Citation:

JOHNSTON, M. C. 1952. VEGETATION OF EASTERN CAMERON COUNTY, TEXAS. M. S. THESIS, UNIV. OF TEXAS AT AUSTIN.

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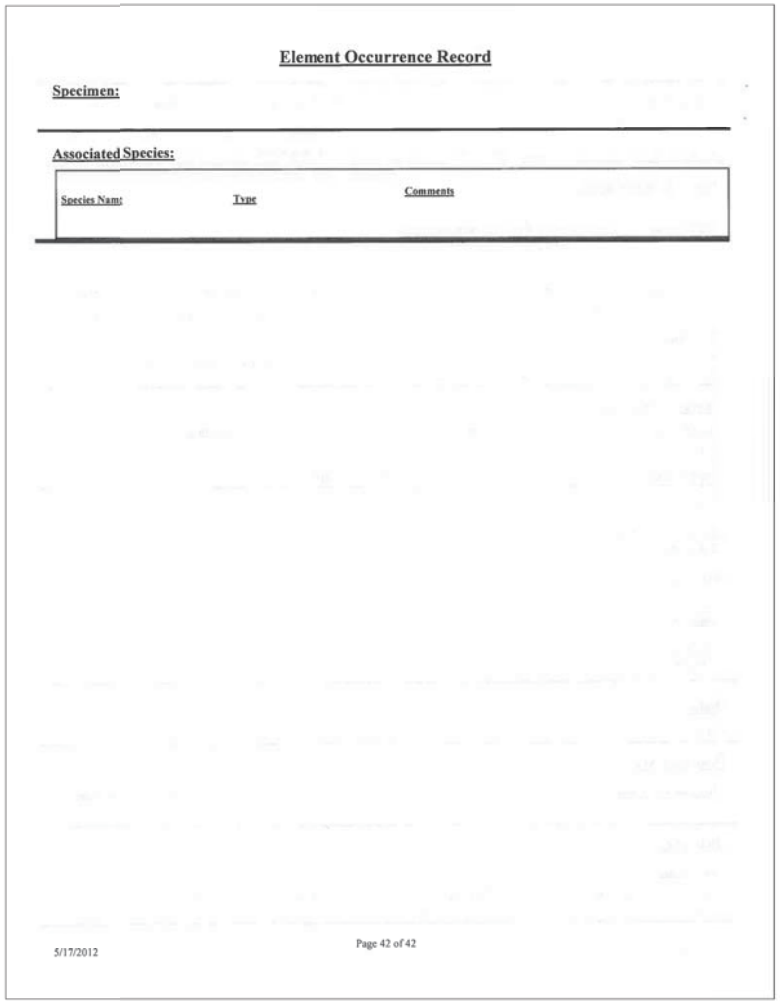

Element Occurrence Record

Specimen:

Associated Species:

Species Nam:	Type	Comments

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Protection of State-Listed Species
Texas Parks and Wildlife Department Guidelines

Protection of State-Listed Species

State law prohibits any take (incidental or otherwise) of state-listed species. State-listed species may only be handled by persons possessing a **Scientific Collecting Permit** or a **Letter of Authorization** issued to relocate a species.

- **Section 68.002 of the Texas Parks and Wildlife (TPW) Code** states that species of fish or wildlife indigenous to Texas are endangered if listed on the United States List of Endangered Native Fish and Wildlife or the list of fish or wildlife threatened with statewide extinction as filed by the director of Texas Park and Wildlife Department. Species listed as Endangerd or Threatened by the Endangered Species Act are protected by both Federal and State Law. The State of Texas also lists and protects additional species considered to be threatened with extinction within Texas.
- **Animals** - Laws and regulations pertaining to state-listed endangered or threatened animal species are contained in **Chapters 67 and 68 of the Texas Parks and Wildlife (TPW) Code** and **Sections 65.171 - 65.176 of Title 31 of the Texas Administrative Code (TAC).** State-listed animals may be found at **31 TAC §65.175 & 176.**
- **Plants** - Laws and regulations pertaining to endangered or threatened plant species are contained in **Chapter 88 of the TPW Code and Sections 69.0 - 69.9 of the TAC.** State-listed plants may be found at **31 TAC §69.8(a) & (b).**

Prohibitions on Take of State Listed Species

Section 68.015 of the TPW Code states that no person may capture, trap, take, or kill, or attempt to capture, trap, take, or kill, endangered fish or wildlife.

Section 65.171 of the Texas Administrative Code states that except as otherwise provided in this subchapter or **Parks and Wildlife Code, Chapters 67 or 68**, no person may take, possess, propagate, transport, export, sell or offer for sale, or ship any species of fish or wildlife listed by the department as endangered or threatened.

"Take" is defined in **Section 1.101(5) of the Texas Parks and Wildlife Code** as:
"Take," except as otherwise provided by this code, means collect, hook, hunt, net, shoot, or snare, by any means or device, and includes an attempt to take or to pursue in order to take.

Penalties

The penalties for take of state-listed species **(TPW Code, Chapter 67 or 68)** are:

- 1ST Offense = Class C Misdemeanor:
  $25-$500 fine
- One or more prior convictions = Class BMisdemeanor
  $200-$2,000 fine and/or up to 180 days in jail.
- Two or more prior convictions = Class A Misdemeanor
  $500-$4,000 fine and/or up to 1 year in jail.

Restitution values apply and vary by species. Specific values and a list of species may be obtained from the TPWD Wildlife Habtat Assessment Program.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
c/o TAMU-CC, Campus Box 338
6300 Ocean Drive
Corpus Christi, Texas 78412

May 30, 2012

Stacy M. Zee
FAA Environmental Protection Specialist
Space-X EIS
c/o Cardno TEC, Inc.
275 West Street, Suite 110
Annapolis, MD 21409

Consultation Number 02ETCC00-2012-TA-0186
ER12-0245

Dear Ms. Zee:

The U.S. Fish and Wildlife Service (Service) has reviewed Department of Transportation, Federal Aviation Administration (FAA), Office of Commercial Space Transportation, Notice of Intent (NOI) to Prepare an Environmental Impact Statement (EIS), Open a Public Scoping Period, and Conduct a Public Scoping Meeting, dated April 10, 2012, for Space Exploration Technologies' (Space-X) proposal to launch the Falcon 9 and Falcon Heavy orbital vertical launch vehicles, and a variety of smaller reusable suborbital launch vehicles. According to the NOI, the proposed sites for the launch site and the launch control center are located on a privately-owned property on Boca Chica Island, Cameron County, Texas. The NOI notes that the development of access and supporting utility infrastructure for the vertical launch area and the control center area may occur on lands outside that which is owned or leased by Space-X.

On May 15, 2012, the Service participated in the Agency Scoping Meeting and Public Scoping Meetings in Brownsville, Texas, a site visit to the proposed launch site, and to the general vicinity of the proposed launch control center. Although the project proponents noted that the launch vehicles would be transported to the site by truck for each launch, no information was provided in the NOI or the meetings regarding the location of the facilities which would house the transport trucks, launch vehicles and payloads prior to each launch event.

General Comments:

The proposed launch site, which involves the development of approximately 5 acres of land along the south side of State Highway (SH) and the launch control center are sited in a remote area of the Texas Gulf Coast in close proximity to federal and state parks and refuges, with federally listed threatened and endangered species and designated critical habitat in the project area. The Service strongly recommends that the project proponents continue to coordinate with the Service and other resource agencies during the development of the Draft EIS (DEIS). Additionally, in the Affected Environment section of the DEIS, the Service recommends that the proposed project area description and map encompass the full range of project facilities and infrastructure needed for the Space-X project.

During the Agency Scoping Meeting, FAA noted that their authorization for the Space-X project could be as an experimental permit, as launch by launch permits, or as a permit for defined actions that occur within a 5-year period. The Service expects that the DEIS will clearly identify which type of launch authorization will be pursued and if a launch by launch is the operational permit type identified that the applicant would consult or confer with the Service regarding each individual permit and project's impacts as appropriate for resource protection.

According to the NOI and in materials presented at the Agency Scoping Meeting, the DEIS will evaluate the full range of potential impacts of the project. The Service's additional comments on the potential impacts of the proposed project and recommendations relative to the development of the DEIS are presented using these evaluation areas as follows:

Land Use, including Section 4(f) properties:

The proposed launch site and launch control centers are in close proximity to lands owned and managed by the Service's South Texas National Wildlife Refuges Complex (Refuge Complex), the Palo Alto Battlefield National Historic Park, the Battle of Palmito Hill National Monument, Boca Chica State Park, Brazos Island State Park, and South Bay Coastal Preserve. Although the sites selected for the launch site and the launch control center are privately owned, the road access to the site, SH 4, and the launch site are bordered by section 4(f) properties. The project as described by the applicant will result in changes to the use of SH 4 directly associated with the Space-X, both during construction of the Boca Chica facilities, and in traffic associated with the operation of these facilities. Furthermore, public use of SH 4 will be altered by the presence and operation of the Space-X facilities, and an increase in traffic along this roadway is likely to occur. Impacts to refuge lands directly bordering SH 4 could occur, and an increase in traffic on this roadway could result in mortalities of the federally listed cats, ocelot (*Leopardus pardalis*), and the Gulf Coast jaguarundi (*Herpailurus yagouaroundi cacomitli*).

Additionally, although the footprint of the Boca Chica facilities is small, and the project proponents indicated that the existing SH 4 would be of sufficient size to transport their launch vehicles, after implementation of the project, the Refuge Complex anticipates major infrastructure development in and around and leading to the site. Changes to the landscape from commercial development, road widening, utilities, and other related development, could directly and indirectly erode the unique character and wildlife values present at Boca Chica, which the Service has responsibility to protect for future generations. We recommend that the scope of review of the DEIS include an assessment of the likely future of the Boca Chica landscape.

The Refuge Complex does not have sufficient law enforcement personnel or technology to ensure that fish and wildlife resources are protected in the Boca Chica area, directly from the operation of this launch facility and the associated increased human presence it will incur.

2

Consequently, we recommend that the DEIS address how Space-X will adequately protect these areas will also be affected by this project.

FAA indicated that a public viewing area may not fall under the scope of review for the DEIS. The enthusiastic public response at the May 15th public scoping meeting highlights the perception that the public will want to view the launches. The impacts of just one insufficiently managed event could have significant and long-term impact to the landscape, including federal refuge and state park lands, as well as to private lands on Boca Chica. In the South Texas coastal habitats, ruts and vehicle tracks on unvegetated sand flats from off road vehicles can persist for many years. Low rainfall means that re-vegetation of coastal prairie areas from similar vehicles can also take many years to recover, if at all. According to the supplemental information that the FAA provided regarding their EIS analysis process, the DEIS will address the socioeconomic impacts of the project on the region; however, the Service recommends that the response of the public to the presence of the Space-X facility, particularly the desire to view launch events, and the associated impacts to the landscape from the public's response, should also fall within the scope of review of the DEIS.

Noise:

The launch facility cannot be operated without causing a significant disturbance (noise) over a large portion of the Refuge Complex during the launches. As Space-X indicates, no people may be present within 1.5 miles due to the extreme noise levels or within a 3-mile safety zone for danger of malfunction. Therefore, it would be reasonable to conclude that adverse effects to important fish and wildlife can be anticipated under launch conditions. In the event of a major malfunction, such as loss of control or explosion near the ground, significant disturbance, damage, and loss of wildlife could occur. The Service recommends that Space-X, in coordination with the Refuge Complex staff, develop an emergency response plan to include actions for assessment and mitigation of impacts to fish and wildlife resources in the event of an on-site accident.

In the scoping meeting, the applicant indicated that air cannons could be used as a means to haze birds from the site prior to a launch. Coastal Texas supports significant avian resources including migrating, wintering, and nesting species. The Refuge Complex has documented 413 bird species. For those birds nesting in the vicinity of the launch site, the Service is concerned that the use of air cannons could result in an impact to nesting birds, eggs, or hatchlings.

The applicant noted that the sound impact for an individual launch is just seconds; however, the effects of both the sound and through-ground vibrations, even if only a second or two, need to be evaluated for their impacts to sub-surface nests, particularly for sea turtles but also for impacts to other wildlife as well.

Visual Resources and Light Emissions:

The Service is concerned that the proposed facility and associated structures would permanently alter the natural views in the Boca Chica area resulting in impairment of the natural character of the Refuge Complex. Furthermore, a large portion of Boca Chica is a federally-recognized Civil

War Battlefield (archaeological site). Development in this area may impact significant archaeological and/or cultural resources present in the Boca Chica area. The Service is aware that the applicant is already undertaking an assessment of the area for direct impacts to archaeological sites from the site development. The applicant indicated that prominent vertical structures for the launch facility would be 4 lightning towers and the water tower for the launch cooling procedure. These structures should be included in the applicant's assessment of the project's impact on the visual landscape for the Refuge Complex as well as for the national monument sites. With regard to the protection of historic properties, such as Palo Alto Battlefield National Monument, 36 CFR PART 800 -- PROTECTION OF HISTORIC PROPERTIES (incorporating amendments effective August 5, 2004), and Section 106 of the National Historic Preservation Act, require Federal agencies to take into account the effects of their undertakings on historic properties. As noted in Section 800.5, an assessment should address affects, direct and indirect, to any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. In the case of Palo Alto Battlefield National Monument, the view shed of the monument, which aligns with the proposed launch facility, should be addressed in FAA's Section 106 assessment of the proposed Space-X project.

The proposed facility will require 24-hour security and night lighting. Lights and/or night launches could impact sea turtles. The predominant nesting sea turtle on the coast is the Kemp's ridley sea turtle (*Lepidochelys kempii*) and it is a daytime nester while the less frequent nesters such as the loggerhead sea turtle (*Caretta caretta*), green sea turtle (*Chelonia mydas*), leatherback sea turtle (*Dermochelys coriacea*), and hawksbill sea turtle (*Eretmochelys imbricata*) are primarily nocturnal nesting species. Lights can disorient or interrupt the nesting process of the nocturnal nesters. All sea turtle nests detected on Texas beaches are collected and the eggs incubated in facilities with hatchlings released in planned events on Texas beaches although lights generally can cause hatchling sea turtles emerging from nests to crawl in the wrong direction away from the sea. Therefore, any nests missed by sea turtle patrols could have hatchlings at risk. Additionally, depending on the type, intensity, and orientation of lighting, migrating birds could be attracted to the facility under certain conditions and could be problematic.

Cultural Resources:

As noted above, the Service is aware that the applicant is already in the process of identifying archaeological and culture sites that could be impacted by the footprint of the launch site and launch control center. The Service recommends that this assessment be extended to the full scope of the proposed project development area, including the other project infrastructure beyond the two components on Boca Chica.

Air Quality and Climate:

Given that Space-X already has an operating facility in Florida, the impact of any air borne pollutants may already be fairly well understood by FAA. The Service will also need to fully understand the nature and scope of emissions produced by the launch events for their direct and

indirect impacts to Refuge Complex property, staff and visitors, which are nearby and downwind of the launch site. Perhaps less obvious yet crucial to area fish and wildlife resources, is the potential impact of water and water vapor released to the immediate area as a by-product of launch cooling procedures. Space-X staff indicated that water would be trucked in and stored in a water tower for use in launch cooling procedures. The applicant indicated at the scoping meeting that water could be collected, filtered and re-used, or if contaminated, trucked to a disposal site. Space-X will need to include details of the anticipated cooling procedures, identify how much water would be needed, how much is likely to be collected post-launch, and a disposal site, or sites, for water not returned to the cooling tower. The Service understood that because of the nature of the procedure, only a percentage of the cooling water would be available for collection for re-use or disposal. The Service recommends that the applicant identify both the amount of cooling water that would be converted to steam and/or water vapor, and discuss the fate of aerosolized water. Unvegetated sand and algal flats used by threatened piping plovers (*Charadrius melodus*) are within the immediate vicinity of the proposed project area. Water that settles on or is discharged to these unvegetated habitats could stimulate vegetation encroachment, potentially impacting piping plover critical habitat and habitat for bare-ground nesting avian species. Additionally, water that collects in low areas as pools could attract wildlife to the facility, and become an attractive nuisance.

The applicant noted, during discussion of a fire plan for the facility, that water trucked to the site to be stored in the tower for the launch cooling procedure, could be used for needed fire suppression. The Service recommends that the applicant identify effects related to the use of this water for fire suppression, specifically any contaminants that may be present, if the water has been reclaimed from a previous launch event.

Hazardous Waste Materials & Waste Management:

In the event of a major malfunction such as an explosion near the ground, the Refuge Complex would likely experience wildlife mortality, and receives significant vehicle and human traffic for debris removal and contaminant cleanup during emergency response operations. The use of wheeled and/or tracked vehicles off road would permanently impact the sensitive Refuge Complex habitats such as wind/tidal flats, lomas, and dunes. A catastrophic event would likely introduce contaminants or toxic chemicals into the environment. Transportation or disposal of contaminants could result in contamination to portions of the Refuge Complex from on-site spills and/or during transit along SH 4. The Service is concerned that, in the event of major malfunction, toxic chemicals or contaminants may be dispersed throughout the Refuge Complex's land and water. As noted in the section above on air quality, the Service will need to be fully apprised of the nature and scope of emissions produced by the launch events, of the chemicals stored on-site, and chemicals that would be included in each launch payload for their direct and indirect impacts to Refuge Complex property. Please provide the Service with Material Safety Data Sheets for all hazardous materials. In addition to the chemical components, the Service will need to have an understanding of the heat dispersed into the air from launches which could lead to direct wildlife mortality, particularly birds such as shorebirds, terns, gulls, and pelicans.

The Service recommends that Space-X develop a comprehensive contingency plan to address the above-mentioned issues and concerns associated with the proposed project. Development of an adequate contingency plan should be designed to address a wide variety of launch, malfunction, and emergency scenarios (e.g., explosions, debris removal, evacuation, injurious events) as they relate to not only public safety, but to avoid or minimize impacts to important fish and wildlife resources. Although a response plan is vital, the Service just as strongly recommends that the applicant's operation plan be designed to avoid and/or minimize potential impacts to wildlife and their habitats.

Water Resources:

According to information provided during the agency meeting, the proposed launch site would impact jurisdictional wetlands. The Service recommends that a copy of the applicant's wetland delineation, verified by the U.S. Army Corps of Engineers, be provided to the Service. The Service anticipates that the applicant's analysis of the proposed impacts of the project would follow the Services 5-step sequential assessment of potential mitigative alternatives as follows:

a. Avoid the impact altogether by not taking a certain action or parts of an action.

b. Minimize impacts by limiting the degree or magnitude of the action and its implementation.

c. Rectify the impact by repairing, rehabilitating, or restoring the affected environment.

d. Reduce or eliminate the impact over time by preservation and maintenance operations during the life of the action.

e. Compensate for the impact by replacing or providing substitute resources or environments.

The Service recommends if compensatory mitigation is required for unavoidable impacts of an authorized Space-X facility at the proposed site, that consideration include the effects of an on-site mitigation project. Although on-site, in-kind mitigation is most often the preferred mitigation alternative, in this case this alternative could likely result in creating additional attractants to wildlife, including avian species which may then be subsequently impacted by operations

Coastal Resources:

Portions of the proposed project fall within Coastal Barrier Resources Act (CBRA) zones. The Service, through the Secretary of the Interior, is responsible for administering CBRA, including consulting with Federal agencies that propose spending funds within the Coastal Barrier Resource System (CBRS). The proposed launch site appears to be located in CBRA Unit T12, and the identified area for the proposed launch control center appears to be located in a CBRA Excluded Unit. The entire facility also appears to be within 500 feet of an Otherwise Protected

Area, T 12P. The DEIS should list federal funding received for the Space-X project on Boca Chica to facilitate the CBRA review. The CBRA determination must be confirmed by our Washington D.C. Office (D.C. Office), who will stipulate possible restrictions on building in CBRA units. We will provide a copy of this letter and project location maps to our D.C. Office, with your contact information.

The applicants are aware that the proposed site is located in a region which is vulnerable to hurricanes. The Service recommends that the applicant develop, and include in the DEIS, a hurricane response plan. With regard to the proposed site, shifting geological features are present in this dynamic coastal zone that could result in not only damage to the facility but create hazardous conditions or adverse impacts to the unique and sensitive fish and wildlife habitats within the surrounding Refuge Complex lands. The Service recommends that the applicant analyze, and include in the DEIS, the historic vulnerability of the site to hurricane as well as the geological vulnerability of the proposed site. The DEIS will need to explain how the proposed structure designs will be able to withstand extreme tropical storm conditions, including tidal surge.

Biological Resources:

The NOI stated that the EIS would analyze the impacts of the proposed project on threatened and endangered species. The Service recommends that consultation under Section 7 of the Encangered Species Act (ESA) be initiated. You have already been in communication to define federally threatened and endangered species that will be appropriate for consideration in the consultation process. Additionally, you indicated in the agency scoping meeting that FAA anticipates consultation with the Service will be completed prior to the publication of the DEIS. We support this plan of action.

The two proposed facilities are surrounded by Refuge Complex lands, which are managed for the protection of sensitive resources such as threatened and endangered species and migratory birds. The ocelot, Kemp's ridley sea turtle, green sea turtle, loggerhead sea turtle, northern aplomado falcon (*Falco femoralis septentrionalis*), piping plover and its critical habitat, Wilson's plover (*Charadrius wilsonia*) and snowy plover (*Charadrius nivosus*) are some of the species of significant concern in the proposed project area. There are approximately 22,481-acres of Refuge Complex lands in the Boca Chica area and approximately 5,767-acres within the 3-mile impact zone of the proposed facility. This area encompasses habitat for federally-listed species as well as other important fish and wildlife resources which the project may the project may impact, both directly and indirectly.

Furthermore, construction could attract certain species of birds to the site, both for roosting and nesting, such as on the water tower and lightning towers. At the Agency Scoping Meeting, the applicant indicated that one of the substrates around the proposed fuel tanks' spill containment area could be gravel. Certain species of ground nesting shorebirds, such as the least tern (*Sternula antillarum*), snowy plover (*Charadrius alexandrinus*), willet (*Tringa semipalmata*), and killdeer (*Charadrius vociferous*) are attracted to unvegetated sand, shell and gravel, including roadways for nesting. Attracting these birds to the site, then launching during nesting season could result in an impact to birds protected under the Migratory Bird Treaty Act.

Launch activities and the increased human presence during the bird nesting season (March through August) may adversely affect federally-endangered northern Aplomado falcons as well as other sensitive nesting birds in the area such as terns, Wilson's and snowy plovers, and reddish egrets (*Egretta rufescens*).

Critical habitat, Texas Unit TX-1, for the wintering piping plover extends from the Brownsville Ship Channel to the Rio Grande. As noted above, the Service anticipates that the consultation process will assess the impacts of the launch procedures, particularly the impacts of noise and ground vibration as well as the use of cooling water during launch, on adjacent sand flats. The introduction of water to unvegetated areas could stimulate the growth of vegetation and significantly alter and impact piping plover critical habitat.

Launch activities may affect federally-threatened and endangered sea turtles such as the Kemp's ridley sea turtle, green sea turtle, and loggerhead sea turtle through effects of vibration and increases in beach driving on undetected nests. These species nest regularly along the Texas coast and also at Boca Chica Beach.

The Service has a Memorandum of Understanding (MOU) with the Mexican States of Tamaulipas and Nuevo Leon to establish and conserve an international wildlife corridor along the Rio Grande River between Falcon Reservoir Dam (in Starr County, Texas) and the Laguna Madre and extending 60 miles north and south of the US/Mexico border. The Refuge Complex is currently working with Mexico to reestablish and reconnect wildlife corridors for the endangered ocelot and jaguarundi between both countries, and to increase genetic diversity for the recovery of the species in South Texas. The increase of infrastructure, development and increase of traffic could have a negative impact to these endangered species and establishment of these important wildlife corridors.

The State of Texas (Texas Parks & Wildlife Department) owns the Brazos Island State Park, which is managed by the Service as part of the Refuge Complex. The proposed Space-X site is bordered on three sides by State parklands and operation of the launch facility could affect the public's enjoyment of these parks. The proposed project could also affect or impair the Refuge Complex's and the State's ability to protect and manage the wildlife resources if launch activities prevent necessary surveys of the area for threatened and endangered species, migratory bird and other wildlife, and the management of public use on the adjacent coastal beaches. The Service recommends that the DEIS include a plan for the oversight and management of these important fish and wildlife resource areas throughout the life of the proposed project.

Socioeconomics & Environmental Justice:

According to Space-X representatives, the proposed site/facility will require evacuation prior to and during launches within a 3-mile safety zone. This would likely result in additional vehicles, aircraft, and/or human traffic on the Refuge Complex, along the periphery of the 3-mile zone. Continual human and vehicle traffic disturbance (e.g., launch personnel and spectators) on the beach and on and off of SH 4 would directly and indirectly affect fish, wildlife, and their habitats. Refuge Complex lands, State-owned lands, Brownsville Navigation District lands, and

other public/private lands are inadequately fenced to prevent an increase in unauthorized access by the public due to the attraction of observing rocket launches. As a result, impacts to sensitive soils and dune areas could increase. As noted in the land use section above, if the response from the public at the May 15th meeting is an indicator, Space-X can expect large crowds of spectators to view the launches. Consequently, the Service recommends that the EIS assess this impact and provide a plan for managing and/or accommodating viewers in a safe manner that avoids damage to sensitive fish and wildlife resources.

Construction Impacts:

As previously noted, the Service anticipates that construction and operation of the proposed facility will result in increased traffic. This traffic, including construction contractors, Space-X employees, security, and tourists along SH 4 will be for purposes other than wildlife-dependent recreation. Increased wildlife mortality, including the federally-endangered ocelot is expected to occur from increased vehicle traffic. The Service recommends that the DEIS include a thorough assessment of construction traffic, operation traffic, and traffic associated with the launch-viewing public.

The applicant indicated that data lines and electric utility service from launch control center to the launch facility would need to be installed. The Service would like to review complete plans and maps for such infrastructure to ensure that the SH 4 right-of-way will accommodate the construction without impacting Refuge Complex property including native brush and ocelot habitat. The project proponents indicated that issue of needed road widening and additional infrastructure either for site operations or from secondary effects of the project could be part of a Department of Transportation (DOT) analysis. Service recommends that this issue is coordinated with DOT during the project planning development phase so that a plan for resolving this issue can be included in the DEIS. The Service owns property for 14 miles on either side of SH 4 and any widening actions, or need for clearing to install additional utilities, would impact Refuge Complex lands.

Induced Impacts:

At the Agency Scoping Meeting the applicant noted that such issues as traffic control would be handled in a coordinated effort with other area law enforcement agencies. Given that public agencies at all levels generally are operating under budgeting levels that may be inadequate to meet current needs, the applicant needs to proactively address how these issues will be handled. The Service's ability to expand monitoring of impacts to our property from launch sightseers going off-road is extremely limited. One event, insufficiently managed, could result in significant and long-term damage to sensitive wildlife habitat.

Cumulative Impacts:

The applicant stated that launch capsules and payloads would be trucked to the site. This implies the construction or use of additional facilities, beyond the Boca Chica components, and these should be included as components of a complete analysis regarding the project in the DEIS. The Service is concerned that if only the launch site and launch control center are included in the

DEIS, other integral components of the project will be developed separately, when they are, in fact, components of the single and complete Space-X project. Given the array of sensitive habitats and resources in South Texas, the Service foresees additional significant impacts from the development of these "additional" facilities to fish and wildlife resources. Where these components are integral to the projec, they should not be segmented from the scope of analysis in the EIS. Furthermore, the Service recommends that the study area for the project include the project's physical facility and operational requirements such as changes to traffic patterns. The DEIS should evaluate the effects that will occur over time, particularly to protection and management of Refuge Complex lands.

The proposed Space-X facilities are less than 2 miles from the international border with Mexico. Therefore, the Service recommends that FAA coordinate with the Department of Homeland Security, Customs and Border Protection with regard to the impact of the project on their programs, particularly for additional border security infrastructure needs as these could impact fish and wildlife resources. The Service recommends that this issue be included in the DEIS.

The Service's meeting notes from the Agency Scoping Meeting, reference a statement by the FAA that end-of-project-life actions would not be in their scope of review; however, considering the location of the project site in the vulnerable and highly dynamic coastal environment, the Service recommends that the applicant be required to draft and include in the DEIS a plan for cessation of use of the launch site and launch control site, and restoration of the project site.

The Service appreciates the opportunity to provide comments on the proposed Space-X project. If you have any questions regarding the Service's comments, please contact Ms. Pat Clements at (361) 994-9005 or pat_clements@fws.gov, or Mr. Ernesto Reyes at 984-784-7560 or ernesto_reyes@fws.gov.

Sincerely,

for Allan M. Strand
Field Supervisor

cc:
R. Jess, South Texas Refuges Complex, USFWS, Alamo, TX
B. Winton, South Texas Refuges Complex, USFWS, Alamo, TX
G. Mowad, State Administrator, USFWS, Austin, TX
M. Spier, Palo Alton Battlefield National Historic Park, NPS, Brownsville, TX
M. Kimmel, Regulatory Branch, USACE, Corpus Christi, TX
J. Robinson, Ecosystem Resources Program, TPWD, Corpus Christi, TX
J. Herrington, Wetlands Section, Regon 6, EPA, Temple, TX
H. Young, Resource Protection, NMIS, Galveston, TX
T. Williams, Environmental Review, TGLO, Austin, TX
V. Sanchez, USFWS, Albuquerque, NM

Exhibit A-10. Notice of Availability, Published April 19, 2013

service data on aircraft component failure. The FAA form 5200–7, Bird/Other Wildlife Strike Report, is most often completed by the pilot-in-charge of an aircraft involved in a wildlife collision or by Air Traffic Control Tower personnel, or other airline or airport personnel who have knowledge of the incident.

Respondents: Approximately 7,666 pilots, air traffic control personnel, or other airline or airport personnel.

Frequency: Information is collected as needed.

Estimated Average Burden per Response: 5 minutes.

Estimated Total Annual Burden: 613 hours.

ADDRESSES: Send comments to the FAA at the following address: Ms. Kathy DePaepe, Room 126B, Federal Aviation Administration, AES–200, 6500 S. MacArthur Blvd., Oklahoma City, OK 73169.

Public Comments Invited: You are asked to comment on any aspect of this information collection, including (a) Whether the proposed collection of information is necessary for FAA's performance; (b) the accuracy of the estimated burden; (c) ways for FAA to enhance the quality, utility and clarity of the information collection; and (d) ways that the burden could be minimized without reducing the quality of the collected information. The agency will summarize and/or include your comments in the request for OMB's clearance of this information collection.

Issued in Washington, DC on April 15, 2013.

Albert R. Spence,

FAA Assistant Information Collection Clearance Officer, IT Enterprises Business Services Division, AES–200.

[FR Doc. 2013–09232 Filed 4–18–13; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Office of Commercial Space Transportation; Notice of Availability and Request for Comment on the Draft Environmental Impact Statement for the SpaceX Texas Launch Site

AGENCY: DOT, Federal Aviation Administration (FAA), lead Federal agency; and National Aeronautics and Space Administration, National Park Service, U.S. Army White Sands Missile Range, U.S. Army Corps of Engineers, cooperating agencies.

ACTION: Notice of Availability, Notice of Public Comment Period, Notice of Public Hearing, and Request for Comment.

SUMMARY: In accordance with the National Environmental Policy Act of 1969, as amended (NEPA; 42 United States Code [U.S.C.] 4321 et seq.), Council on Environmental Quality NEPA implementing regulations (40 Code of Federal Regulations parts 1500 to 1508), and FAA Order 1050.1E, Change 1, the FAA, Office of Commercial Space Transportation (AST) is announcing the availability of and requesting comments on the *Draft Environmental Impact Statement for the SpaceX Texas Launch Site* (Draft EIS). This Draft EIS is also submitted for review pursuant to the following public law requirements: Section 4(f) of the Department of Transportation Act (49 U.S.C. Section 303); Section 106 of the National Historic Preservation Act (16 U.S.C. 470); Executive Order 11988, *Floodplain Management;* DOT Order 5650.2, *Floodplain Management and Protection;* Executive Order 11990, *Protection of Wetlands;* and DOT Order 5660.1A, *Preservation of the Nation's Wetlands.*

An electronic version of the Draft EIS is available on the FAA/AST Web site: *http://www.faa.gov/about/office_org/headquarters_offices/ast/environmental/nepa_docs/review/documents_progress/spacex_texas_launch_site_environmental_impact_statement/.* In addition, copies of the Draft EIS were sent to persons and agencies on the distribution list (found in Chapter 11 of the Draft EIS). A paper copy and an electronic version of the Draft EIS may be reviewed during regular business hours at the following Brownsville locations:

- Brownsville Public Library Main Branch, 2600 Central Blvd.
- Southmost Branch Library, 4320 Southmost Blvd.
- University of Texas at Brownsville, Oliveira Library, 80 Fort Brown St.

The FAA will hold a public hearing to solicit comments from the public concerning the scope and content of the Draft EIS.

- May 7, 2013, 5:00 p.m. to 8:00 p.m., at the International Technology, Education, and Commerce (ITEC) Center, located at 301 Mexico Boulevard, Suite G–1, Brownsville, TX 78520.

The public hearing will include a poster information session from 5:00 p.m. to 6:00 p.m., FAA presentation from 6:00 p.m. to 6:15 p.m., followed by a public statement period in which members of the public may provide up to a 3-minute statement. The FAA will transcribe all oral comments. All comments received during the comment period will be given equal weight and be taken into consideration in the preparation of the Final EIS.

DATES: The public comment period for the Draft EIS begins with the issuance of this Notice of Availability and last 45 days. The FAA encourages interested agencies, organizations, Native American tribes, and members of the public to submit comments concerning the scope and content of the Draft EIS by June 3, 2013. Comments on the Draft EIS should be as specific as possible and address the analysis of potential environmental impacts and the adequacy of the Proposed Action or merits of alternatives and the mitigation being considered. Reviewers should organize their participation so that it is meaningful and makes the agency aware of the reviewer's interests and concerns using quotations and other specific references to the text of the Draft EIS and related documents. Matters that could have been raised with specificity during the comment period on the Draft EIS may not be considered if they are raised for the first time later in the decision process. This commenting procedure is intended to ensure that substantive comments and concerns are made available to the FAA in a timely manner so that the FAA has an opportunity to address them.

ADDRESSES: Please submit comments or questions regarding the Draft EIS to Ms. Stacey M. Zee, FAA Environmental Specialist, SpaceX EIS c/o Cardno TEC Inc., 275 West Street, Suite 110, Annapolis, MD 21401. Comments may also be submitted via email to *faaspacexeis@cardnotec.com* or by fax to (410) 990–0455.

FOR FURTHER INFORMATION CONTACT: Ms. Stacey M. Zee, Environmental Specialist, Federal Aviation Administration, 800 Independence Avenue SW., Suite 325, Washington, DC 20591; email *Stacey.Zee@faa.gov;* or phone (202) 267–0305.

Additional Information

The Proposed Action is for the FAA to issue launch licenses and/or experimental permits to SpaceX that would allow SpaceX to launch the Falcon 9 and Falcon Heavy orbital vertical launch vehicles and a variety of reusable suborbital launch vehicles from a launch site on privately-owned property in Cameron County, Texas. As part of the Proposed Action, SpaceX plans to construct facilities, structures, and utility connections in order to support the launch of the Falcon 9 and Falcon Heavy launch vehicles. The facilities would be located in two areas:

vertical launch area and control center area. The proposed vertical launch area site is currently undeveloped and is located directly adjacent to the eastern terminus of Texas State Highway 4 (Boca Chica Boulevard) and approximately 3 miles north of the Mexican border on the Gulf Coast. It is located approximately 5 miles south of Port Isabel and South Padre Island. At the vertical launch area, the new facilities required would include an integration and processing hangar, a launch pad and stand with its associated flame duct, a water tower, a retention basic for deluge water, propellant storage and handling areas, a workshop and office area, and a warehouse for parts storage.

The command and control functions for a launch are required to be conducted at a safe separation distance from the actual launch pad. The control center area would be located inland, approximately 2 miles west of the vertical launch area and would include control center buildings, payload processing facilities, a launch vehicle processing hangar, generators and diesel storage facilities, and a satellite fuels storage facility. All facilities would be constructed through private funding, on currently undeveloped private property that would be purchased or leased by SpaceX. In addition, new underground power lines would be installed in the State Highway 4 Right-of-Way from the control center area to the vertical launch area.

Operations would consist of up to 12 launches per year with a maximum of two Falcon Heavy launches. All Falcon 9 and Falcon Heavy launches would be expected to have commercial payloads, including satellites or experimental payloads. In addition to standard payloads, the Falcon 9 and Falcon Heavy may also carry a capsule, such as the SpaceX Dragon capsule. All launch trajectories would be to the east over the Gulf of Mexico.

Alternatives under consideration include the Proposed Action and the No Action Alternative. Under the No Action Alternative, the FAA would not issue a license or experimental permit to SpaceX. The Draft EIS evaluates the direct, indirect, and cumulative environmental impacts of the Proposed Action and No Action Alternative on several environmental impact categories, including compatible land use (including farmlands and coastal resources); Section 4(f) properties; noise; visual resources and light emissions; historical, architectural, archaeological, and cultural resources; air quality; water resources (including wetlands, floodplains, surface waters, groundwater, and wild and scenic rivers); biological resources (including fish, wildlife, and plants); hazardous materials, pollution prevention, and solid waste; socioeconomics, environmental justice, and children's environmental health risks and safety risks; energy supply and natural resources; and secondary (induced) impacts. Additional resources were also considered including airspace, health and safety, and ground traffic and transportation. The Proposed Action would include a significant encroachment on floodplains per DOT Order 5650.2, *Floodplain Management Protection*.

Issued in Washington, DC, on April 11, 2013.

Daniel Murray,

Deputy Manager, Space Transportation Development Division.

[FR Doc. 2013–09161 Filed 4–18–13; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Highway Administration

Notice of Final Federal Agency Actions on State Highway 99 (Segment C) in Texas

AGENCY: Federal Highway Administration (FHWA), DOT.

ACTION: Notice of Limitation on Claims for Judicial Review of Actions by FHWA and Other Federal Agencies.

SUMMARY: This notice announces actions taken by the FHWA and other Federal agencies that are final within the meaning of 23 U.S.C. 139(l)(1). The actions relate to a proposed highway project, Grand Parkway (State Highway 99) Segment C, from US 59 (S) to SH 288 in Fort Bend and Brazoria Counties, Texas. Those actions grant licenses, permits, and approvals for the project.

DATES: By this notice, the FHWA is advising the public of final agency actions subject to 23 U.S.C. 139(l)(1). A claim seeking judicial review of the Federal agency actions on the highway project will be barred unless the claim is filed on or before September 16, 2013. If the Federal law that authorizes judicial review of a claim provides a time period of less than 150 days for filing such claim, then that shorter time period still applies.

FOR FURTHER INFORMATION CONTACT: Mr. Gregory Punske, P.E., District Engineer, District B (South), Federal Highway Administration, 300 East 8th Street, Room 826 Austin, Texas 78701; telephone: (512) 536–5960; email: *gregory.punske@fhwa.dot.gov*. The FHWA Texas Division Office's normal business hours are 7:45 a.m. to 4:15 p.m. (central time) Monday through Friday. You may also contact Mr. Carlos Swonke, Environmental Affairs Division, Texas Department of Transportation, 118 E. Riverside Drive, Austin, Texas 78704; telephone: (512) 416–2734; email: *Carlos.Swonke@txdot.gov*. The Texas Department of Transportation normal business hours are 8 a.m. to 5 p.m. (central time) Monday through Friday.

SUPPLEMENTARY INFORMATION: Notice is hereby given that the FHWA and other Federal agencies have taken final agency actions by issuing licenses, permits, and approvals for the following highway project in the State of Texas: Grand Parkway (State Highway 99) Segment C from US 59 (S) to SH 288 in Fort Bend and Brazoria Counties; FHWA Project Reference Number: FHWA–TX–EIS–03–03–F. The project will be a 41.8 km (26 mi) long, four-lane controlled access toll road with intermittent frontage roads, grade-separated intersections with exit and entrance ramps at eight intersections, while the need for elevated directional interchanges will be determined during final design. It will begin at SH 288 in Brazoria County and then proceeds northwest through Fort Bend County and end at US 59. The purpose of the project is to efficiently link the suburban communities and major roadways, enhance mobility and safety, and respond to economic growth. The actions by the Federal agencies, and the laws under which such actions were taken, are described in the Final Environmental Impact Statement (FEIS) for the project, approved on August 8, 2012, in the FHWA Record of Decision (ROD) issued on March 29, 2013, and in other documents in the FHWA administrative record. The FEIS, ROD, and other documents in the FHWA administrative record file are available by contacting the FHWA or the Texas Department of Transportation at the addresses provided above. The FHWA FEIS and ROD can be viewed and downloaded from the Grand Parkway Association Web site at *http://www.grandpky.com/segments/c/*.

This notice applies to all Federal agency decisions as of the issuance date of this notice and all laws under which such actions were taken, including but not limited to:

1. General: National Environmental Policy Act (NEPA) [42 U.S.C. 4321–4335]; Federal-Aid Highway Act [23 U.S.C. 109].

2. Air: Clean Air Act, 42 U.S.C. 7401–7671(q).

Exhibit A-11. Public Hearing Notice – Publication Dates for Newspapers

Newspaper	Dates	Page Number
The Brownsville Herald	May 1, 2013 May 2, 2013 May 3, 2013	C5 C3 C2
Valley Morning Star	May 1, 2013 May 2, 2013 May 3, 2013	B5 B5 B4
El Bravo (Spanish language)	May 1, 2013 May 2, 2013 May 3, 2013	7 7 5

Exhibit A-12. Public Hearing Notice - The Brownsville Herald



THE BROWNSVILLE HERALD | WEDNESDAY, MAY 1, 2013 | PAGE C6

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The Brownsville Herald, 1135 E. Van Buren., Brownsville, TX 78520
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101 Legal Notices

FEDERAL AVIATION ADMINISTRATION
NOTICE OF PUBLIC HEARING

In accordance with the National Environmental Policy Act (NEPA), the Federal Aviation Administration (FAA), Office of Commercial Space Transportation (AST) is announcing the availability of the *Draft Environmental Impact Statement for the SpaceX Texas Launch Site* (Draft EIS).The Draft EIS evaluates the potential environmental impacts associated with Space Exploration Technologies Corp. (SpaceX) proposal to launch the Falcon 9 and Falcon Heavy orbital vertical launch vehicles from a private site located in Cameron County, Texas. The Proposed Action would include a significan encroachment on flood-plains per DOT Order 5650.2, *Floodplain Management and Protection*. An electronic version of the Draft EIS is available on the FAA/AST website: http://www.faa.gov/about/office_org/headquarters_offices/ast/environmental/nepa_docs/review/documents_progress/spacex_texas_launch_site_environmental_impact_statement/.
In addition, printed copies of the Draft EIS an available at the following locations: Brownsville Public Library Main Branch, Southmost Branch Library, and the University of Texas at Brownsville, Oliveira Library.

As part of the EIS public participation process, the FAA will hold a public hearing on May 7, 2013, from 5:00 p.m.to 8:00 p.m. at the ITEC Center, 30 Mexico Blvd., Suite G-1, Brownsville, TX 78520. The public hearing wil include a poster information session from 5:00 to 6:00 p.m., FAA presentation from 6:00 to 6:15 p.m., followed by a public statement period in which members of the public may provide up to a 3-minute statement.The FAA will transcribe oral comments. Comments on the Draft EIS will help the FAA arrive at the best possible informed decision about the proposal. All comments must b postmarked or received (online) no later than June 3, 2013 to ensure consideration in the Final EIS. The public can provide comments in fourways: 1) provide written or oral comments at the public hearing; 2) email comments to faaspacex-eis@cardnutec.com; 3) fax comments to (410) 990-0455; or 4) mail comments to: Ms. Stacey M. Zee, Environmental Specialist, Federal Aviation Administration, SpaceX EIS c/o Cardno TEC Inc., 275 West Street, Suite 116, Annapolis, MD 21401

4581, 62, 65/03A

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101 Legal Notices | 101 Legal Notices | 109 Personals | 114 Adoptions | 305 Pets & Supplies | 405 Garage Sales/ Flea Markets | Garage Sales/ Flea Market | 418 Restaurant Equipment | 501 Help Wanted | 501 Help Wanted

LEGAL NOTICE

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5/2, 5/9/2013

ADOPT

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PAGE C2 | THE BROWNSVILLE HERALD | FRIDAY, MAY 3, 2013

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TOWN OF LAGUNA VISTA
REQUEST FOR STATEMENTS OF QUALIFICATIONS FOR MUNICIPAL COURT JUDGES

The Town of Laguna Vista will be receiving sealed Statements of Qualifications from qualified applicants interested in serving as Municipal Court Judge or Alternate Municipal Court Judge for the Town. Sealed written Statements of Qualifications should be delivered by 3:00 o'clock p.m., Friday, May 31, 2013, to City Secretary Alma Deckard at 122 Fernandez Street, Laguna Vista, Texas 78578. Statements and proposals received after this deadline will not be considered.

The position duties and requirements for this RFQ are available at the City Hall of the Town of Laguna Vista at 122 Fernandez Street, Laguna Vista, Texas, or by contacting City Secretary Alma Deckard by telephone at 956-943-1793 or by email at adeckard@lvtexas.us.

The Town of Laguna Vista reserves the right to reject any or all Statements of Qualifications received in response to this request, the right to make any appointments as may be in the interest of the Town, the right to hold any Statements of Qualifications and delay any decision for any period of time, and the right to waive any and all formalities in connection with any Statement of Qualifications received.

05/03/2013

NOTICE TO PUBLIC AND TO ALL INTERESTED MORTGAGE LENDERS

TEXAS DEPARTMENT OF HOUSING AND COMMUNITY AFFAIRS
MORTGAGE CREDIT CERTIFICATE PROGRAM

The Texas Department of Housing and Community Affairs (the "Department") intends to implement a Mortgage Credit Certificate Program (the "Program") to assist eligible very low, low and moderate income first-time homebuyers with the purchase of a residence located within the State of Texas.

Under the Program, a first-time homebuyer who satisfies the eligibility requirements described below may receive a federal income tax credit in an amount equal to the product of the certificate credit rate established under the Program and the interest paid or accrued by the homeowner during the taxable year on the remaining principal of the certified indebtedness amount incurred by the homeowner to acquire the principal residence of the homeowner, provided that such credit allowed in any taxable year does not exceed $2,000. In order to qualify to receive a mortgage credit certificate, the homebuyer must qualify for a conventional, FHA, VA or other home mortgage loan from a lending institution and must meet the other requirements of the Program.

The mortgage credit certificates will be issued to qualified mortgagors on a first-come, first-served basis by the Department, which will review applications from lending institutions and prospective mortgagors to determine compliance with the requirements of the Program and determine that mortgage credit certificates remain available under the Program. No mortgage credit certificates will be issued prior to 90 days from the date of publication of this notice or after the date that all of the credit certificate amount has been allocated to homebuyers, and in no event will mortgage credit certificates be issued later than the date permitted by federal tax law.

In order to satisfy the eligibility requirements for a mortgage credit certificate under the Program, (a) the prospective residence must be a single-family residence located within the State of Texas that can be reasonably expected to become the principal residence of the mortgagor within a reasonable period of time after the financing is provided, (b) the prospective homebuyer's current income must not exceed, (i) for families of three or more persons, 115% (140% in certain targeted areas or in certain cases permitted under applicable provisions of the Internal Revenue Code of 1986, as amended (the "Code")) of the area median income, and (ii) for individuals and families of two persons, 100% (120% in certain targeted areas or in certain cases permitted under applicable provisions of the Code) of the area median income; (c) the prospective homebuyer must not have owned a home as a principal residence during the past three years (except in the case of certain targeted area residences or in certain cases permitted under applicable provisions of the Code), (d) the acquisition cost of the residence must not exceed 90% (110%, in the case of certain targeted area residences or in certain cases permitted under applicable provisions of the Code) of the average area purchase price applicable to the residence, and (e) no part of the proceeds of the qualified indebtedness may be used to acquire or replace an existing mortgage (except in certain cases permitted under applicable provisions of the Code). To obtain additional information on the Program, including the boundaries of current targeted areas, as well as the current income and purchase price limits (which are subject to revision and adjustment from time to time by the Department pursuant to changes in applicable federal law and Department policy), please contact Cathy Gutierrez at the Texas Department of Housing and Community Affairs, 221 East 11th Street, Austin, Texas 78701-2410, telephone (512) 475-0277.

The Department intends to maintain a list of single family mortgage lenders that will participate in the Program by making loans to qualified holders of these mortgage credit certificates. Any lender interested in appearing on this list or in obtaining additional information regarding the Program should contact Cathy Gutierrez at the Texas Department of Housing and Community Affairs, 221 East 11th Street, Austin, Texas 78701-2410, (512) 475-3277. The Department may schedule a meeting with lenders to discuss in greater detail the requirements of the Program.

This notice is published in satisfaction of the requirements of Section 25 of the Code and Treasury Regulation Section 1.25-3T(j)(4) issued thereunder regarding the public notices prerequisite to the issuance of mortgage credit certificates and to maintaining a list of participating lenders.

107 Auctions

NOTICE OF PUBLIC SALE

Pursuant to chapter 59, Texas Property Code, Storage Depot locations listed below will hold a public auction of property being sold to satisfy landlord's lien. Sale will be held on Friday, May 17, 2013 at the following locations and times:
Property will be sold to the highest bidder for cash. Deposit for removal and clean-up will be required. Seller reserves the right to not accept any bid and to withdraw property from sale. Property includes contents in the spaces of the following tenants:

1. **1575 Us. Military Hwy 281, BROWNSVILLE, TEXAS 78520@ 9:30 A.M. UNITS BEING SOLD ARE:**

ROCIO ROJAS: Appliances, Misc. Items

2. **654 N. Expressway 77, BROWNSVILLE, TEXAS 78520@ 10:30 A.M. UNITS TO BE SOLD ARE:**

ESTEVAN LOPEZ: Furniture, Misc. Items
THALIA OCHOA: Misc. Items
VICTOR ABIEL PADILLA: Boxes of Misc. Items

3. **274 KINGS HWY, BROWNSVILLE, TEXAS 78521 @11:30 am UNITS BEING SOLD ARE:**

SUSANNE LYTLE: Boxes of Misc. Items
ZOLA BENAVIDES: Tires, Salon equipment, Misc. Items

4. **205 MORNINGSIDE RD., BROWNSVILLE, TEXAS 78520@ 12:30 p.m. UNITS BEING SOLD ARE:**

ERNESTO LOPEZ III: Furniture, Boxes of Misc. Items
JAIME GARZA: Electronics, Appliances, Furniture, Misc. Items.
BONOZO SANTIBANEZ: Misc. Items
BONOZO SANTIBANEZ: Vehicle Shell, Misc. Items
JULIE RODRIGUEZ: Misc. Items

5. **6580 E. FM 802, BROWNSVILLE, TEXAS 78526 @ 1:30 P.M. UNITS BEING SOLD ARE:**

MARIA DEL CARMEN ANDRADE: Appliances, Misc. Items
BERNICE DE LUCIO: Furniture, Boxes of Misc. Items
JOSE VEGA: Mountain Bike, Appliances, Misc. Items

4/26/2013 & 5/03/2013

FIND IT IN THE CLASSIFIEDS
Valleywide 1-866-572-SELL

AUCTION
CCPD IMPOUND
SAT. MAY 4, 10AM

107 Auctions

114 Adoptions

♥ADOPT♥

115 Special Notices

Smart Buy
Phone Accessories

203 Air Conditioning

210 Cement Work

217 General Services

218 Home Repairs

Valleywide 1-866-572-SELL

218 Home Repairs

AZTEC

221 Lawn Care/Landscaping

225 Paint & Paper

305 Pets & Supplies







405 Garage Sales/Flea Market

Garage Sales / Flea Market

405 Garage Sales/Flea Market Lower Valley

405 Garage Sales Flea Market Upper Valley

After Your Garage Sale Bring Your unsold items to goodwill
Call 1-866-222-0555 to find your nearest Goodwill Donation Station.
Donations

418 Restaurant Equipment

JEAN'S RESTAURANT SUPPLY

501 Help Wanted

FRED LOYA INSURANCE
Now Hiring BILINGUAL CUSTOMER SALES REPS (English/Spanish)
Apply At nearest location or Email Application & Resume
Live interviews for Mission and McAllen
Tuesday May 7th
9am-4pm
917 N. 10th St McAllen
Pay Starting at

HUTCO INC.
Local & Louisiana work. Housing Available
1st Class 3G, 4G Fluxcore Welders,
1st Class Ship fitters, & CR stick Fluxcore Welders

101 Legal Notices

FEDERAL AVIATION ADMINISTRATION NOTICE OF PUBLIC HEARING

In accordance with the National Environmental Policy Act (NEPA), the Federal Aviation Administration (FAA), Office of Commercial Space Transportation (AST) is announcing the availability of the *Draft Environmental Impact Statement for the SpaceX Texas Launch Site* (Draft EIS). The Draft EIS evaluates the potential environmental impacts associated with Space Exploration Technologies Corp. (SpaceX) proposal to launch the Falcon 9 and Falcon Heavy orbital vertical launch vehicles from a private site located in Cameron County, Texas. The Proposed Action would include a significant encroachment on floodplains per DOT Order 5650.2, *Floodplain Management and Protection*. An electronic version of the Draft EIS is available on the FAA/AST website:
http://www.faa.gov/about/office_org/headquarters_offices/ast/environmental/nepa_docs/review/documents_progress/spacex_texas_launch_site_environmental_impact_statement/.
In addition, printed copies of the Draft EIS are available at the following locations: Brownsville Public Library Main Branch, Southmost Branch Library, and the University of Texas at Brownsville, Oliveira Library.

As part of the EIS public participation process, the FAA will hold a public hearing on May 7, 2013, from 5:00 p.m. to 8:00 p.m. at the ITEC Center, 301 Mexico Blvd., Suite G-1, Brownsville, TX 78520. The public hearing will include a poster information session from 5:00 to 6:00 p.m., FAA presentation from 6:00 to 6:15 p.m., followed by a public statement period in which members of the public may provide up to a 3-minute statement. The FAA will transcribe oral comments. Comments on the Draft EIS will help the FAA arrive at the best possible informed decision about the proposal. All comments must be postmarked or received (online) no later than June 3, 2013 to ensure consideration in the Final EIS. The public can provide comments in four ways: 1) provide written or oral comments at the public hearing, 2) email comments to faaspacexeis@cardnotec.com, 3) fax comments to (410) 990-0455, or 4) mail comments to: Ms. Stacey M. Zee, Environmental Specialist, Federal Aviation Administration, SpaceX EIS c/o Cardno TEC Inc., 275 West Street, Suite 110, Annapolis, MD 21401.

05/01, 02, 05/03/13

LEGAL NOTICE

APPLICATION HAS BEEN MADE WITH TEXAS ALCHOLIC BEVERAGE COMMISSION FOR MIXED BEVERAGE PERMIT BY ALFONSO T. SALAZAR, MUSSETTE C. SALAZAR, AND CAMERON K. SALAZAR DBA DIRTY AL'S TO BE LOCATED AT 33396 STATE PARK RD. 100 SOUTH PADRE ISLAND, CAMERON COUNTY TX 78597

5/2, 5/3/2013

107 Auctions

BOND & BOND AUCTIONEERS & REALTY
PUBLIC AUCTION
CITY OF MERCEDES & OTHER CONSIGNORS
VEHICLES, EQPT., TOOLS, FURNITURE. ACCEPTING ALL TYPES OF EQPT. BRING AS EARLY AS POSSIBLE.
DATE: SAT MAY 4th @ 10AM

Exhibit A-13. Public Hearing Notice - Valley Morning Star



VALLEY MORNING STAR CLASSIFIED WEDNESDAY, MAY 1, 2013 ★ B5

Valleywide CLASSIFIEDS

valleyclassifieds.com

1-866-572-SELL WEDNESDAY, MAY 1, 2013 1-866-572-SELL

101 Legal Notices 101 Legal Notices 101 Legal Notices

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REQUEST FOR SEALED BIDS

The Board of Directors of the Region One Education Service Center, Edinburg, Texas request Sealed Bids on:

REGION ONE SCIENCE LAB PROJECT
Sealed Bid 13-03-07

The Board of Directors, herein after known as "Owner", will receive sealed bids from qualified bidders until **2:00 PM, Thursday, May 30, 2013** in the Zapta Room of the Region One Education Service Center, located at 1900 West Schunior Street, Edinburg, Texas 78541-2233, at which time and place bids will be opened and publicly read aloud. Sealed bids will be received in accordance with the Instructions to Vendors. Only bona fide sealed bids will be considered at opening time. All bids received after the stipulated time for bid opening will be returned to the bidder unopened.

The request for sealed bids that includes construction documents, selection criteria, estimated budget, project scope, schedule and other information that contractors may need in order to respond to the request may be obtained from, or inspected at:

ERO Archictects
300 South 8th Street
McAllen, Texas 78501-2721
Phone: 956-661-0400
Fax: 956-661-0401

Plans and specifications may be obtained from RGV Reprographics located at 519 South Broadway Street, McAllen, Texas 78501-4903. All prospective bidders that pick

108 Cemetery Lots

San Benito
2 lots in Mont Meta Memorial Park in Section D lot 45 space 9 & 10. $2,150 each or $4,300 for both. 512-422-0903. Info: TX95670 to 56654

114 Adoptions

ADOPT
Actress former yearns to be future mom. Financially Secure, Educated, Very loving. Expenses paid Kim. "1-800-990-7667" It is illegal to be paid for anything beyond legal and/or medical expenses."

305 Pets & Supplies

English Jack Russell Puppies for sale $350-$550 Dewormed /shots. 956-496-9921 Info: TX94949 to 56654

On the web valleyclassifieds.com

102 Bid Notices

305 Pets & Supplies

AKC German Shepherd Pups, 1st shots, dewormed 3 (F), $175 each. (956)456-6669, Info: TX95961 to 56654

NEW Today!

BUBBA (M) 24 lb Terrier-Dachshund. Mellow. Gentle friend. Great dog. HSH 956-425-7297

German Shepherd puppies, 6 Males, 2 Females, 7 weeks old, $250 (M), $200 (F). (956) 330-2033 Info: TX95071 to 56654

102 Bid Notices

305 Pets & Supplies

Carlo (M) neutered very friendly young adult blonde Terrier X. Text: 956.245.4809 Tip of Tex K9 Rescue Info: TX96040 to 56654

NEW Today!

Foxy (F) small spayed young adult. Tri color & friendly. Text: 956.245.4809 Tip of Tex K9 Rescue Info: TX96048 to 56654

Valleywide valleyclassifieds.com

102 Bid Notices

305 Pets & Supplies

GiGi & Fuxy (F) Dachshund X., Extra loving. Mom & daughter pair. HSH 956-425-729

NEW Today!

JEZEBEL (F) adorable Terrie kitten. Litter trained. Cute as a button. HSH 956-425-7297

Call Us At 1-866-572-SELL (7355)

102 Bid Notices

VALLEY MORNING STAR — CLASSIFIED — THURSDAY, MAY 2, 2013 ✱ B5

valleywide CLASSIFIEDS

valleyclassifieds.com

Hidalgo County: THE MONITOR, MID-VALLEY TOWN CRIER
Cameron County: THE STAR, THE BROWNSVILLE HERALD
COASTAL CURRENT, INLAND BREEZE

B

1-866-572-SELL — THURSDAY, MAY 2, 2013 — 1-866-572-SELL

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109 Personals

San Benito 2 lots in Mont Meta Memorial Park in Section D lot 45 space 9 & 10. $2,150 each or $4,300 for both. 512-422-0903. Info: TX95070 to 56654

ADOPT
Actress former yearns to be future mom. Financially Secure, Educated, Very loving. Expenses paid Kim. 1-800-990-7667 "It is illegal to be paid for anything beyond legal and/or medical expenses."

NEW Today!

Dear Heart of Jesus, in the past I have asked for favors. This time I ask you this very special one (mention favor). Take it dear Jesus and place it within your own heart where your father sees it then in your merciful eyes it will become your favor not mine. Amen. Say this prayer for 3 days, promise publication and favor will be granted. Never known to fail. Thank You / **D.B**

213 Drapes & Upholstery

LINDA'S UPHOLSTERY Est., Pick-up, Delivery 956-423-8879

218 Home Repairs

AZTEC House Leveling & Remodeling (All Types of Home Repairs)
- Slab/Pier & Beam
- FREE Estimates
- Senior Discounts

Hgn. 412-1558 McA. 631-0985 Brwn. 546-5657 Info: TX98033 to 56654

221 Lawn Care/ Landscaping

ECONOMY LAWN & Tree Tractor Service, carpet grass, topsoil,

BUBBA (M) 24 lb Terrier-Dachshund. Mellow. Gentle friend. Great dog. HSH 956-425-7297

English Jack Russell Puppies for sale $350-$550 Dewormed /shots. 956-496-9921 Info: TX94949 to 56654

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GiGi & Foxy (F) Lacrisnung X-Extra loving. Mom & daughter pair. HSH 956-425-729

German Shepherd puppies, 6 Males, 2 Fe-males, (M), 6 weeks old. $250 (F), $200 (M). (956) 330-2033 Info: TX95071 to 56654

Medusa (F), 5 yr. old-spayed Toy Poodle. Lap dog. Text: 956.245.4809 Tip of Tex K9 Rescue Info: TX96066 to 56654

STARBUCKS (M) outgoing & confidant Chihuhua X. Mr. Personality. HSH 956-425-7297

JEZEBEL (F) adorable Terrier X. Litter trained. Cute as a button. HSH 956-425-7297

Venus (F) spayed friendly young adult Poodle-Terrier X. Text: 956.245.4809 Tip of Tex K9 Rescue

Valleywide valleyclassifieds.com

Call Us At 1-866-572-SELL (7355)

101 Legal Notices

Check the web at valleyclassifieds.com

101 Legal Notices

406 Miscellaneous

Damaged Building Sale, Storage, several sizes, dramatically reduced, delivery, 369-5222

NEW Today!

San Benito - 945 Ballenger St. on Thurs & Fri. 8am-5. Refrigerator, dining set, Queen size bed set, misc.
Info: TX95314 to 56654

NEW Today!

San Benito- 3 Family sale, 1600 N. Bowie on Sat. 8:30-2:30. LOTS of kitchen items, sports & fishing gear, canoe, Misc. NO early birds!

410 Restaurant Equipment

JEAN'S

Sinks, Fryers, Ranges, Ice machine, ventihood, chairs, tables, coolers & More. **956-688-6290** Info: TX96206 to 56654

B4 ★ FRIDAY, MAY 3, 2013 CLASSIFIED VALLEY MORNING STAR

valleywide CLASSIFIEDS

valleyclassifieds.com

Hidalgo County
Edinburg
THE MONITOR
McAllen
MID-VALLEY TOWN CRIER
Cameron County
Brownsville
TIMES STAR
Harlingen
THE HERALD
COASTAL CURRENT
ISLAND BREEZE

B

1-866-572-SELL FRIDAY, MAY 3, 2013 1-866-572-SELL

no event will mortgage credit certificates be issued later than the date permitted by federal tax law.

In order to satisfy the eligibility requirements for a mortgage credit certificate under the Program, (a) the prospective residence must be a single-family residence located within the State of Texas that can be reasonably expected to become the principal residence of the mortgagor within a reasonable period of time after the financing is provided; (b) the prospective homebuyer's current income must not exceed, (i) for families of three or more persons, 115% (140% in certain targeted areas or in certain cases permitted under applicable provisions of the Internal Revenue Code of 1986, as amended (the "Code")) of the area median income, and (ii) for individuals and families of two persons, 100% (120% in certain targeted areas or in certain cases permitted under applicable provisions of the Code) of the area median income; (c) the prospective homebuyer must not have owned a home as a principal residence during the past three years (except in the case of certain targeted area residences or in certain cases permitted under applicable provisions of the Code); (d) the acquisition cost of the residence must not exceed 90% (110% in the case of certain targeted area residences or in certain cases permitted under applicable provisions of the Code) of the average area purchase price applicable to the residence; and (e) no part of the proceeds of the qualified indebtedness may be used to acquire or replace an existing mortgage (except in certain cases permitted under applicable provisions of the Code). To obtain additional information on the Program, including the boundaries of current targeted areas, as well as the current income and purchase price limits (which are subject to revision and adjustment from time to time by the Department pursuant to changes in applicable federal law and Department policy), please contact Cathy Gutierrez at the Texas Department of Housing and Community Affairs, 221 East 11th Street, Austin, Texas 78701-2410; telephone (512) 475-0277.

The Department intends to maintain a list of single family mortgage lenders

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405 Garage Sales/ Flea Market Lower Valley

ALAMO Door- Garage sales, service and repair. Valley-wide. 956-365-9007

Antiques Emporium & Tamer-Duckerhund Frank's Collection Record Shop. 123 E. Jackson Hgn 423-4041 Mon-Sat 10am - 6:30

SOL Technologies. Renewable Energy, Solar Panels, Wind Turbines. **956-975-2510. www.soltechnologies llc.com** Free at Home and Business Consultations.

210 Home Repairs

All Valley Housebuilding. Slab,Pier & Beam Repairs. Free Inspections! Discounts 4 2 1 - 2 2 0 0 (956)994-9996

AZTEC House Leveling & Remodeling (All Types of Home Repairs)
- Slab,Pier & Beam
- FREE Estimates
- Senior Discounts

Hgn. 412-1558 McA. 631-0995 Brwn. 546-5657 Info: TX96033 to 56854

valleywide

valleyclassifieds.com

HGN- 2009 Lazy Lake on Fri & Sat 7am-12. Bedroom set, couch, loveseat, tools, electronics, toys, clothes. Info: TX96389 to 56854

NEW Today!

HGN- 2114 Spring Court (Springfield Estates off 13th St.) Sat. 8a.m.-12. Clothes, shoes, H/H items, toys, lots of misc

HGN- 2314 Pendleton on Fri. & Sat 8am-4 for every-thing. TOO MUCH TO LIST! Info: TX96311 to 56854

LOOKING FOR A BARGAIN? CHECK OUT THE GARAGE SALES

1-866-572-SELL

HGN- 3102 Lazy Lake on Friday 8am-4 and Saturday 8am-noon. Tools, furn, yard equipment, power washer. Info: TX96295 to 56854

107 Auctions

BOND & BOND AUCTIONEERS & REALTY

PUBLIC AUCTION

CITY OF MERCEDES & OTHER CONSIGNORS VEHICLES, FOOT... TOOLS

BUBBA (M) 24 lb. Mellow, Gentle friend. Great dog. HSH 856-425-7297

English Jack Russell Puppies for sale $350-$550 Dewormed Info: 956-466-9921 TX94949 to 56854

German Shepherd puppies, 6 Males, 2 Females, 7 weeks old. $250 (M), $300 (F). (956) 330-2033 (956) 7439071 to 56854

Exhibit A-14. Public Hearing Notice - El Bravo



D A D

EL BRAVO | H. Matamoros, Tam., México
Miércoles 1 de Mayo de 2013

7

Mayo 2013

ADMINISTRACIÓN FEDERAL DE AVIACIÓN

NOTIFICACIÓN DE REUNIÓN PÚBLICA

De acuerdo con la Ley de Política Nacional en Materia de Medio Ambiente (NEPA por sus siglas en inglés), la Administración Federal de Aviación (FAA por sus siglas en inglés), Oficina de Transporte Espacial Comercial (AST por sus siglas en inglés) está anunciando la disponibilidad de la Declaración de Impacto Ambiental Preliminar para la Base de Lanzamiento de SpaceX en Texas (EIS Preliminar por sus siglas en inglés). La EIS Preliminar evalúa los posibles impactos ambientales asociados con la propuesta de SpaceExploration Technologies Corp. (SpaceX), quienes proponen lanzamientos de vehículos orbitales verticales como el Falcón 9 y el Falcón Heavy, desde un sitio privado situado en el condado de Cameron Texas. La Acción Propuesta incluiría una intrusión significativa en las llanuras de aluvión como definidas en la Orden del Departamento de Transporte 5620.2, Administración y Protección de Llanuras de Aluvión. Una versión electrónica de la EIS Preliminar está disponible en la página de internet de la FAA/AST:

http://www.faa.gov/about/office_org/headquarters_offices/ast/environmental/nepa_docs/review/documents_progress/spacex_texas_launch_site_environmental_impact_statement/.

Adicionalmente, copias impresas de la EIS Preliminar están disponibles en las siguientes bibliotecas locales:

Biblioteca Pública de Brownsville, Sede Principal y Sede Southmost; y en la Universidad de Texas en Brownsville, Biblioteca Oliveira.

Como parte del proceso de participación pública de la EIS, la FAA organizará una reunión pública el 7 de mayo del 2013, desde las 5:00 p.m. hasta las 8:00 p.m. en el Centro ITEC, ubicado en el 301 México Blvd., Suite G-1, Brownsville, TX 78520. La reunión incluirá una sesión de carteles informativos desde las 5:00 p.m. a las 6:00 p.m., una presentación de la FAA desde las 6:00 p.m. hasta las 6:15 p.m., seguido por un período de declaraciones públicas en la que los miembros del público pueden ofrecer declaraciones de hasta 3 minutos. La FAA transcribirá los comentarios ofrecidos oralmente. Comentarios sobre la EIS Preliminar ayudarán a la FAA a tomar la decisión mejor informada sobre esta propuesta. Todos los comentarios deben ser matasellados o recibidos (por internet) a más tardar el 3 de junio del 2013 para asegurar que sean considerados en la EIS Final. El público puede ofrecer comentarios de cuatro maneras: 1) Ofrecer comentarios oralmente o por escrito durante la reunión pública, 2) enviar comentarios por correo electrónico a faaspacexeis@cardnotec.com, 3) enviar comentarios por fax al (410) 990-0455, o 4) enviar comentarios por correo a: Ms. [redacted] Environmental Specialist, Federal Aviation Administración, SpaceX



D A D

EL BRAVO | H. Matamoros, Tam., México
Jueves 2 de Mayo de 2013

7

Mayo 2013

ADMINISTRACIÓN FEDERAL DE AVIACIÓN

NOTIFICACIÓN DE REUNIÓN PÚBLICA

De acuerdo con la Ley de Política Nacional en Materia de Medio Ambiente (NEPA por sus siglas en inglés), la Administración Federal de Aviación (FAA por sus siglas en inglés), Oficina de Transporte Espacial Comercial (AST por sus siglas en inglés) está anunciando la disponibilidad de la Declaración de Impacto Ambiental Preliminar para la Base de Lanzamiento de SpaceX en Texas (EIS Preliminar por sus siglas en inglés). La EIS Preliminar evalúa los posibles impactos ambientales asociados con la propuesta de SpaceExploration Technologies Corp. (SpaceX), quienes proponen lanzamientos de vehículos orbitales verticales como el Falcón 9 y el Falcón Heavy, desde un sitio privado situado en el condado de Cameron Texas. La Acción Propuesta incluiría una intrusión significativa en las llanuras de aluvión como definidas en la Orden del Departamento de Transporte 5620.2, Administración y Protección de Llanuras de Aluvión. Una versión electrónica de la EIS Preliminar está disponible en la página de internet de la FAA/AST:

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D A D

EL BRAVO | H. Matamoros, Tam., México
Viernes 3 de Mayo de 2013

5

da

$5 mil 500 mdp en Tamaulipas

ADMINISTRACIÓN FEDERAL DE AVIACIÓN

NOTIFICACIÓN DE REUNIÓN PÚBLICA

De acuerdo con la Ley de Política Nacional en Materia de Medio Ambiente (NEPA por sus siglas en inglés), la Administración Federal de Aviación (FAA por sus siglas en inglés), Oficina de Transporte Espacial Comercial (AST por sus siglas en inglés) está anunciando la disponibilidad de la Declaración de Impacto Ambiental Preliminar para la Base de Lanzamiento de SpaceX en Texas (EIS Preliminar por sus siglas en inglés). La EIS Preliminar evalúa los posibles impactos ambientales asociados con la propuesta de SpaceExploration Technologies Corp. (SpaceX), quienes proponen lanzamientos de vehículos orbitales verticales como el Falcón 9 y el Falcón Heavy, desde un sitio privado situado en el condado de Cameron Texas. La Acción Propuesta incluiría una intrusión significativa en las llanuras de aluvión como definidas en la Orden del Departamento de Transporte 5620.2, Administración y Protección de Llanuras de Aluvión. Una versión electrónica de la EIS Preliminar está disponible en la página de internet de la FAA/AST:

http://www.faa.gov/about/office_org/headquarters_offices/ast/environmental/nepa_docs/review/documents_progress/spacex_texas_launch_site_environmental_impact_statement/.

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Biblioteca Pública de Brownsville, Sede Principal y Sede Southmost; y en la Universidad de Texas en Brownsville, Biblioteca Oliveira.
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Exhibit A-15. Public Hearing Flyers (English and Spanish)

Federal Aviation Administration
PUBLIC COMMENT HEARING
YOU ARE INVITED

The Federal Aviation Administration (FAA), Office of Commercial Space Transportation (AST) is releasing the *Draft Environmental Impact Statement for the SpaceX Texas Launch Site* (Draft EIS). The Draft EIS evaluates the potential environmental impacts associated with Space Exploration Technologies Corp. (SpaceX's) proposal to launch the Falcon 9 and Falcon Heavy orbital vertical launch vehicles from a private site located in Cameron County, Texas, which would require the FAA to issue launch licenses and/or experimental permits. Under the Proposed Action, SpaceX would construct a vertical launch area at the eastern end of Texas State Highway 4 (Boca Chica Boulevard) and a nearby control center area to support up to 12 commercial launches per year.

When?	*What?*	*Where?*
Tuesday, May 7, 2013		
5:00 pm to 6:00 pm	Poster Information Session	ITEC Center
6:00 pm to 6:15 pm	FAA Presentation	301 Mexico Blvd. G-1,
6:15 pm to 8:00 pm	Public Statement Period	Brownsville, Texas 78520

The public hearing will include a poster information session from 5:00 p.m. to 6:00 p.m., FAA presentation from 6:00 p.m. to 6:15 p.m., followed by a public statement period in which members of the public may provide up to a 3-minute statement. You can provide comments at the public hearing or by submitting comments to: Ms. Stacey M. Zee, Environmental Specialist, Federal Aviation Administration, SpaceX EIS c/o Cardno TEC Inc., 275 West Street, Suite 110, Annapolis, MD 21401; email faaspacexeis@cardnotec.com; or fax (410)-990-0455. Comments must be postmarked or received (online) no later than June 3, 2013 to ensure consideration in the Final EIS.

Copies of the Draft EIS are available at the following libraries:

- Brownsville Public Library, 2600 Central Blvd
- Southmost Branch Library, 4320 Southmost Blvd
- University of Texas at Brownsville, Oliveira Library, 80 Fort Brown St.

Administración Federal de Aviación
REUNIÓN PÚBLICA
USTED ESTÁ INVITADO

La Administración Federal de Aviación (FAA), Oficina de Transporte Espacial Comercial (AST) publicó la *Declaración de Impacto Ambiental para la Base de Lanzamiento de SpaceX en Texas* (EIS Preliminar por sus siglas en inglés). La EIS Preliminar evalúa los posibles impactos ambientales asociados con la propuesta de SpaceX Exploration Technologies Corp. (SpaceX) de establecer un sitio de lanzamiento para los vehículos orbitales de lanzamiento vertical Falcón 9 y Falcón Heavy desde una ubicación privada en el Condado Cameron, Texas lo cual requiere que el FAA emita licencias de lanzamientos y/o permisos experimentales Bajo la Acción Propuesta, SpaceX construiría una área de lanzamientos verticales en el extremo oriental de la Autopista Estatal 4 de Texas (Boca Chica Boulevard) y un centro de control en una área cercana para para acomodar hasta 12 lanzamientos comerciales al año.

¿Cuando?	*¿Qué?*	*¿Donde?*
martes, 7de Mayo, 2013		
5:00 p.m. a 6:00 p.m.	Sesión informativa de Carteles	ITEC Center
6:00 p.m. a 6:15 p.m.	Presentación de la FAA	301 Mexico Blvd. G-1,
6:15 p.m. a 8:00 p.m.	Declaraciones del Público	Brownsville, Texas 78520

La reunión incluirá una sesón informativa de carteles de 5:00 p.m. a 6:00 p.m.; una presentación dada por la FAA de 6:00 p.m. a 6:15 p.m.; seguida por un período para declaraciones del público, en el cual miembros de la comunidad podrán ofrecer una declaración de un máximo de 3-minutos. Usted puede ofrecer comentarios durante la reunión pública o mandarlos a la siguiente dirección :

Ms. Stacey M. Zee, Environmental Specialist, Federal Aviation Administration, SpaceX EIS c/o Cardno TEC Inc., 275 West Street, Suite 110, Annapolis, MD 21401; correo electrónico: faaspacexeis@cardnotec.com; o fax (410) 990-0455. Para asegurar que sus comentarios sean considerados en la EIS Final, deberán ser matasellados o recibidos (por internet) a más tardar el 3 de junio, 2013.

Copias del la EIS Preliminar están disponibles en las siguientes bibliotecas:

- Brownsville Public Library, 2600 Central Blvd
- Southmost Branch Library, 4320 Southmost Blvd
- University of Texas at Brownsville, Oliveira Library, 80 Fort Brown St.

Exhibit A-16. Public Hearing Factsheets

WELCOME

Public Hearing
Draft Environmental Impact Statement
for the SpaceX Texas Launch Site



May 7, 2013
5:00 p.m. to 8:00 p.m.
ITEC CENTER

Please Sign In

Your input is essential to ensure the most informed decision is made.

WELCOME TO THE FAA PUBLIC HEARING

The Federal Aviation Administration (FAA) Office of Commercial Space Transportation (AST) has prepared a Draft Environmental Impact Statement EIS) for the SpaceX Texas Launch Site (Draft EIS) to evaluate the potential environmental impacts that may result from the FAA's proposal to issue launch licenses and/or experimental permits that would allow Space Exploration Technologies Corp. (SpaceX) to launch the Falcon 9, Falcor Heavy, and a variety of reusable suborbital launch vehicles from a launch site on privately owned property in Cameron County, Texas. The 45-day public comment period began when the FAA published a Notice of Availability for the Draft EIS in the *Federal Register* on April 19, 2013. During the public comment period, the FAA encourages interested agencies, organizations, Native American tribes, and members of the public to submit comments concerning the scope and content of the Draft EIS. Comments are due to the FAA by **June 3, 2013**. An electronic version of the Draft EIS is available on the FAA/AST website:
http://www.faa.gov/about/office_org/headquarters_offices/ast/environmental/nepa_docs/review/documents_progress/spacex_texas_launch_site_environmental_impact_statement/.

What is the Purpose of this Public Hearing?

The purpose of this public hearing is to inform you about the proposed project, explain the Proposed Action and the associated environmental impact analysis, and solicit your comments and concerns related to Proposed Action. Please review the displays located throughout the open house, and ask FAA representatives questions.

Why Hold a Public Hearing?
Tonight's public hearing is being held to solicit input from the public to help the FAA arrive at the best possible informed decision about the Proposed Action.

The public hearing includes a poster information session from 5:00 p.m. to 6:00 p.m., FAA presentation from 6:00 p.m. to 6:15 p.m., followed by a public statement period from 6:15 p.m. to 8:00 p.m. During the public statement period, members of the public may provide up to a 3-minute statement. The FAA will transcribe all oral comments.

Your Involvement in the Draft EIS

All comments received during the comment period will be given equal weight and be taken into consideration in the preparation of the Final EIS. ***Comments on the Draft EIS should be as specific as possible and address the analysis of potential environmental impacts and the adequacy of the Proposed Action or merits of the alternatives and the mitigation being considered.***

During the comment period, the public can provide comments in 5 ways:

1. Provide written comments at tonight's public hearing
2. Talk to our court reporter or speak during the public statement portion of tonight's public hearing
3. Submit comments via email to faaspacexeis@cardnotec.com
4. Fax your comments to (410 990-0455
5. Mail your written comment form to:

Ms. Stacey M. Zee, Environmental Specialist
Federal Aviation Administration
SpaceX EIS
c/o Cardno TEC Inc. - 275 West Street—Suite 110
Annapolis, MD 21401

EIS for SpaceX Texas Launch Site | Page 1

LICENSING & PERMITTING

FAA Licenses, Permits, Regulations, and Approvals

- The FAA statutory requirements for licenses and permits are described in 14 CFR Chapter III, Parts 400-450.
- SpaceX would be the exclusive user of the site.
- The FAA conducts a review of the license or permit application including a policy review, payload review, financial determination, environmental review and safety review.
- Successful completion of the environmental review does not guarantee that FAA would issue launch licenses and/or experimental permits to SpaceX.

AST Licensing and Permitting Review

- **Policy Review** – Determines whether a proposed launch would jeopardize U.S. National Security, International Obligations or Foreign policy interests
- **Payload Review** – Determines if a license applicant or payload owner or operator has obtained all required licenses, authorizations, and permits. Does not apply to payloads under the jurisdiction of any other government agency
- **Financial Responsibility Determination** – Proof of financial responsibility is required. This is usually fulfilled by purchase of liability insurance
- **Environmental Review** – Proposal must be reviewed under NEPA. Upon completion, this EIS process will fulfill the environmental review portion of the license application (after the FAA publishes the Final EIS and Record of Decision).
- **Safety Review** – Determines if an applicant can safely conduct the launch of the proposed launch vehicle(s) and payload(s).



PROPOSED ACTION

The Proposed Action is for the FAA to issue launch licenses and/or experimental permits to SpaceX to conduct launches of the Falcon 9, Falcon Heavy, and a variety of reusabe suborbital launch vehicles from the proposed launch site. As part of the Proposed Action, SpaceX would construct a vertical launch area and a control center area to support up to 12 commercial launches per year, which includes a maximum of two Falcon Heavy launches. All Falcon 9 and Falcon Heavy launches would be expected to have commercial payloads, including satellites or experimental payloads, or may carry a capsule, such as the SpaceX Dragon Capsule. All launch trajectories would be to the east over the Gulf of Mexico. SpaceX intends to apply to the FAA for the appropriate launch licenses and/or experimental permits. Alternatives under consideration include the Proposed Action and the No Action Alternative. Under the No Action Alternative, the FAA would not issue launch licenses and/or experimental permits to SpaceX.

Operational Activities

Approximately 30 full-time SpaceX employees/contractors would be present at the vertical launch area and/or control center area. Full-time SpaceX employees/contractor are anticipated to work a single shift, between the hours of approximately 8:00 a.m. and 5:00 p.m. On a per-mission basis, launch campaigns (i.e., preparation for and conducting a launch) would be expected to last up to two weeks. During a launch campaign, an additional 100 local or transient workers would be working at the vertical launch area and/or control center area. During launch campaigns, the additional workers could work extended hours; however, 2 days prior to launch, full-time SpaceX employees/contractors and the local or transient workers would need to be on-site for up to 24 hours per day. Staffing on-site would return to normal levels (approximately 30 full-time SpaceX employees/contractors) within a day or two after the actual launch.

Proposed Launch Day Closure Area

As part of the FAA licensing and permitting process SpaceX must implement a plan that defines the process for ensuring that any unauthorized persons, vessels, trains, aircraft, or other vehicles are not within the FAA approved hazard area. SpaceX proposes to limit public access at two pre-defined checkpoints on State Highway 4 for up to 15 hours on each launch day, with 6 hours being the closure time for a nominal launch. The first checkpoint is a soft checkpoint on State Highway 4, just east of Massey Way. Government personnel, SpaceX personnel, emergency personnel, and anyone with property beyond this soft checkpoint could pass, but the general public would be denied access. SpaceX may move the soft checkpoint further away from the launch site based on consultation with the USFWS.

On launch day, Boca Chica Beach would be closed to the public from the Brownsville Shipping Channel south to the U.S./Mexico border on the Gulf Coast. The beach closure for launch day would last upto 15 hours.



The second checkpoint would be a hard checkpoint, just after Boca Chica Village, which is a "no pass" area determined by the hazard area. No one would be permitted to pass by this hard checkpoint during launch operations. SpaceX and law enforcement would monitor the area to the east of the checkpoints to ensure that the area is clear. SpaceX would coordinate with Cameron County, the City of Brownsville, USFWS - Lower Rio Grande Valley NWR, NPS, TPWD, TGLO, and TxDOT to identify a safe location for the public to view a launch event (along State Highway 4 before the Massey way checkpoint).

Construction Activities



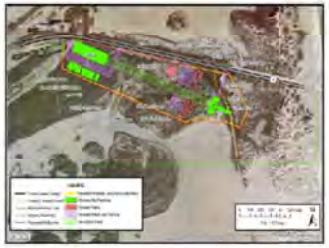
As part of the Proposed Action, SpaceX would construct new facilities, structures, and utility connections in order to support the launches. The proposed schedule for all construction is a 24-month period from start to finish. The facilities would be located in two areas: vertica launch area and a control center area.

The proposed vertical launch area is currently undeveloped and is located directly adjacent to the eastern terminus of the Texas State Highway 4 (Boca Chica Boulevard).

The control center area would be located inland to the west of the vertical launch area. All facilities would be constructed on private land owned or leased by SpaceX. The development of access and supporting utility infrastructure for the vertical launch and control center areas may occur on lands outside those owned or leased by SpaceX.

Vertical Launch Area Site Layout

At the proposed vertical launch area, the facilities required would include: an integration and processing hangar, a launch pad and stand with its associated flame duct, water tower, four lightning protection towers, retention basin for deluge water, propellant storage and handling areas, a workshop and office area, and a warehouse for parts storage.



The hangar facility at the vertical launch area would be used for the preparation of the launch vehicle for launch and the final fueling and integration of the payload onto the vehicle. The launch pad and stand is used to move the launch vehicle to a vertical position and to support it on the pad prior to lift-off.

Control Center Area Site Layout

The proposed control center area would include: two launch control center buildings, two payload processing facilities, launch vehicle processing hangar, two radio frequency transmitter/receivers, generators and diesel storage facilities, and a satellite fuels storage facility.



The control center would be used for command and control of the launch vehicle, payload, and ground systems during launch and test operations. The payload processing facilities would be used to conduct final processing of payloads prior to integrating them with the launch vehicle. The launch vehicle processing hangar would be used to conduct refurbishment of flown stages or pre-integration preparation of the launch vehicle stages before they go to the pad hangar for final integration.



Environmental Effects

The following resource areas were considered to provide a context for understanding and assessing the potential environmental effects of the Proposed Action: compatible land use (including farmlands and coastal resources); Section 4(f) properties; noise; visual resources and light emissions; historical, architectural, archaeological, and cultural resources; air quality; water resources (including surface waters, groundwater, wetlands, floodplains, and Wild and Scenic Rivers); biological resources (fish, wildlife, and plants); hazardous materials, pollution prevention, and solid waste; socioeconomics, environmental justice, and children's environmental health risks and safety risks; natural resources and energy supply; and secondary (induced) impacts. Additional resources were also considered including airspace, health and safety, and ground traffic and transportation.

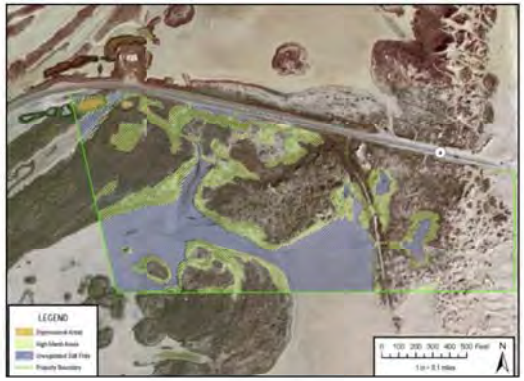
The successful completion of the environmental review process **does not** guarantee that the FAA would issue launch licenses and/or experimental permits to SpaceX. The project must also meet all FAA safety, risk, and indemnification requirements.

Please refer to the Draft EIS for the full review of potential environmental impacts from the Proposed Action. Below is a summary of select potential environmental impacts and resulting consultations with appropriate agencies.

Consultations

Wetlands

- There would be approximately 6.19 acres of wetland impacts including:
  - the direct impact to approximately 3.34 acres of wetlands
  - the indirect impact to approximately 2.85 acres of wetlands
- SpaceX would be required to obtain an individual permit from the U.S. Army Corps of Engineers, which would require compensatory mitigation to offset wetland impacts. Adverse impacts are expected to be less than significant if appropriate mitigation measures are implemented.



Biological Resources

- The FAA has prepared a Biological Assessment and has determined that the Proposed Action:
  - ***may affect, is likely to adversely affect*** the piping plover and its critical habitat, the northern aplomado falcon, the jaguarundi, the ocelot, and sea turtles (Atlantic hawksbill, green, Kemp's ridley, leatherback, and loggerhead)
  - ***may affect, is not likely to adversely affect*** the West Indian manatee
- In accordance with Section 7 of the Endangered Species Act, formal consultation is being conducted between the USFWS and the FAA, for impacts from both construction and operations. The conclusion of the consultation and associated Biological Opinion from the USFWS will be provided in the Final EIS.



Cultural Resources

- Construction of the vertical launch and control center areas, in particular, a 250-foot tall water tower and up to 200-foot tall lightning protection towers, would result in adverse visual effects to Palmito Ranch Battlefield National Historic Landmark.
- Ground vibrations caused by high noise levels from the Falcon 9 and Falcon Heavy vehicle launches would likely result in an adverse effect to three historic properties including the 1846 Cypress Pilings, the 1865 Palmetto Pilings, and the Palmetto Pilings Texas Centennial Historical Marker.
- Secondary impacts that would result from the increased visitation and use of the area would result in adverse effects on the Palmito Ranch Battlefield NHL, the 1846 Cypress Pilings, the 1865 Palmetto Pilings, and the Piling Site.
- For impacts to cultural resources, the FAA is consulting under Section 106 of the National Historic Preservation Act to address adverse effects to historic resources. The FAA is developing a Memorandum of Agreement with the THC, the Advisory Council on Historic Preservation, and the NPS to mitigate adverse effects.





Section 4(f) Properties

- Section 4(f) properties include any publicly owned parks, recreation areas, and wildlife or waterfowl refuges, or any publicly or privately owned historic site listed or eligible for listing on the National Register for Historic Places.
- The FAA is consulting with the USFWS, NPS, THC, and TPWD to come to agreement on potential impacts to Section 4(f) properties.

THIS PAGE FOR YOUR NOTES

Exhibit A-17. Public Hearing Poster Displays

WELCOME

Public Hearing
Draft Environmental Impact Statement
for the SpaceX Texas Launch Site



May 7, 2013
5:00 p.m. to 8:00 p.m.
ITEC CENTER

Please Sign In
Your input is essential to ensure the most informed decision is made.

COMMENTS

YOUR INPUT IS IMPORTANT

1 . Please ask questions.
FAA representatives are here to talk to you about your concerns.

2. Please provide comments.
This will help us understand your concerns. There are several ways to submit your comments. For your convenience, a stenographer is here to record your comments.

3. Stay involved.
Please add your name to the mailing list to receive future notices.

Please submit your comments here

THANK YOU FOR PARTICIPATING!

PROPOSED ACTION

What is the Proposed Action?

- FAA is proposing to issue launch licenses and/or experimental permits to SpaceX to launch:
  - ⇒ Falcon 9
  - ⇒ Falcon Heavy
  - ⇒ A variety of reusable suborbital launch vehicles



Proposed Vertical Launch Area Site Layout

- SpaceX would construct a vertical launch area and a control center area to support up to 12 commercial launches per year.



Proposed Launch Day Closure Area



- SpaceX proposes to limit public access at two pre-defined checkpoints on State Highway 4 for up to 15 hours on launch day, with 6 hours being the closure time for a nominal launch.
- SpaceX proposes a maximum of 180 hours of annual closure (this includes 15 hours per launch for each of the 12 launches).
- On launch day, Boca Chica Beach would be closed to the public from the Brownsville Shipping Channel south to the U.S./Mexico border.

Proposed Control Center Area Site Layout

- Command and control functions for a launch are required to be conducted at a safe separation distance from the actual launch site. As a result, the proposed control center area is approximately 2 miles west from the vertical launch area.
- The proposed control center area consists of three parcels, which are all privately-owned. Only one of these parcels has existing infrastructure: a concrete pad (a former swimming pool).





LICENSING AND PERMITTING

- SpaceX must apply for a launch license or experimental permit.
- SpaceX would be the exclusive user of the site.
- FAA statutory requirements for licenses and permits are described in 14 CFR Chapter III, Parts 400-450.
- FAA conducts a review of the license or permit application including a policy review, payload review, financial determination, environmental review and safety review.
- Successful completion of the environmental review does not guarantee that FAA would issue launch licenses and/or experimental permits to SpaceX.



AST Licensing and Permitting Review



- **Policy Review** – Determines whether a proposed launch would jeopardize U.S. National Security, International Obligations or Foreign policy interests.
- **Payload Review** – Determines if a license applicant or payload owner or operator has obtained all required licenses, authorizations, and permits. Does not apply to payloads under the jurisdiction of any other government agency
- **Financial Responsibility Determination** – Proof of financial responsibility is required. This is usually fulfilled by purchase of liability insurance.
- **Environmental Review** – Proposal must be reviewed under the NEPA. This EIS process fulfills the environmental review portion of the license application.
- **Safety Review** – Determines if an applicant can safely conduct the launch of the proposed launch vehicle(s) and payload(s).

The project must meet all FAA safety, risk, and indemnification requirements.

ENVIRONMENTAL EFFECTS

Water Resources

Wetlands

- 6.19 acres of wetland impacts including:
  - ⇒ direct impact to approximately 3.34 acres
  - ⇒ indirect impact to approximately 2.85 acres



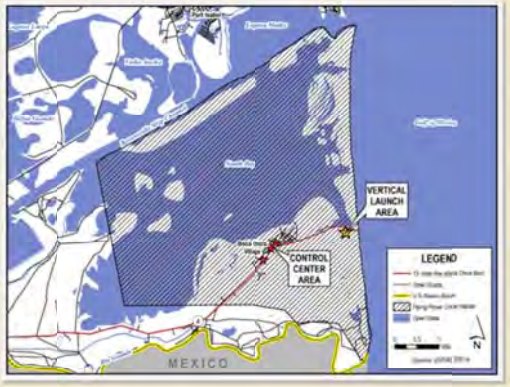
Floodplains



- Approximately 8.59 acres of 100-year floodplain would be filled in the proposed vertical launch area
- Approximately 12.4 acres of the 100-year floodplain would be filled in the proposed control center area.
- Based on the expected notable adverse impacts on some of the natural and beneficial floodplain values, the Proposed Action would result in a significant floodplain encroachment per DOT Order 5650.2.

Biological Resources

- The FAA is consulting with USFWS under Section 7 of the Endangered Species Act.
- The FAA has prepared a Biological Assessment (BA).
- Based on the BA, the FAA has determined that the Proposed Action ***may affect, is likely to adversely affect*** the piping plover and its critical habitat, the northern aplomado falcon, the jaguarundi, the ocelot, and sea turtles.



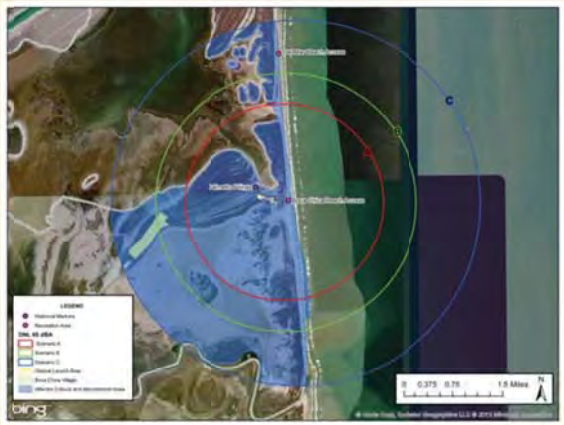


- A total of 15.74 acres of upland habitat would be removed from construction of proposed vertical launch and control center area facilities and infrastructure.
- Approximately 0.70 acre of critical habitat (unvegetated flats and depressional wetlands) for the threatened piping plover occur within the proposed project footprints for the vertical launch area and would be removed.
- The FAA has determined that the Proposed Action ***may affect, is not likely to adversely affect*** the West Indian manatee.
- None of the proposed construction areas are located in any potential sea turtle nesting areas. Proposed construction and operational activities would have no direct effect on sea turtle habitat in the terrestrial environment.



ENVIRONMENTAL EFFECTS

Noise and Compatible Land Use



*A significant impact = an increase in noise of DNL 1.5 dBA or more at or above the DNL 65 dBA noise exposure.

- The FAA analyzed the following scenarios:

Scenario	Falcon 9		Falcon Heavy		Total Operations
	Daytime	Nighttime	Daytime	Nighttime	
A	10		2		12
B	9	1	2		12
C	10		1	1	12

- Boca Chica Village falls within the DNL 65 dBA contour for Scenarios B and C. Under Scenario B, 13 households would be affected.
- Under Scenario C, 35 households would be affected.
- Noise impacts to Boca Chica Village would be considered significant under Scenarios B and C only.

Visual and Cultural Resources

- The FAA is consulting with THC and NPS under the Section 106 of the National Historic Preservation Act.
- Construction of the proposed vertical launch and control center areas would not directly (physically) impact any historic property.



Visual Simulation of the Vertical Launch Area from a Point Along State Highway 4 at the Eastern End of the Palmito Ranch Battlefield NHL.

- There would be indirect impacts to five historic properties, which are considered an adverse effect because the impacts could diminish their integrity. The adversely affected properties include the Palmito Ranch Battlefield National Historic Landmark (NHL), 1846 Cypress Pilings, associated Pilings Site, 1865 Palmetto Pilings, and Palmetto Pilings Historical Marker.
- Construction of the proposed vertical launch and control center areas would indirectly impact the setting of the Palmito Ranch Battlefield NHL.
- Three historic properties in proximity to the vertical launch area (the Cypress Pilings, Palmetto Pilings, and Palmetto Pilings Historical Marker) could be impacted by vibrations from high noise levels, which could cause physical damage to structural features.
- Increased numbers of visitors and use of the area would result in secondary impacts to all five historic properties.

YOUR INVOLVEMENT IN THE DRAFT EIS

National Environmental Policy Act (NEPA) Process

- A Draft Environmental Impact Statement (EIS) has been developed for this project.
- Your input during the Draft EIS Public Comment Period (no later than June 3, 2013) will assist the FAA in arriving at the best possible informed decision about the Proposed Action.
- FAA/AST will respond to substantive comments in the Final EIS.
- Four cooperating agencies are involved in this Proposed Action:
  - ⇒ National Aeronautics and Space Administration
  - ⇒ National Park Service (NPS)
  - ⇒ U.S. Army White Sands Missile Range
  - ⇒ U.S. Army Corps of Engineers

Agency Consultation

- Section 4(f) of the U. S. Department of Transportation Act: Texas Historical Commission (THC), Texas Parks and Wildlife Department, NPS, and U.S. Fish and Wildlife Service (USFWS)
- Section 106 of the National Historic Preservation Act: THC, NPS, Advisory Council on Historic Preservation, and USFWS
- Section 7 of the Endangered Species Act: USFWS and National Marine Fisheries Service



How You Can Help Us

There are

5

ways to comment

No later than **June 3, 2013**

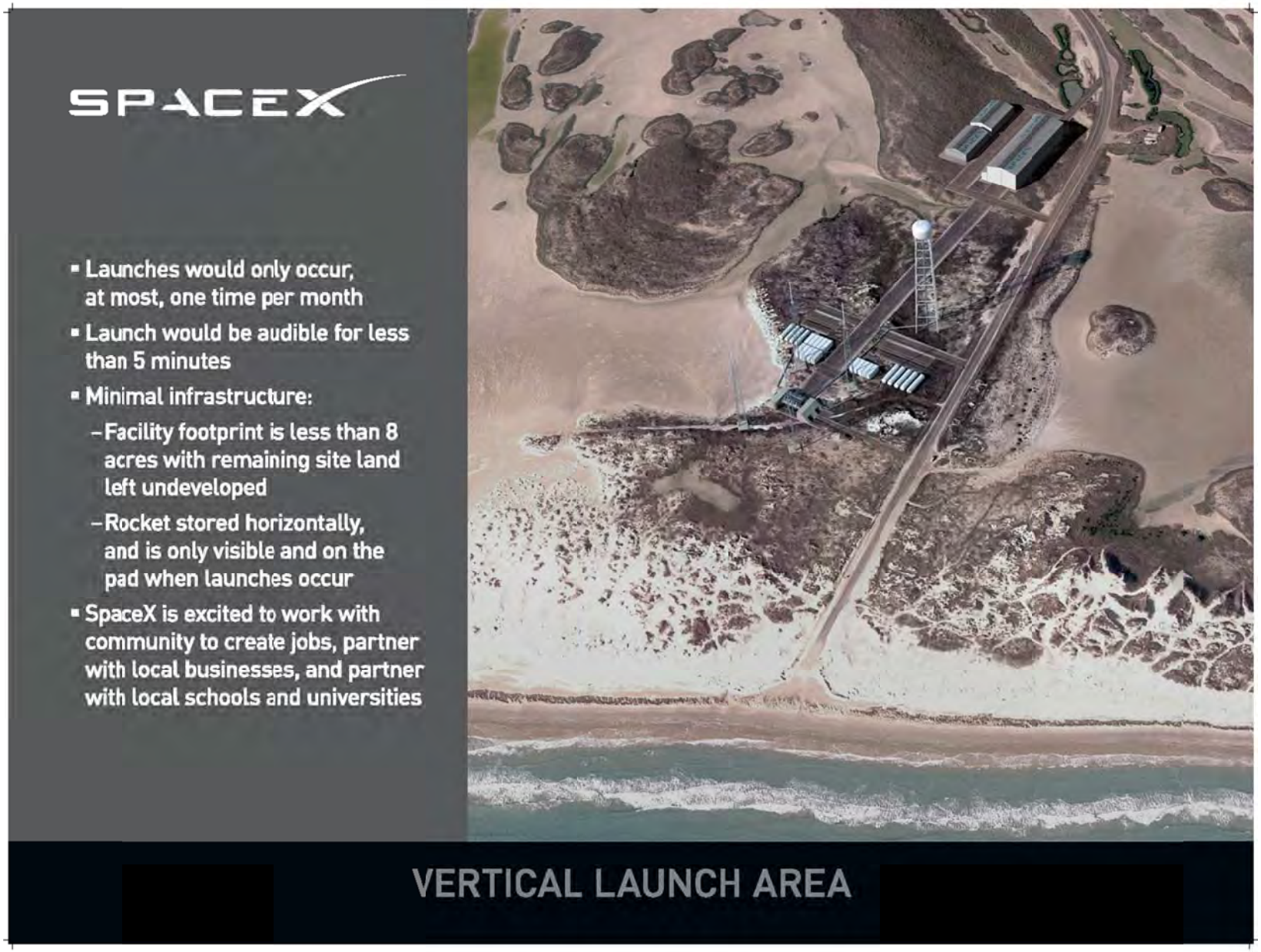
1. Provide written comments at tonight's public hearing
2. Talk to our court reporter or speak during the public statement portion of tonight's public hearing
3. Submit comments via email to ***faaspacexeis@cardnotec.com***
4. Fax your comments to **(410) 990-0455**
5. Mail your written comment form to:

Ms. Stacey M. Zee, Environmental Specialist
Federal Aviation Administration
SpaceX EIS
c/o Cardno TEC Inc.
275 West Street, Suite 110
Annapolis, MD 21401

We Are Here

Notice of Intent (April 10, 2012) → Public Scoping Period (April 10 - May 30, 2012) → Preparation of Draft EIS → Notice of Availability of Draft EIS (April 19, 2013) → Public/Agency Comment Period (April 19-June 3, 2013) → Preparation of Final EIS → Notice of Availability of Final EIS (2013) → Waiting Period (30 Days) → Record of Decision (2013)


SPACEX
• Medium-class vehicle powered by nine Merlin engines
• Two-stage vehicle to maximize reliability
• SpaceX rockets use liquid oxygen and highly-refined kerosene (which is cleaner than jet fuel)
• No toxic propellants are used on the rocket
• Hold-before-release system: the vehicle is safely held down until all vehicle systems are confirmed to be operating normally
SPACEX
FALCON 9


SPACEX
▪ Launches would only occur, at most, one time per month
▪ Launch would be audible for less than 5 minutes
▪ Minimal infrastructure:
– Facility footprint is less than 8 acres with remaining site land left undeveloped
– Rocket stored horizontally, and is only visible and on the pad when launches occur
▪ SpaceX is excited to work with community to create jobs, partner with local businesses, and partner with local schools and universities
VERTICAL LAUNCH AREA


SPACEX
VERTICAL LAUNCH AREA WITH FALCON 9 ON PAD


SPACEX
VERTICAL LAUNCH AREA WITH FALCON HEAVY ON PAD

Exhibit A-18. Notice of Comment Period Extension, Published June 11, 2013

ASTM Designation F2930–12, titled: Standard Guide for Compliance with Light Sport Aircraft Standards

Availability

These consensus standards are copyrighted by ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428–2959. Individual reprints of a standard (single or multiple copies, or special compilations and other related technical information) may be obtained by contacting ASTM at this address, or at (610) 832–9585 (phone), (610) 832–9555 (fax), through *service@astm.org* (email), or through the ASTM Web site at *www.astm.org*. To inquire about standard content and/or membership or about ASTM International Offices abroad, contact Christine DeJong, Staff Manager for Committee F37 on Light Sport Aircraft: (610) 832–9736, *cdejong@astm.org*.

Issued in Kansas City, Missouri on May 31, 2013.

Earl Lawrence,

Manager, Small Airplane Directorate, Aircraft Certification Service.

[FR Doc. 2013–13796 Filed 6–10–13; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Office of Commercial Space Transportation; Notice of Extension of Comment Period for the Draft Environmental Impact Statement for the SpaceX Texas Launch Site

AGENCY: DOT, Federal Aviation Administration (FAA), lead Federal agency; and National Aeronautics and Space Administration, National Park Service, U.S. Army White Sands Missile Range, U.S. Army Corps of Engineers, cooperating agencies.

ACTION: Notice of extension of comment period.

SUMMARY: A Notice of Availability (NOA) for the FAA's *Draft Environmental Impact Statement for the SpaceX Texas Launch Site* (Draft EIS) was published in the **Federal Register** by the U.S. Environmental Protection Agency (EPA) on April 19, 2013 (78 *FR* 23558). The FAA also published an NOA of the Draft EIS in the **Federal Register** on the same day (78 FR 23629). The comment period for the Draft EIS was to end on June 3, 2013 (45 days after publication of the proposal in the **Federal Register**). This notice extends the comment period to June 24, 2013 to allow the public additional time to comment on the Draft EIS.

DATES: Written comments must be received on or before June 24, 2013.

ADDRESSES: Please submit comments or questions regarding the Draft EIS to Ms. Stacey M. Zee, FAA Environmental Specialist, SpaceX EIS c/o Cardno TEC Inc., 275 West Street, Suite 110, Annapolis, MD 21401. Comments may also be submitted via email to *faaspacexeis@cardnotec.com* or by fax to (410) 990–0455.

Additional Information

On April 19, 2013, the FAA published a Notice of Availability of the Draft EIS in the **Federal Register** and requested comments. See 78 *FR* 23629. The comment period for the Draft EIS was originally scheduled to close on June 3, 2013. The EPA requested a comment period extension, changing the deadline for submitting comments on the Draft EIS to June 24, 2013.

An electronic version of the Draft EIS is available on the FAA Web site: *http://www.faa.gov/about/office_org/headquarters_offices/ast/environmental/nepa_docs/review/documents_progress/spacex_texas_launch_site_environmental_impact_statement/*. Additionally, a paper copy and an electronic version of the Draft EIS may be reviewed during regular business hours at the following Brownsville, Texas locations:

- Brownsville Public Library, 2600 Central Blvd.
- Southmost Branch Library, 4320 Southmost Blvd.
- University of Texas at Brownsville, Oliveira Library, 80 Fort Brown St.

FOR FURTHER INFORMATION CONTACT: Ms. Stacey M. Zee, Environmental Protection Specialist, Federal Aviation Administration, 800 Independence Avenue SW., Suite 325, Washington, DC 20591; email *Stacey.Zee@faa.gov;* or phone (202) 267–9305.

Issued in Washington, DC on: May 30, 2013.

Daniel Murray,

Acting Manager, Space Transportation Development Division.

[FR Doc. 2013–13814 Filed 6–10–13; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Motor Carrier Safety Administration

[Docket No. FMCSA–2010–0177]

Parts and Accessories Necessary for Safe Operation; Exemption Renewal for the Flatbed Carrier Safety Group

AGENCY: Federal Motor Carrier Safety Administration (FMCSA), DOT.

ACTION: Notice of renewal of exemption; request for comments.

SUMMARY: FMCSA renews the Flatbed Carrier Safety Group's (FCSG) exemption which allows the securement of metal coils on a flatbed vehicle, in a sided vehicle, or in an intermodal container loaded with eyes crosswise, grouped in rows, in which the coils are loaded to contact each other in the longitudinal direction. Motor carriers may continue to use the pre-January 1, 2004 cargo securement regulations for the transportation of groups of metal coils with eyes crosswise, as this loading configuration is not currently covered under the Agency's commodity-specific rules for securing metal coils in 49 CFR 393.120. The Agency has concluded that granting this exemption renewal will maintain a level of safety that is equivalent to, or greater than, the level of safety achieved without the exemption. However, the Agency requests comments on this issue, especially from anyone who believes this standard will not be maintained.

DATES: This decision is effective June 11, 2013. Comments must be received on or before July 11, 2013.

ADDRESSES: You may submit comments bearing the Federal Docket Management System (FDMS) number FMCSA—by any of the following methods:

- Federal eRulemaking Portal: Go to *http://www.regulations.gov*. Follow the on-line instructions for submitting comments.
- Mail: Docket Management Facility, U.S. Department of Transportation, Room W12–140, 1200 New Jersey Avenue SE., Washington, DC 20590–0001.
- Hand Delivery: Ground Floor, Room W12–140, DOT Building, 1200 New Jersey Avenue SE., Washington, DC, between 9 a.m. and 5 p.m. e.t., Monday through Friday, except Federal holidays.
- Fax: 1–202–493–2251.

Instructions: Each submission must include the Agency name and docket number for this notice. For detailed instructions on submitting comments and additional information on the exemption process, see the "Public

Exhibit A-19. Notice of Comment Period Extension, Postcards

FEDERAL AVIATION ADMINISTRATION
NOTICE OF EXTENSION OF COMMENT PERIOD

The public comment period for the Draft Environmental Impact Statement (EIS) for the SpaceX Texas Launch Site has been extended from June 3, 2013 to June 24, 2013 to allow the public additional time to comment on the Draft EIS. Comments must be received on or before June 24, 2013. Comments can be submitted to: Ms. Stacey M. Zee, FAA Environmental Specialist, SpaceX EIS c/o Cardno TEC Inc., 275 West Street, Suite 110, Annapolis, MD 21401; Email faaspacexeis@cardnotec.com; Fax (410) 990-0455.

A Notice of Availability (NOA) for the FAA's *Draft Environmental Impact Statement for the SpaceX Texas Launch Site* (Draft EIS) was published in the *Federal Register* by the U.S. Environmental Protection Agency (EPA) on April 19, 2013 (78 FR 23558). The FAA also published an NOA of the Draft EIS in the *Federal Register* on the same day (78 FR 23629). The comment period for the Draft EIS was to end on June 3, 2013 (45 days after publication of the proposal in the *Federal Register*). The EPA requested a comment period extension, changing the deadline for submitting comments on the Draft EIS to June 24, 2013. More information on the comment extension and an electronic version of the Draft EIS are available on the FAA website:

http://www.faa.gov/about/office_org/headquarters_offices/ast/environmental/nepa_docs/review/documents_progress/spacex_texas_launch_site_environmental_impact_statement/.

Additionally, a paper copy and an electronic version of the Draft EIS may be reviewed during regular business hours at the following Brownsville, Texas locations: Brownsville Public Library, 2600 Central Blvd, Southmost Branch Library, 4320 Southmost Blvd, University of Texas at Brownsville, Oliveira Library, 80 Fort Brown St.

ADMINISTRACIÓN FEDERAL DE AVIACIÓN
NOTIFICACIÓN PARA LA EXTENSIÓN DE PERÍODO DE COMENTARIOS

El período de comentarios públicos para la Declaración de Impacto Ambiental (EIS por sus siglas en inglés) Preliminar para la Base de Lanzamiento de SpaceX en Texas se ha extendido desde el 3 de junio del 2013 hasta el 24 de junio del 2013 para permitirle al público tiempo adicional para ofrecer comentarios sobre el EIS Preliminar. Los comentarios deben ser recibidos a más tardar el 24 de Junio del 2013. Comentarios pueden ser enviados a la siguiente dirección: Ms. Stacey M. Zee, FAA Environmental Specialist, SpaceX EIS c/o Cardno TEC Inc., 275 West Street, Suite 110, Annapolis, MD 21401; correo electrónico faaspacexeis@cardnotec.com; Fax (410) 990-0455.

Una Notificación de Disponibilidad (NOA por sus siglas en inglés) para la *Declaración de Impacto Ambiental para la Base de Lanzamiento de SpaceX en Texas* (EIS Preliminar) de la FAA se publicó en el *Registro Federal* por la Agencia de Protección Ambiental de Estados Unidos (EPA por sus siglas en inglés) el 19 de Abril del 2013 ((78 FR 23558). La FAA también público una NOA para el EIS Preliminar en el *Registro Federal* el mismo día (78 FR 23629). El período de comentarios para la EIS Preliminar iba a terminar el 3 de junio del 2013 (45 días después de la publicación de la propuesta en el *Registro Federal*). La EPA ha solicitado una extensión al período de comentarios, cambiando la fecha límite para ofrecer comentarios sobre la EIS hasta el 24 de junio, 2013. más información sobre la extensión de comentarios y una versión electrónica de la EIS Preliminar están disponibles en la página de internet de la FAA:

http://www.faa.gov/about/office_org/headquarters_offices/ast/environmental/nepa_docs/review/documents_progress/spacex_texas_launch_site_environmental_impact_statement/.

Adicionalmente, una copia impresa y una versión electrónica de la EIS Preliminar están accesibles durante las horas de trabajo normales en las siguientes ubicaciones en Brownsville Texas: Brownsville Public Library, 2600 Central Blvd, Southmost Branch Library, 4320 Southmost Blvd, University of Texas at Brownsville, Oliveira Library, 80 Fort Brown St.

Appendix B
Federal Consistency Review: Texas Coastal Management Program

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Federal Consistency Review: Texas Coastal Management Program

for the Proposed SpaceX Texas Launch Site,

Cameron County, Texas

Prepared for:

Federal Aviation Administration

Office of Commercial Space Transportation

Washington, DC

March 2013

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ACRONYMS AND ABBREVIATIONS

APE	Area of Potential Effects
ARTCC	Air Route Traffic Control Center
AST	Office of Commercial Space Transportation
ATV	all-terrain vehicle
CBRA	Coastal Barrier Resources Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CNRA	Coastal Natural Resource Area
CO	carbon monoxide
CO_2	carbon dioxide
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
dBA	A-weighted decibel
DNL	Day-Night Average Sound Level
DOT	U.S. Department of Transportation
EIS	Environmental Impact Statement
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
ft	feet/foot
LOA	Letter of Authorization
LOX	liquid oxygen
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NOTAM	Notice to Airmen
NOTMAR	Notice to Mariners
NO_x	nitrogen oxide
NPS	National Park Service
NRHP	National Register of Historic Places
NWR	National Wildlife Refuge
ROW	Right-of-Way
RP-1	refined petroleum-1
PSF	Permanent School Fund
SpaceX	Space Exploration Technologies Corp.
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TCMP	Texas Coastal Management Program
TGLO	Texas General Land Office
TPWD	Texas Parks and Wildlife Department
TxDOT	Texas Department of Transportation
U.S.	United States
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USFWS	U.S. Fish and Wildlife Service

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1.0 INTRODUCTION

The Federal Aviation Administration (FAA) Office of Commercial Space Transportation (AST) proposes to issue launch licenses and/or experimental permits that would allow Space Exploration Technologies Corp. (SpaceX) to launch the Falcon 9 and Falcon Heavy orbital vertical launch vehicles and a variety of reusable suborbital launch vehicles from a launch site on privately owned property in Cameron County, Texas (Figure 1). As part of the Proposed Action, SpaceX would construct a vertical launch area and a control center area (Figure 2) to support their launch activities. In addition, new underground power lines would be installed in the State Highway 4 (Boca Chica Boulevard) Right-of-Way (ROW) from the control center area to the vertical launch area.

Issuing launch licenses and experimental permits is considered a major Federal action subject to environmental review under the National Environmental Policy Act (NEPA) of 1969 as amended (42 United States Code [U.S.C.] §4321, et seq.). The FAA/AST is preparing an Environmental Impact Statement (EIS) in accordance with NEPA, Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508), and FAA Order 1050.1E, Change 1, *Environmental Impacts: Policies and Procedures*. The completion of the environmental review process does not guarantee the FAA would issue launch licenses and/or experimental permits to SpaceX to launch from the proposed privately owned site in Cameron County, Texas. The Proposed Action, which is the EIS Preferred Alternative, must also meet all FAA safety, risk, and indemnification requirements for obtaining and possessing a launch license and/or experimental permit as described in 14 CFR Parts 400-450. In addition, SpaceX would need to obtain a Letter of Authorization (LOA) from the Houston Air Route Traffic Control Center (ARTCC) to operate the Falcon 9 and Falcon Heavy in the proposed airspace before any launches could commence. SpaceX would coordinate with the Secretariat of Communications and Transportation – Mexico, United States (U.S.) Customs and Border Protection, Cameron County and State of Texas law enforcement agencies, the U.S. Coast Guard, and Houston ARTCC in order to ensure public safety and allow for the issuance of Notice to Mariners (NOTMARs) and Notice to Airmen (NOTAMs). Approximately 3-6 days prior to launch, the public would be notified of the upcoming launch through local media and through the use of NOTMARs and NOTAMs.

Proposed operations would consist of up to 12 launches per year, including a maximum of two Falcon Heavy launches. All Falcon 9 and Falcon Heavy launches would be expected to have commercial payloads, including satellites or experimental payloads. In addition to standard payloads, the Falcon 9 and Falcon Heavy may also carry a capsule, such as the SpaceX Dragon capsule. SpaceX may also elect to launch smaller suborbital launch vehicles from this proposed site, such as a Falcon 9 Stage 1 tank. All launch trajectories would be to the east over the Gulf of Mexico. The majority of launches would be conducted between the hours of 7:00 a.m. and 7:00 p.m. However, there could be up to one nighttime launch per year. All launches, including pre-flight activities, would be conducted under the control of SpaceX, FAA/AST, and in accordance with the LOA from Houston ARTCC.

As part of the licensing and permitting process, SpaceX must implement a plan that defines the process for ensuring that any unauthorized persons, vessels, trains, aircraft, or other vehicles are not within the

hazard area. The plan must include safety and security personnel for each launch, and roadblocks and other security checkpoints. SpaceX also must develop and implement agreements and plans with local authorities whose support is needed to ensure public safety during all launch processing and flight, in accordance with 14 CFR § 417.111. SpaceX would coordinate with U.S. Customs and Border Protection, Cameron County and State of Texas law enforcement agencies, the City of Brownsville, the City of South Padre Island, Padre Island National Seashore, U.S. Fish and Wildlife Service (USFWS), Lower Rio Grande Valley National Wildlife Refuge (NWR), National Park Service (NPS), Texas Parks and Wildlife Department (TPWD), Texas General Land Office (TGLO), Texas Department of Transportation (TxDOT), and U.S. Coast Guard on the preparation of a detailed closure plan that discusses the procedures for land closure and water closure areas that would limit public access on launch day along State Highway 4, on Boca Chica Beach, and offshore areas.

SpaceX proposes to limit public access at two pre-defined checkpoints on State Highway 4 for up to 15 hours on launch day, with 6 hours being the closure time for a nominal launch. The 15-hour closure period allows for potential aborts and contingencies. Therefore, with 12 proposed annual launches, SpaceX proposes a maximum of 180 hours (this includes 15 hours per launch for each of the 12 launches) of annual closure. The two checkpoints include a soft checkpoint on State Highway 4, just east of Massey Way. Government personnel, SpaceX personnel, emergency personnel, and anyone with property beyond this soft checkpoint could pass, but the general public would be denied access. SpaceX may move the soft checkpoint further away from the launch site based on consultations with the USFWS. The second checkpoint would be a hard checkpoint, just before the control center area, which is a “no pass” area determined by the FAA approved hazard area (see Section 2.1.1.8 of the EIS for further discussion of the FAA approved hazard area). No one would be permitted to pass by this hard checkpoint during launch operations. Figure 3 shows the proposed launch day closure areas that SpaceX would implement to ensure that unauthorized persons remain out of the hazard area. SpaceX and law enforcement would monitor the area to the east of the checkpoints to ensure the area is clear. In addition, SpaceX would coordinate with Cameron County, the City of Brownsville, USFWS, Lower Rio Grande Valley NWR, NPS, TPWD, TGLO, and TxDOT to identify a safe location on private land along State Highway 4, before the Massey Way soft checkpoint, for the public to view a launch event.

SpaceX and law enforcement would monitor the area to the east of the checkpoints to ensure the area is clear. Monitoring would be done by vehicle along existing roads including State Highway 4. On the day of a launch, Boca Chica Beach would be closed to the public from the Brownsville Shipping Channel south to the U.S./Mexico border on the Gulf Coast (see Figure 3). SpaceX would continue to monitor the beach area using all-terrain vehicles (ATVs) to ensure the area is clear before launch. The beach closure for launch day would last up to 15 hours.



Figure 1. Regional Location of Proposed Launch Site



Figure 2. Location of Proposed Vertical Launch Area and Control Center Area

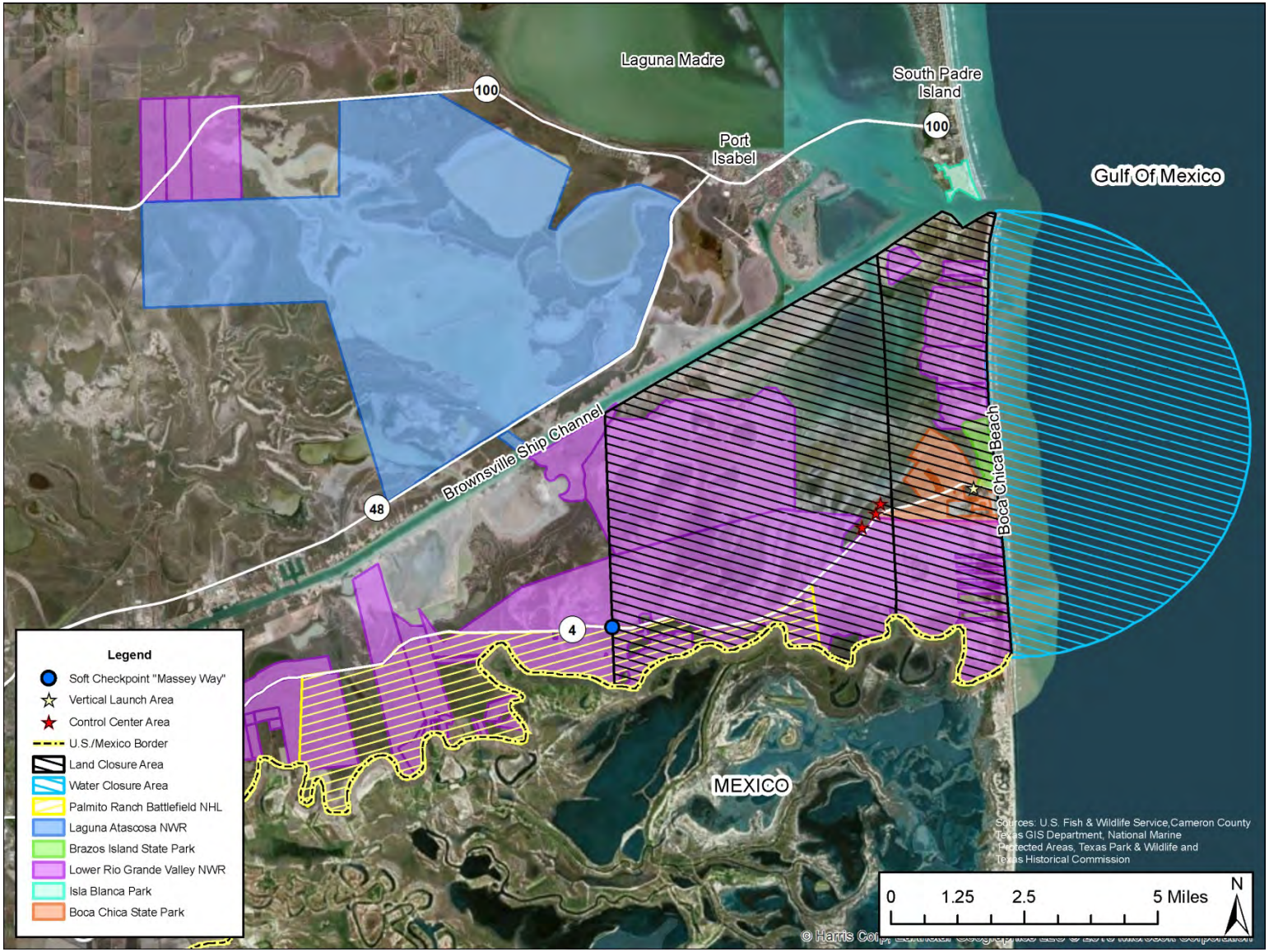

Figure 3. Proposed Launch Day Closure Areas

As part of the licensing process, SpaceX would also develop a plan for clearing offshore areas. This plan would include coordinating with the U.S. Coast Guard, issuing NOTMARs, and clearing the offshore area in order to ensure public safety. The U.S. Coast Guard could conduct boat patrols to sweep the offshore area to make sure the area is clear; this would continue to take place until SpaceX is ready to load propellant to the vehicle (approximately 3 hours from launch). A final sweep of the closure areas by helicopter could also be implemented at this time to ensure the areas are clear.

On the day of launch, the launch vehicle on the transporter erector would be moved to the launch pad from the vertical launch area Integration and Processing Hangar (Hangar) and connected to the launch stand. A wheeled vehicle, such as a small tug or other road equipment, would be used to pull the launch vehicle and transporter erector to the launch pad. Launch vehicles may be erected and de-erected several times prior to launch; the transporter erector is designed to make this operation quick and simple. On the day of launch, the launch vehicle would be erected and final system checks completed. Approximately 3 hours before launch, the vehicle would be loaded with propellant. Just before launch, the transporter erector would be retracted at least 12 degrees from the vehicle. The transporter erector would be moved into the Hangar after the launch. After the launch, SpaceX and the FAA would notify law enforcement when the area has been deemed safe. Individuals needing to conduct nesting sea turtle beach patrols (e.g., Sea Turtle Inc.) would be given one hour to check the beach for sea turtle nests prior to the beach being re-opened for the general public. After completion of the sea turtle patrols, the checkpoints would be raised and the area would be re-opened for the public.

SpaceX plans to construct facilities, structures, and utility connections in order to support the launch of the Falcon 9 and Falcon Heavy launch vehicles. The facilities would be located in two separate areas: vertical launch area and control center area. The command and control functions for a launch are required to be conducted at a safe separation distance from the actual launch pad, which is approximately 2 miles away. As a result, the proposed control center area is approximately 2 miles west from the vertical launch area and north of Boca Chica Boulevard (Figure 2). All facilities would be constructed through private funding and on currently undeveloped private property that would be purchased or leased by SpaceX. All construction staging areas would occur within the proposed project boundaries and no additional areas would be required for staging. The proposed schedule for all construction activities is a 24-month period from start to finish. Minimal construction, such as pouring concrete, would occur at night.

The proposed vertical launch area is located at the eastern terminus of Boca Chica Boulevard (State Highway 4), in a sparsely populated coastal area off the Gulf of Mexico, approximately 3 miles north of the U.S./Mexico border. The property is located south of Boca Chica Boulevard and abuts the beach adjacent to the Gulf of Mexico (Figure 4). The vertical launch area property is approximately 56.5 acres. However, development of the vertical launch area would only occur within 20 acres of the entire 56.5-acre property. The rest of the property would remain open space. Construction of the vertical launch area would generally involve placing fill material to raise land levels enough to avoid frequent flooding. Fill material would be sourced from on-site whenever possible. All on-site material would come from within the 20-acre project area. If necessary, additional clean fill material would be sourced from the

local region. In addition, most of the larger facilities and those that must support heavy loads would be required to have pilings driven to support the facilities. As a result, most of the land area inside the proposed fence lines would be disturbed at some point. Proposed facility and infrastructure construction at the vertical launch area would include the following:

- Integration and Processing Hangar (Hangar)
- Launch pad and stand with its associated flame duct
- Water tower
- Lightning protection towers (four total)
- Retention basin for deluge water
- Propellant storage and handling areas
- Workshop and office area
- Warehouse for parts storage
- Roads, parking areas, fencing, security, lighting, and utilities

The proposed control center area would be located immediately adjacent to Boca Chica Village approximately 2 miles west of the proposed vertical launch area and north of Boca Chica Boulevard. The proposed control center area would consist of three parcels (Figures 5a and 5b). The 4.0-acre Parcel 1 is located the furthest from the proposed vertical launch area and is bounded on the southeastern side by Boca Chica Boulevard and the southwestern side by Remedios Avenue (Figure 5b).

The 4.4-acre Parcel 2 is bounded on the southeastern side by Boca Chica Boulevard, on the southern end by San Martin Boulevard, and on the northwestern side by Esperson Street.

The 4.0-acre Parcel 3, which is the closest to the proposed vertical launch area, is located northeast of Eichorn Boulevard. Proposed facility and infrastructure construction at the control center area would include the following:

- Two launch control center buildings
- Two payload processing facilities
- Launch vehicle processing hangar
- Two radio frequency transmitter/receivers
- Generators and diesel storage facilities
- Roads, parking areas, fencing, security, lighting, and utilities
- A satellite fuels storage facility

Construction at this location would generally involve grading to level the land. As a result, most of the land area inside the proposed fence lines would be disturbed at some point.

A maximum of 30 full-time SpaceX employees/contractors would be present on-site at the vertical launch area and/or control center area in 2013. Full-time SpaceX employees/contractors are anticipated to work a single shift, between the hours of approximately 8:00 a.m. – 5:00 p.m. On a per-mission basis, launch campaigns (i.e., preparation for and conducting of a launch event) would be expected to last up to two weeks. During a launch campaign, an additional 100 local or transient workers would be working at the vertical launch area and/or control center area. During launch campaigns, the additional workers

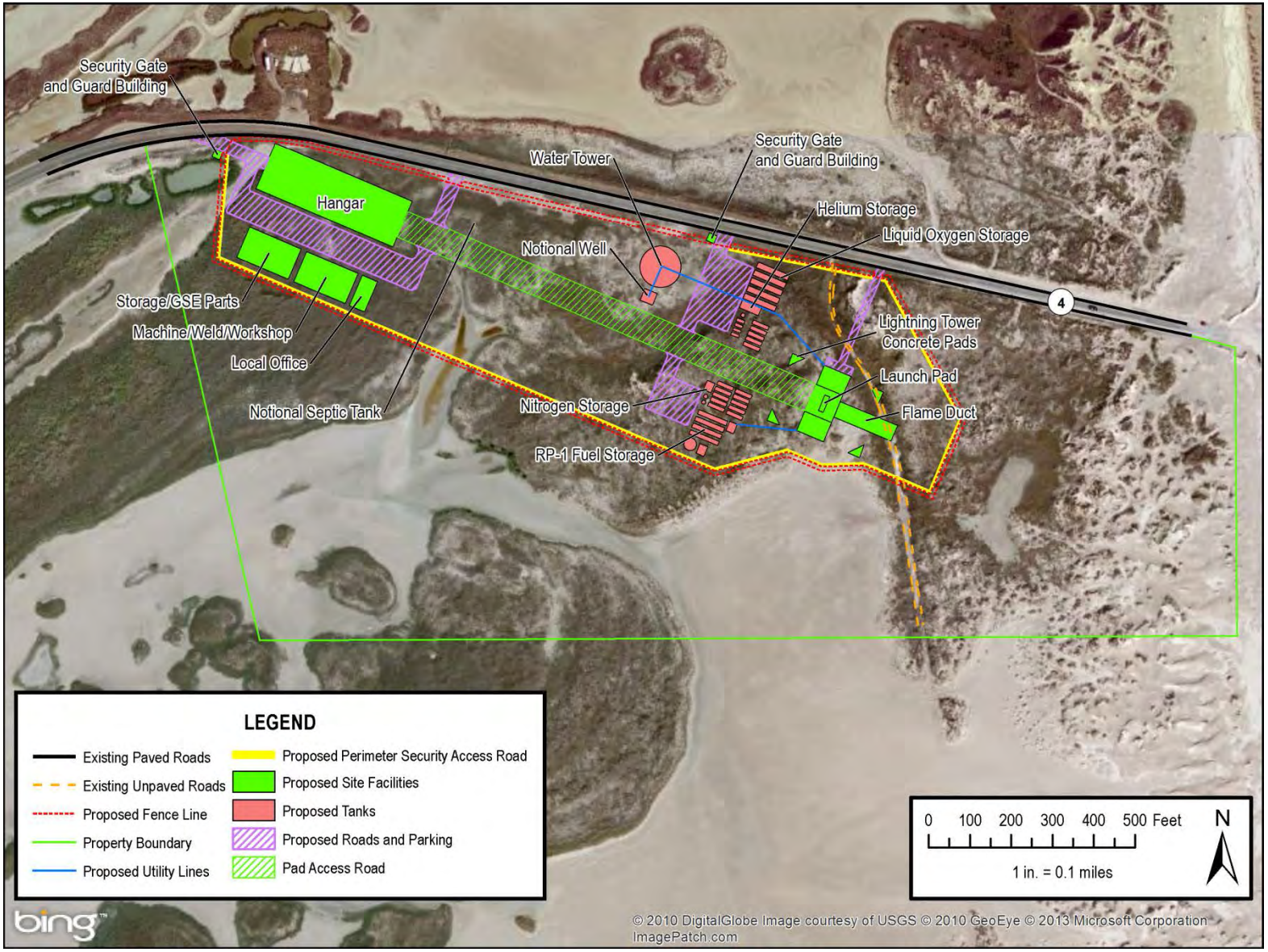

Figure 4. Proposed Vertical Launch Area Site Layout

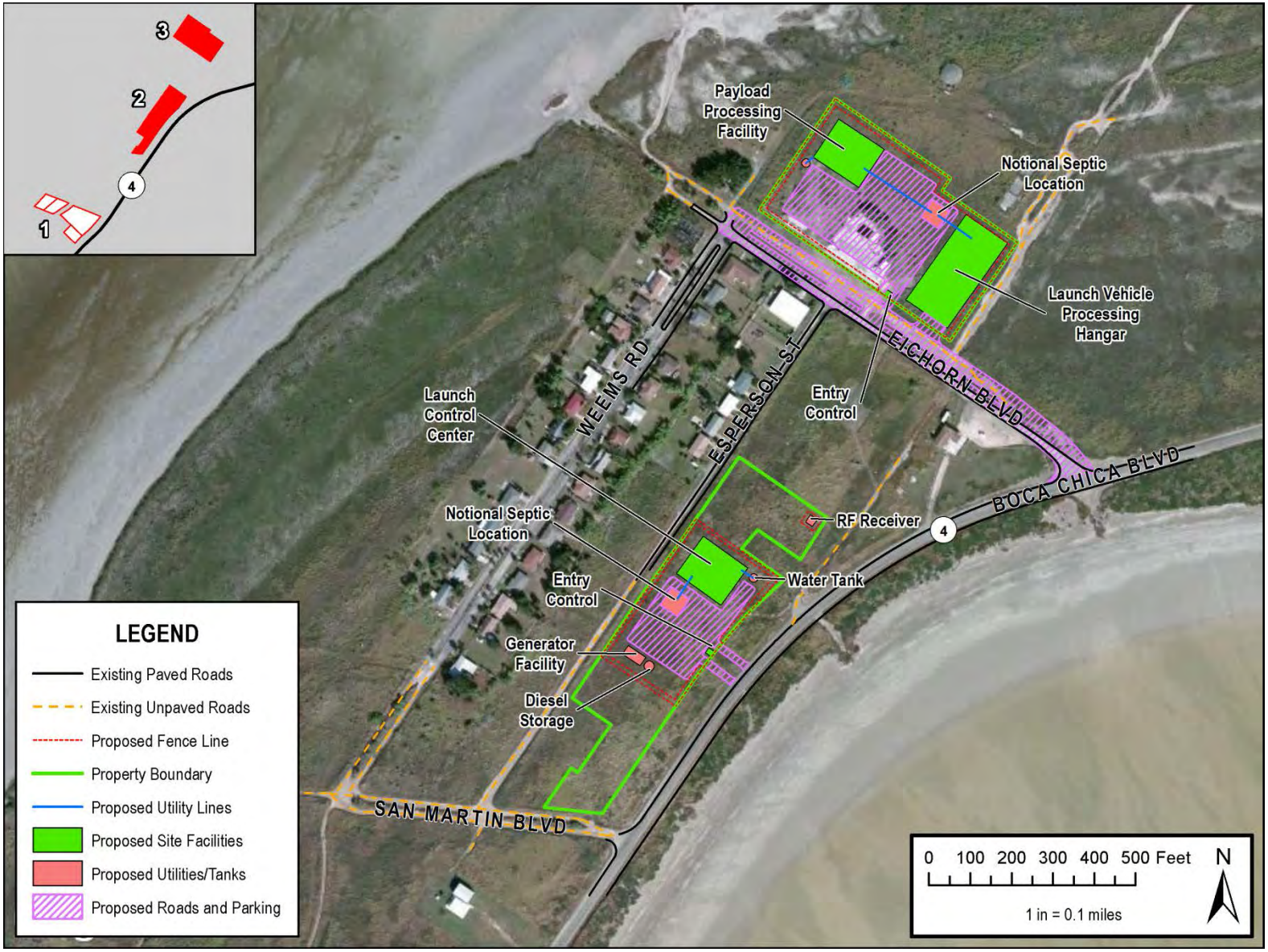

Figure 5a. Control Center Area Site Layout

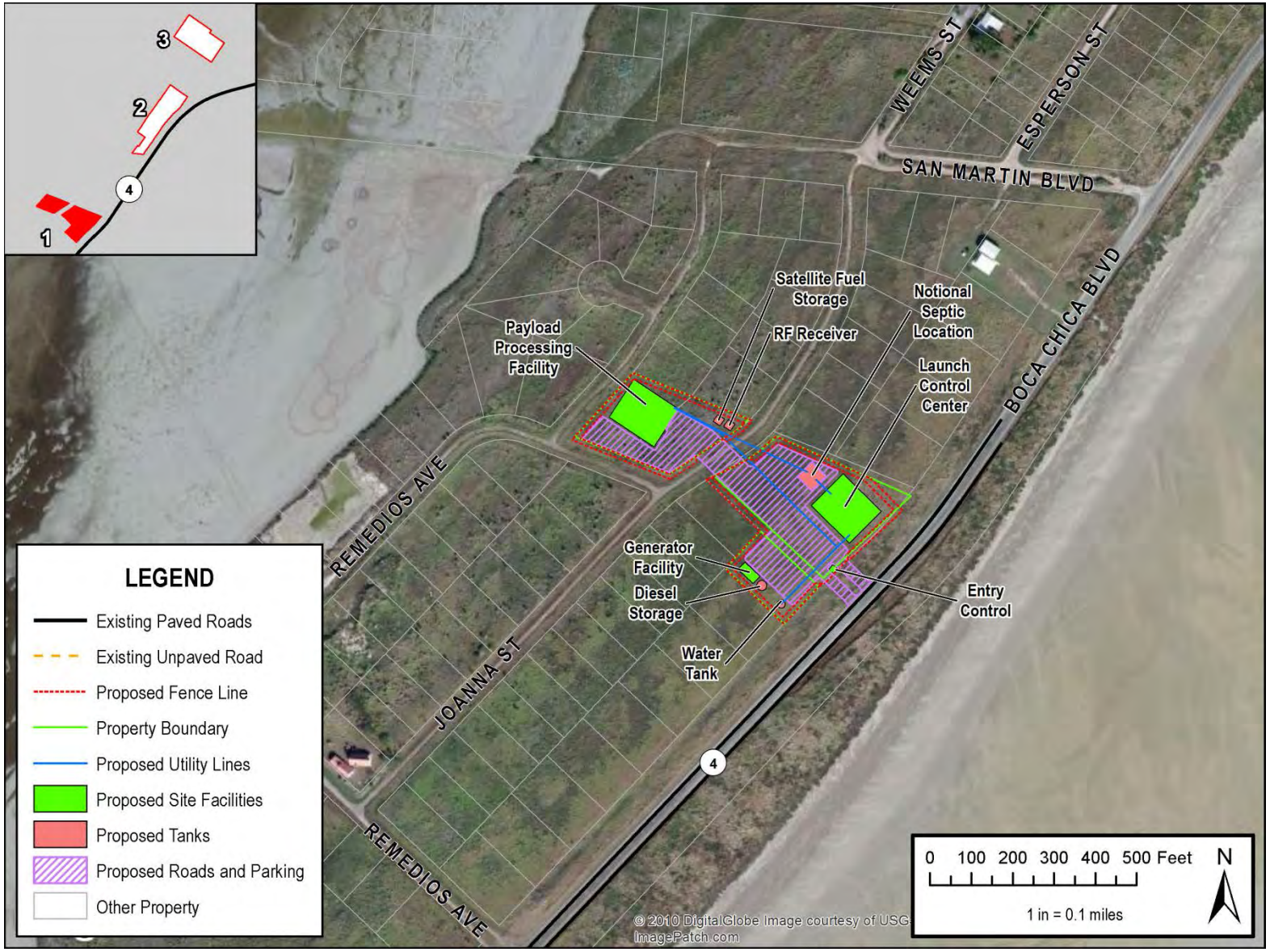

Figure 5b. Control Center Area Site Layout

could work extended hours; however, 2 days prior to launch, full-time SpaceX employees/contractors and the local or transient workers would need to be on-site for up to 24 hours per day. Staffing on-site would return to normal levels (maximum 30 full-time SpaceX employees/contractors) within a day or two after the actual launch. By 2022, it is expected that there would be 150 full-time SpaceX employees/contractors working on-site. The EIS includes the full scope of facilities that would be necessary to support proposed operations at the launch site. At this time, it is not anticipated that there would be a need for expansion of facilities for the phased increase in workforce through 2022. However, if additional facilities are proposed in the future, a supplemental analysis would need to be prepared to address the potential impacts. Supporting documentation and additional detail regarding project impacts can be found in the EIS.

As lead Federal agency for the Proposed Action, the FAA is required to comply with Section 307 of the Coastal Zone Management Act (CZMA) of 1972 (16 U.S.C. §1451 et seq.). The CZMA promotes the "effective management, beneficial use, protection, and development" of the nation's coastal zone; those goals are met through active State involvement to enact the CZMA. In Texas, the TGLO is responsible for maintaining the consistency of federal actions with the CZMA. The TGLO's Texas Coastal Management Program (TCMP) is the State program that executes the CZMA in Texas and coordinates the management of Texas coastal resources. The proposed vertical launch area and control center area are located within the Texas Coastal Zone Boundary defined in the TCMP rules (31 Texas Administrative Code [TAC] §503.1).

Impacts to Coastal Natural Resource Areas (CNRAs) as defined in the TCMP would include visual and noise impacts associated with construction and operational activities. Short-term impacts to the visual setting would result during construction. Also, potential indirect impacts could consist of visual effects on the setting of historic properties in the area of potential effects (APE) from the presence of proposed permanent structures at the vertical launch and control center areas. The noise impacts associated with a typical launch would be limited to a few minutes. The cumulative noise impact resulting from ten Falcon 9 and two Falcon Heavy launches per year would exceed the FAA Order 1050.1E, Change 1, standard[1] of Day-Night Average Sound Level (DNL) 65 A-weighted decibels (dBA) within distances of 1.5, 2.0, and 2.8 miles from the launch site for Scenarios A, B, and C, respectively, as discussed in Section 4.1.1.2 of the EIS. As Boca Chica Village is greater than 1.5 miles from the vertical launch area, the DNL 65 dBA criteria is exceeded only if the scenario includes a launch of either the Falcon 9 or Falcon Heavy during acoustic nighttime hours (10:00 p.m. to 7:00 a.m.).

The FAA is cooperating with the U.S. Army Corps of Engineers (USACE) on mitigation for any impacts to coastal wetlands to minimize functional wetland losses and ecosystem services. SpaceX will avoid to the maximum extent practicable impacts to coastal natural resources at the vertical launch and control center areas.

[1] The FAA Order 1050.1E establishes a standard of Day-Night Average Sound Level (DNL) 65 A-weighted decibels (dBA); however, these standards are not specifically designed to assess the impact of intermittent launch noise.

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2.0 COASTAL NATURAL RESOURCE AREAS

As defined in 31 TAC §501.3, CNRAs include coastal barriers, coastal historic areas, coastal preserves, coastal shore areas, coastal wetlands, critical dune areas, critical erosion areas, gulf beaches, hard substrate reefs, oyster reefs, submerged land, special hazard areas, submerged aquatic vegetation, tidal sand or mud flats, water of the open Gulf of Mexico, and water under tidal influence. Potential impacts to CNRAs with implementation of the Proposed Action are described in the following sections.

2.1 COASTAL BARRIERS

The Coastal Barrier Resources Act (CBRA) restricts Federal funding and financial assistance for development within undeveloped coastal barriers, as defined by the USFWS. Portions of the proposed vertical launch area are located within the USFWS designated Coastal Federal Resource System unit T-12. The Proposed Action is not subject to Federal funding and is therefore not subject to siting restrictions under the CBRA. A letter was sent by FAA to USFWS on June 18, 2012, requesting concurrence that the CBRA does not apply to this Proposed Action. A response letter from USFWS dated August 14, 2012, concurred that the Proposed Action is exempt from CBRA under Section 3(3)(C), which states that "assistance for environmental studies, planning, and assessments that are required incident to the issuance of permits or other authorizations under Federal law" are not considered financial assistance and therefore CBRA provisions would not apply. Supporting documentation can be found in the EIS.

2.2 COASTAL HISTORIC AREAS

In consultation with the Texas State Historic Preservation Officer, the FAA defined an APE for direct effects and an APE for indirect effects. The APE for direct effects was defined as the boundaries of the sites for the proposed vertical launch and control center areas. The APE for indirect effects was defined as a 5-mile radius centered on the vertical launch area where historic resources could sustain visual or noise-related impacts as a result of project activities. The eastern end of the Palmito Ranch Battlefield National Historic Landmark, a Civil War battlefield listed on the National Register of Historic Places (NRHP), is located approximately 3 miles west of the vertical launch area and is partially within the APE (Figure 6). Additionally, Palmetto Pilings and Cypress Pilings from former railroad crossings located west of Boca Chica Beach are considered to be NRHP-eligible. Across from the northwest corner of the vertical launch area is the granite historical marker for the Palmetto Pilings. It is a 1936 Texas Centennial Marker, which was a statewide program that identified and commemorated places of significance to the history of Texas. The marker is considered to be eligible for the NRHP. All other architectural resources in the APE for indirect effects are less than 50 years old and are not considered eligible under NRHP criteria. No coastal historic areas would be physically altered or removed as a result of the Proposed Action. The historical marker may be susceptible to impacts from vibrations caused by high noise levels during launches. Potential indirect impacts could consist of visual effects on the setting of the Palmito Ranch Battlefield from the presence of proposed permanent structures at the vertical launch and control center areas. The FAA is in the process of developing a Memorandum of Agreement with the Section 106 consulting parties (Texas Historical Commission, NPS, Advisory Council on Historic Preservation, and SpaceX) to mitigate the adverse effects on historic properties should the Proposed Action be implemented.

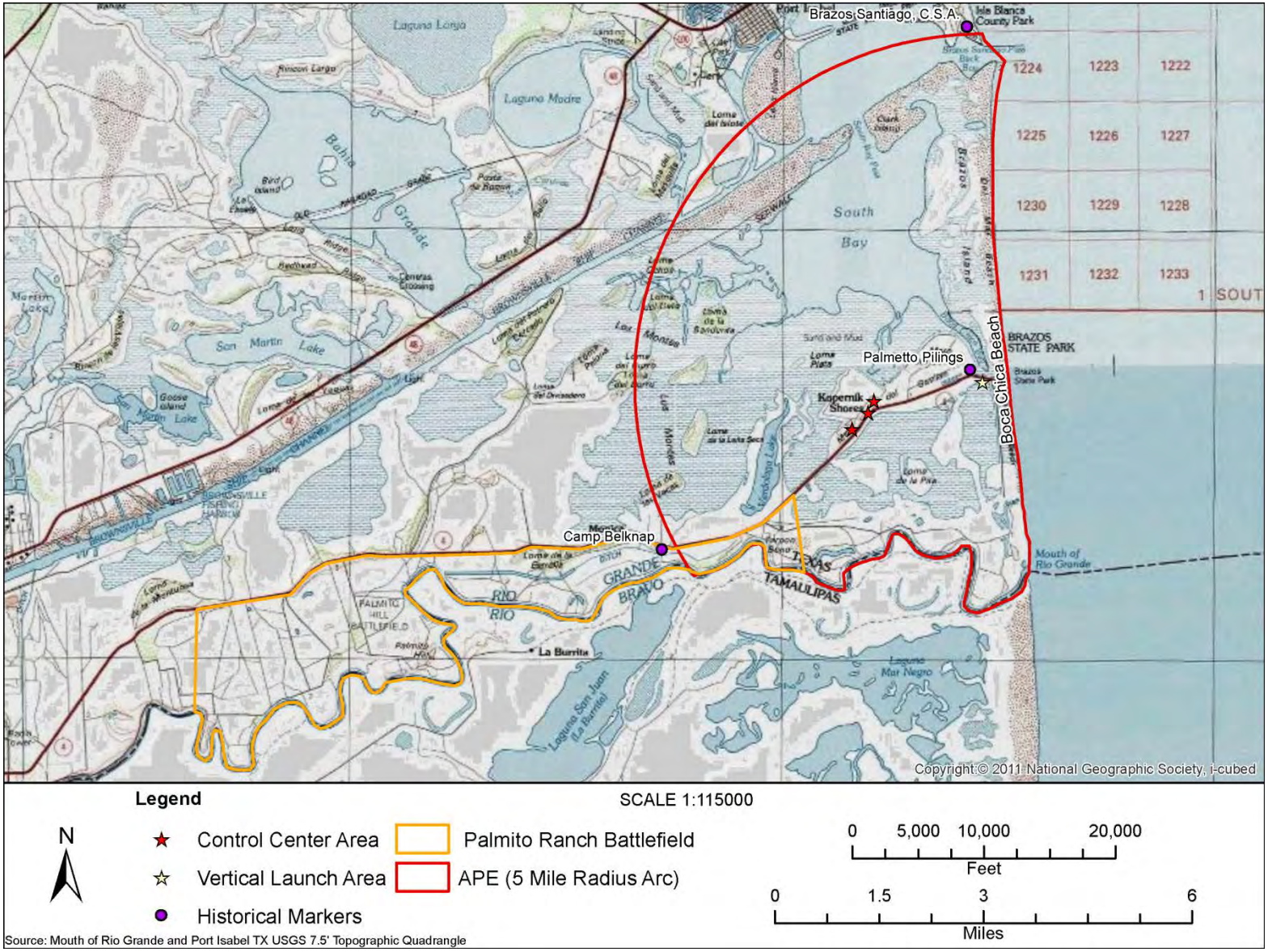

Figure 6. Locations of Historical Sites Within and Adjacent to the APE

2.3 COASTAL PRESERVES

There are several preserves within the vicinity of the proposed vertical launch area, including the South Bay Coastal Preserve, Boca Chica State Park, Brazos Island State Park, and the Lower Rio Grande Valley NWR (Figure 7).

The proposed vertical launch and control center areas are outside the boundaries of these coastal preserves. However, the disturbance from launch operations may result in short-term visual and noise impacts to coastal preserves. Additionally, public access to Boca Chica State Park, Brazos Island State Park, the Lower Rio Grande Valley NWR, and the South Bay Coastal Preserve would be restricted during beach closures on days when launches are scheduled. On the day of launch, the entire Boca Chica Beach area from the Brownsville Shipping Channel to the U.S./Mexico border would be closed for up to 15 hours. SpaceX is working closely with the Cameron County Dunes Committee, the Cameron County Commissioners, and the TGLO in order to allow temporary beach closures during launch days.

Impacts to wildlife resources within coastal preserves would be primarily limited to short-term disturbance associated with increased vehicular traffic, human presence, and noise from construction and launch activities. Increased vehicular traffic and human presence from operational activities associated with the Proposed Action may cause wildlife species found within the vertical launch and control center areas to disperse. Disturbance may temporarily displace wildlife species; however, wildlife in the area is currently exposed to noise from vehicular traffic and human presence along State Highway 4. Impacts to state-listed species (peregrine falcon, reddish egret, sooty tern, white-tailed hawk, white-faced ibis, wood stork, and the black-striped snake) and additional federally listed species (piping plover, jaguarondi, ocelot, the northern aplomado falcon, and sea turtles) would be similar to those described for wildlife (see Section 4.8 of the EIS). A Biological Assessment was completed in accordance with Section 7 of the Endangered Species Act and formal consultation with the USFWS regarding species impact determinations is ongoing.

2.4 COASTAL SHORE AREAS

The proposed vertical launch area boundary is located outside the defined coastal shore area (100 feet [ft] landward of the mean high water mark on submerged lands) along the Gulf of Mexico. Therefore, implementation of the Proposed Action would not physically impact coastal shore areas.

2.5 COASTAL WETLANDS

The proposed vertical launch area includes 25.43 acres of wetlands on-site, including shrub-scrub and emergent wetlands and unvegetated sand flats. Additionally, one emergent depressional wetland (0.4 acre) is located on Parcel 3 of the control center area. A total of 2.60 acres of vegetated wetland habitat, 0.08 acres of unvegetated depressional wetland, and 0.62 acres of unvegetated tidal flats would be removed as a result of construction of the proposed vertical launch area (Figure 8a); and 0.04 acre of vegetated wetland would be removed for construction of the proposed control center area (Figure 8b). In addition, the construction of the vertical launch area would effectively cut off the tidal influence to 2.85 acres of wetland through the construction of buildings and roads.

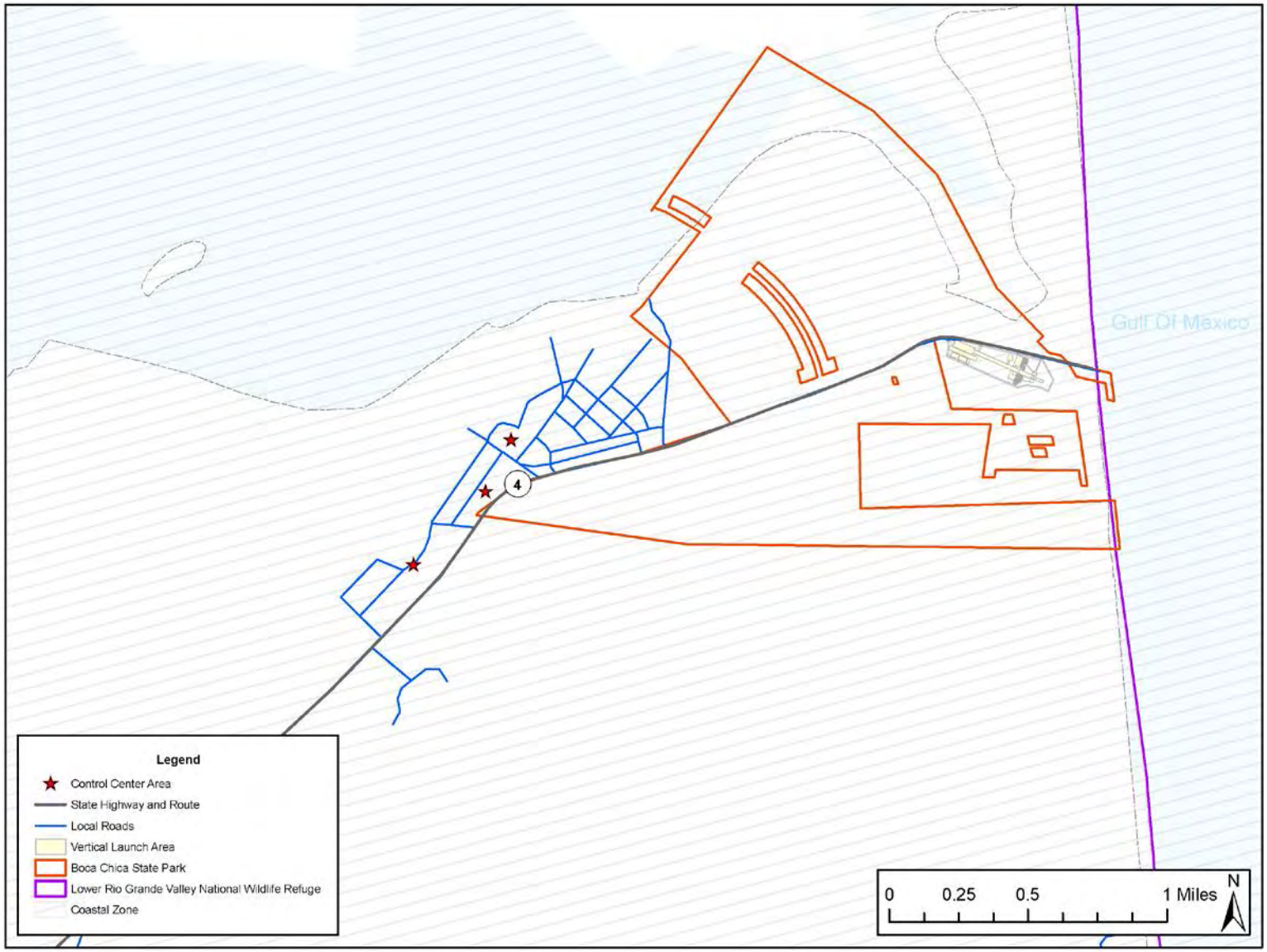

Figure 7. Coastal Preserves Within the Vicinity of the Vertical Launch and Control Center Areas

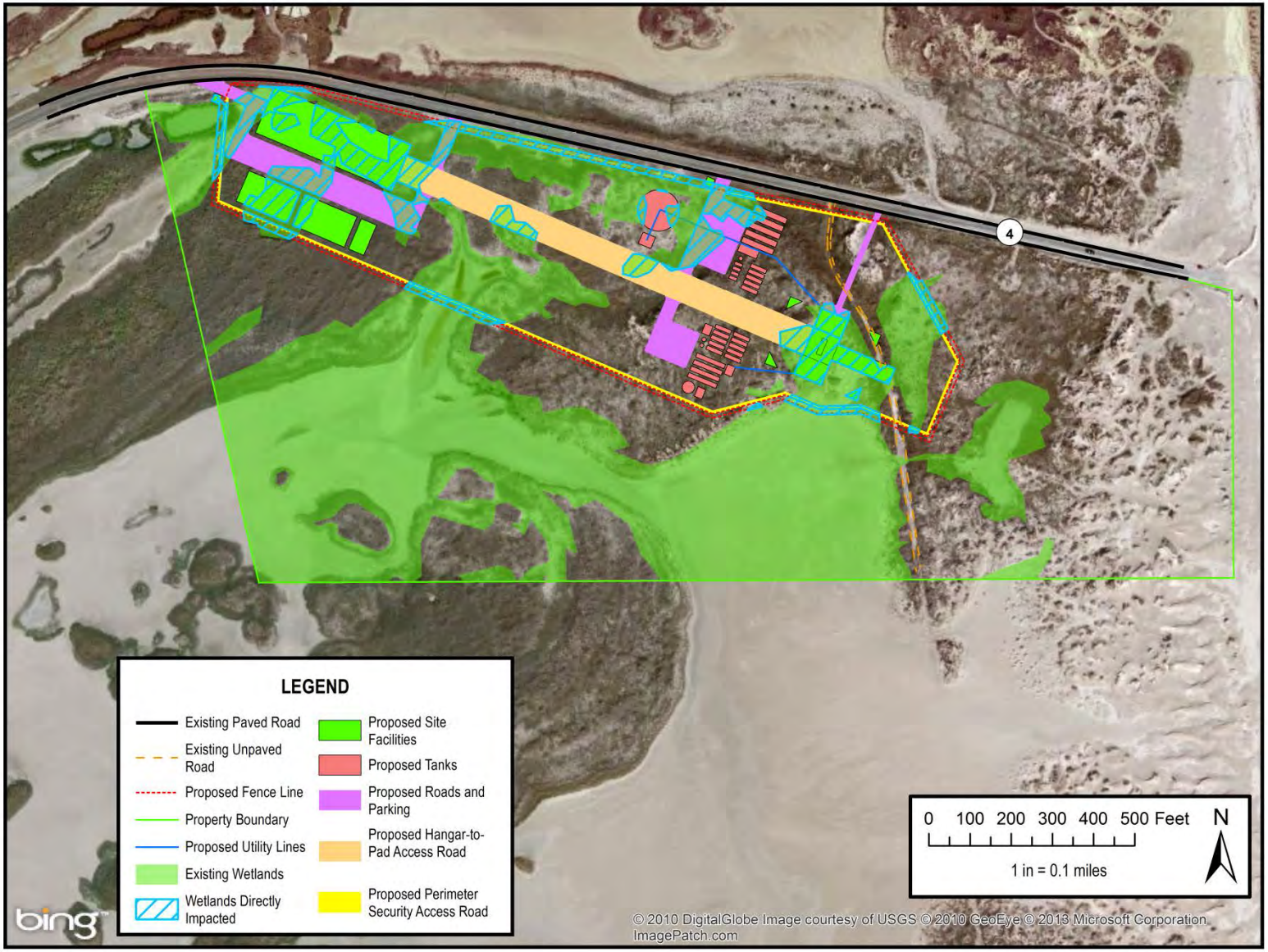

Figure 8a. Vertical Launch Area Wetland Impacts



Figure 8b. Control Center Area Wetland Impacts

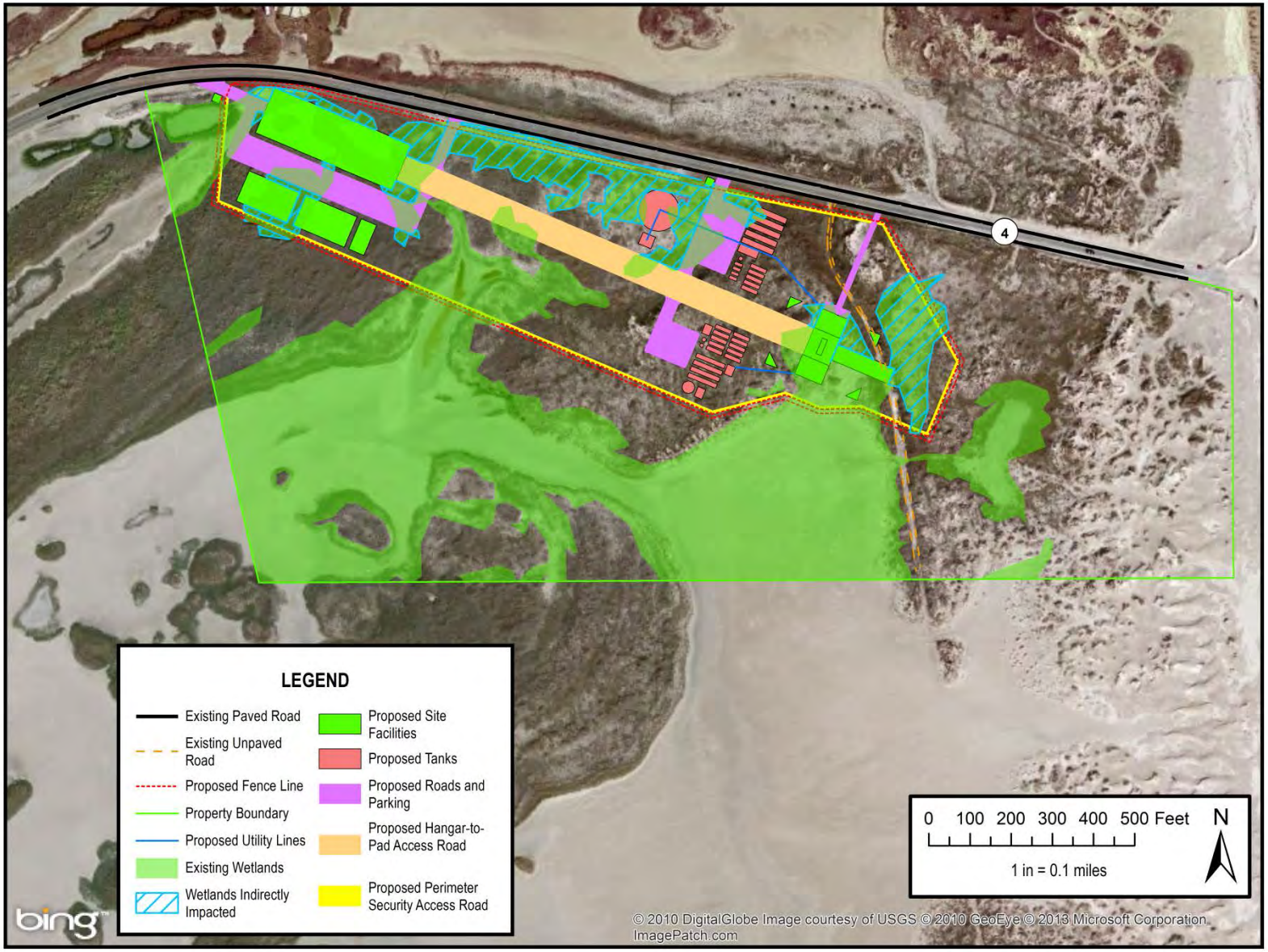

Figure 8c. Vertical Launch Area Indirect Wetland Impacts

Indirect wetland impacts are comprised of 2.54 acres of high marsh vegetated wetlands and 0.31 acres of unvegetated wetland salt flats (Figure 8c). Therefore, a total of 6.19 acres of wetlands would be impacted.

A goal of the FAA's evaluation of the Proposed Action is to minimize adverse effects to wetlands, achieve no net loss of wetlands, and to restore resources and environmental quality in accordance with FAA Order 1050.1E, Change 1. No excavation or fill material would be placed in Clean Water Act (CWA) Section 404 waters of the U.S., except as authorized by a USACE permit. The FAA and SpaceX are coordinating with the USACE to mitigate for losses of wetland area and functions from the Proposed Action. The wetland delineation results were field verified during a site visit on July 6, 2012, with the USACE. The preliminary Jurisdictional Determination was issued by the USACE on August 31, 2012, providing concurrence on the wetland boundaries. A total of 6.19 acres of wetlands would be removed as the result of project construction (Figures 8a, 8b, and 8c). Construction would result in permanent fill of the underlying wetlands. SpaceX is working with USACE to complete an individual permit, under which wetland impacts would require compensatory mitigation by SpaceX. Therefore, the proposed construction would have no significant impacts on wetlands.

2.6 CRITICAL DUNE AREAS

The property boundary for the proposed vertical launch area is immediately adjacent to critical dune areas, defined as a protected sand dune complex on Gulf shoreline parallel to and within 1,000 ft of mean high tide designated by a dune protection line established by local governments. Cameron County established a dune protection line,[2] which changes with shoreline changes. Additionally, there is an area of sand dunes on the eastern portion of the vertical launch area property.

Although the property boundary for the proposed vertical launch area may abut and include dune areas, all construction is proposed inland of the dunes and therefore construction of the vertical launch area is not expected to compromise dune structure or impact dune vegetation.[3] Launch activities would have minimal impacts to vegetation from fire and acidic deposition. Fires are unlikely since launch activities would occur over concrete pads with no surrounding vegetation. Very little acid or particulate deposition is expected since the Falcon 9 and Falcon Heavy vehicles utilize liquid fuels (liquid oxygen [LOX] and refined petroleum-1 [RP-1]). No significant impacts to critical dune areas are expected as a result of project construction or operation.

[2] Cameron County. 2010. Cameron County Dune Protection and Beach Access Plan. http://www.co.cameron.tx.us/parks/docs/BeachAccessDunePlan.pdf. Last amended August 26, 2010.

[3] University of Texas Bureau of Economic Geology. 2011. CIAP Lidar Survey Coverage Shapefiles. Available online at http://www.beg.utexas.edu/coastal/morphodynamics.php.

2.7 CRITICAL EROSION AREAS

The proposed vertical launch area is not within a critical erosion area designated by the TGLO in the Texas Coastwide Erosion Response Plan (2009).[4] Therefore, implementation of the Proposed Action would not impact critical erosion areas.

2.8 GULF BEACHES

The proposed vertical launch area is adjacent to Boca Chica Beach along the Gulf of Mexico. The proximity of the vertical launch area to Gulf beaches would result in beach closures during each of the proposed 12 launches per year. Beach closures, as described in Section 2.3, would be limited to the date of each launch and would last up to 15 hours.

SpaceX is working closely with the TGLO, the Cameron County Commissioners Court, the Cameron County Dunes Committee, the State Senator, and the State Representative to ensure that a temporary closure of a public beach and beach access would be allowable under Texas law. As of March 28, 2013, proposed legislation had been filed by State Senator Eddie Lucio, Jr. and State Representative Rene Oliveira that would amend the Texas Natural Resources Code Chapter 61 to allow for the TGLO and/or the Cameron County Commissioners Court to temporarily close a public beach and beach access for space flight activities, including launches. However, if the primary launch date falls on the major summer holidays of Memorial Day, Fourth of July, Labor Day, and/or summer weekends between Memorial Day and Labor Day weekends, additional approval from the TGLO would be required. The proposed legislation would also allow for a Memorandum of Agreement between the TGLO and Cameron County to further define specific requirements for beach and access closure requests, approvals, and related public notices.

Impacts to wildlife resources on Boca Chica Beach would be limited to short-term disturbance associated with increased vehicular traffic, human presence, noise from construction, and launch activities. Increased vehicular traffic and human presence from operational activities associated with the Proposed Action may cause wildlife species found within the vertical launch and control center areas to disperse. However, wildlife in the area is currently exposed to noise from vehicular traffic and human presence along State Highway 4. Impacts to special status species including the piping plover and sea turtles would be similar to those described for wildlife resources (see Section 4.8 of the EIS). A Biological Assessment was completed in accordance with Section 7 of the Endangered Species Act and formal consultation with the USFWS regarding species impact determinations is ongoing.

2.9 HARD SUBSTRATE REEFS

The Proposed Action would not occur in the marine environment. Therefore, there would be no impacts to naturally occurring hard substrate reefs with implementation of the Proposed Action.

[4]TGLO. 2009. Texas Coastwide Erosion Response Plan. http://www.glo.texas.gov/what-we-do/caring-for-the-coast/coastal-erosion/response-plans.html. December.

2.10 OYSTER REEFS

The Proposed Action would not occur in the marine environment. Therefore, there would be no impacts to oyster reefs with implementation of the Proposed Action.

2.11 SUBMERGED LAND

The Proposed Action would not occur on submerged lands. Therefore, there would be no impacts to submerged lands from construction or operation of the proposed control center and vertical launch areas. However, state-owned submerged lands are included in the water closure area for launch day activities (Figure 9).

The TGLO manages state-owned submerged land dedicated to generating revenues for the Permanent School Fund (PSF). The TGLO would not be excluded from leasing submerged lands within the water closure area and exploration and production of mineral resources within those areas would not be prevented by the Proposed Action. Therefore, the Proposed Action would not cause a loss of revenue to the PSF. However, as discussed in Section 2.1.1.6 of the EIS, SpaceX must implement a plan that defines the process for ensuring that any unauthorized persons, ships, trains, aircraft or other vehicles are not within the hazard area up to 15 hours during a launch event. Therefore, the Proposed Action would limit public use of state-owned submerged land during a launch event.

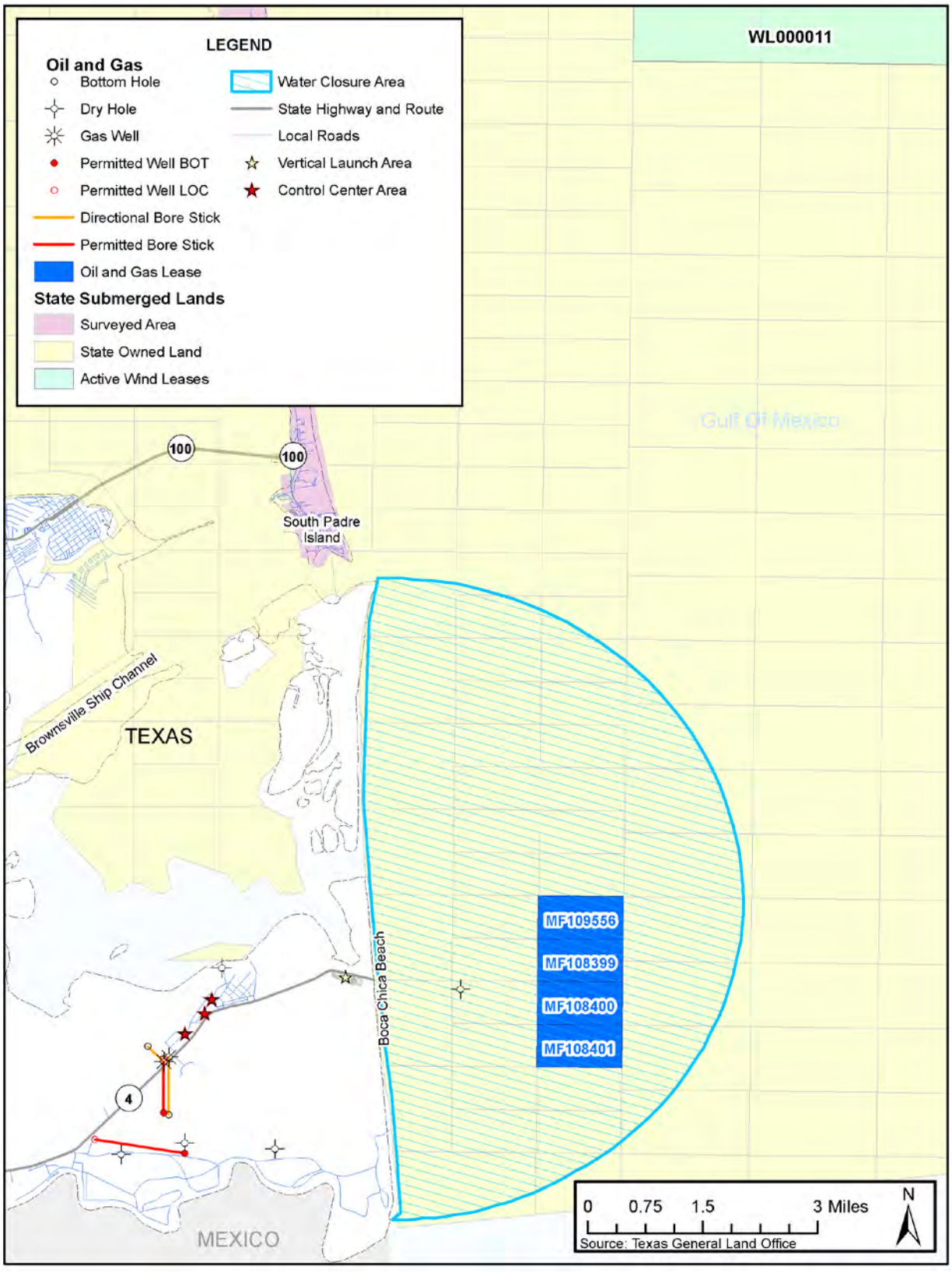

Figure 9. TGLO Managed Land within the Vicinity of the ROI

2.12 SPECIAL HAZARD AREA

Special hazard areas are designated by the Federal Emergency Management Agency (FEMA) as having special flood, flood-related erosion, or mudslide hazards. The proposed vertical launch and control center areas are located within Zone A8 and Zone V10 of the Flood Insurance Rate Map for Cameron County, Texas, and are designated as a special hazard area according to 31 TAC §501.3 of the TCMP. Zone A is defined by FEMA as areas that are subject to inundation by the 1-percent-annual-chance flood event. Zone V includes areas along coasts that are subject to inundation by the 1-percent-annual chance flood events with additional hazards associated with storm-induced waves.

Communities in Texas that participate in the National Flood Insurance Program (NFIP) must meet the minimum floodplain development standards described by FEMA's NFIP regulations. Some participating communities develop floodplain regulations that exceed the minimum standards required by NFIP regulations if the community determines that higher standards are needed to meet their local floodplain management goals. The proposed construction would be conducted in accordance with applicable county zoning and would be coordinated with the Cameron County floodplain administrators to receive a development permit. Additional coordination with Cameron County would be required to ensure the proposed construction meets the requirements of the NFIP. The NFIP permits development in the floodway if it can be demonstrated that "No-Rise" in the base flood elevation will occur. The County of Cameron Building Regulations outline the floodplain development standards that must be followed to comply with the NFIP and development in the floodplain.

Fill material would be required to elevate various components of the vertical launch area out of the floodplain. Fill material would be sourced from on-site whenever possible. All on-site material would come from within the 20-acre project area. If necessary, additional clean fill material would be sourced from the local region. Approximately 4.22 acres of floodplain would be filled in Zone V10 in the proposed vertical launch area and approximately 4.37 acres would be filled in Zone A8 in the western portion of the vertical launch area. The elevation increase at the vertical launch area was assumed to be 4.6 ft. A 30 percent increase in the fill required for the footprint of the vertical launch area facilities was assumed to account for possible design contingencies. The total amount of fill material for the vertical launch area would be 49,574 cubic yards (yd^3).

According to the Brownsville, Texas Code of Ordinances in addition to 44 CFR 60.3, fill material must be placed properly, should be 95 percent of the maximum density, and have graded side slopes no steeper than 2:1. As per the requirements of 44 CFR 60.3, fill material would be used to raise the elevations for parking and open storage areas. Structural support for the Hangar, launch pad, and workshop at the vertical launch area would rely on a pile design. Upon completion of the elevation work, an Elevation Certificate (FEMA Form 81-31) verifying the "as built" elevation of the structure complies with the local floodplain ordinance and NFIP floodplain management requirements would be obtained.

Construction at the control center area would require placing fill material to level the land and construction of impervious surface. The total amount of fill material for the control center area would be approximately 53,137 yd^3 (Table 4.7-2) and would impact approximately 12.4 acres of Zone A8.

Similar to the vertical launch area, an Elevation Certificate (FEMA Form 81-31) verifying the "as built" elevation of the structure complies with the local floodplain ordinance and NFIP floodplain management requirements would be obtained.

In order to comply with the local floodplain zoning required for participation in the NFIP and to obtain development permits, a hydraulic analysis of the floodplain associated with the vertical launch and control center areas would need to be conducted during the preliminary engineering design phase of the project to comply with the local county requirements. The hydraulic analysis would determine if the fill and construction of facilities within the floodplain would affect the base flood elevation. If the study determines that construction would not affect the base flood elevation, a "No-Rise" Determination would be submitted to the county. However, if the hydraulic study determined that the base flood elevation would be affected, further engineering design would need to be conducted to mitigate for the change in base flood elevation in order to comply with NFIP and Cameron County building regulations as required by the National Flood Insurance Act Title 42. The hydraulic study would also ensure that no flood storage would be lost and that the facility is adequately designed to prevent flotation, collapse, or lateral movement of the structure due to hydrodynamic and hydrostatic loads, including the effects of buoyancy. The design engineer would certify that the design elevation would withstand the depth and velocity of 100-year flood events (hydrostatic and hydrodynamic loads), any potential increase in wind load, or any other relevant load factors. Compliance with the NFIP as well as county regulations would ensure that the construction would have no significant impacts on floodplain storage and base flood elevations.

The construction activities would also be required to comply with Executive Order 11988 through compliance with U.S. Department of Transportation (DOT) Order 5650.2. To determine if construction of the proposed vertical launch and control center areas would result in a significant floodplain encroachment per DOT Order 5650.2, each of the following three scenarios have been addressed:

1. The action would have a considerable probability of loss of human life:

   a. Construction of the proposed vertical launch and control center areas would not result in considerable probability of loss of human life. No part of the proposed vertical launch or control center areas would be designed or constructed for human habitation or as a human dwelling. The proposed vertical launch and control center areas would not prohibit people from entering or exiting the area should a flood event occur.

2. The action would likely have substantial, encroachment-associated costs or damage, including interrupting aircraft service or loss of a vital transportation facility (e.g., flooding of a runway or taxiway, important navigational aid out of service due to flooding, etc.):

   a. The proposed vertical launch area would be constructed within a large contiguous floodplain that spans an area of approximately 5,477 acres (4.22 acres of Zone V10 and 4.37 acres of Zone A8). Construction of the vertical launch area would result in the filling of 8.59 acres of floodplain. Filling this relatively small area (less than 1 percent of the contiguous area) would

not result in new areas being subject to 100-year floods, nor would it result in existing areas subject to 100-year floods becoming more prone to floods.

3. The action would cause a notable adverse impact on natural and beneficial floodplain values:

   a. Based on the analysis in Sections 4.1, *Compatible Land Use (Including Farmlands and Coastal Resources*); 4.4, *Visual Resources and Light Emissions*; and 4.8, *Biological Resources (Including Fish, Wildlife, and Plants)* of the EIS, the FAA has determined that construction of the proposed vertical launch and control center areas would result in notable adverse impacts to some of the natural and beneficial floodplain values: land use (outdoor recreation), visual resources (open space, natural beauty), and wildlife (including federally threatened and endangered species). Therefore, based on the expected notable adverse impacts on some of the natural and beneficial floodplain values, the Proposed Action would result in significant floodplain encroachment per DOT Order 5650.2.

Based on the expected notable adverse impacts on the floodplain, the Proposed Action would result in significant floodplain encroachment per DOT Order 5650.2. Alternatives to the Proposed Action were considered and it was determined there are no non-floodplain alternative sites that would meet the requirements of the project as discussed in Section 2.3, *Alternatives Considered but Not Carried Forward*, of the EIS.

2.13 SUBMERGED AQUATIC VEGETATION

The Proposed Action would not occur in the marine environment and the project areas do not contain any freshwater areas that support submerged aquatic vegetation. Therefore, there would be no impacts to submerged aquatic vegetation with implementation of proposed construction and operations within the vertical launch and control center areas. Due to the desire of the public to view a launch, there is the potential for increased boat traffic outside the water closure area during launch days. Elevated boating activity could increase disturbance to submerged aquatic vegetation from rotor wash. However, no significant impacts on seagrass beds as a result of increased boat traffic are expected.

2.14 TIDAL SAND OR MUD FLATS

The proposed vertical launch area includes 13.0 acres of unvegetated tidal sand flats. No mud flats are located in the vertical launch area. The construction of the vertical launch and control center areas would result in the permanent impact of 6.19 acres of wetlands. Within the total acres of wetlands to be impacted, a total of 0.62 acres of tidal sand flats would be removed during project construction at the vertical launch area. In addition, the construction of the vertical launch area would effectively cut off the tidal influence to 2.85 acres of wetland through the construction of buildings and roads. These indirect wetland impacts are comprised of 2.54 acres of high marsh vegetated wetlands and 0.31 acres of unvegetated wetland salt flats. As discussed previously, SpaceX would coordinate with the USACE for mitigation.

2.15 WATER OF THE OPEN GULF OF MEXICO

The Proposed Action would not occur in the marine environment. No impacts to waters of the Gulf are expected as a result of proposed construction activities or operations at the vertical launch and control center areas. Following a launch, the first stage of the Falcon 9 vehicle would land approximately 550 miles downrange of the vertical launch area in the Gulf of Mexico. A salvage ship would recover the first stage, unless the first stage could not be relocated (likely indicating that it was damaged and sank). Spent first stages falling into the Gulf of Mexico are a potential source of pollution to marine environments. Depending on the vehicle, varying quantities of LOX and RP-1 would remain in the fuel tanks at the time of the splashdown. Localized temporary adverse impacts on marine waters in the immediate area surrounding this landing may occur. Long-term impacts would be negligible due to the buffering capacity of the Gulf of Mexico. LOX would dissolve in marine water. However, liquid fuels such as RP-1 that are relatively insoluble in water pose a slight risk to the marine environment until evaporation occurs. When the propellant surfaces, it would form a thin film that would be broken up by wave action, sunlight, and oxygen. All traces of propellant would quickly dissipate within 1 to 2 days.

2.16 WATER UNDER TIDAL INFLUENCE

Tidal wetlands and sand flats are present at the proposed vertical lausnch area, as described in Section 2.14. For construction of the proposed vertical launch area, 3.30 acres of tidally influenced coastal wetlands would be removed. No tidal wetlands are located within the proposed control center area. As described in Section 2.5, the FAA and SpaceX would coordinate with the USACE for mitigation.

3.0 COMPLIANCE WITH POLICIES OF THE TCMP

Based on the nature and location of the Proposed Action, the following enforceable policies of the TCMP were reviewed for compliance.

- 31 TAC §501.15, Policy for Major Actions
- 31 TAC §501.16, Policy for Construction of Electric Generating and Transmission Facilities
- 31 TAC §501.19, Policy for Construction and Operation of Solid Waste Treatment, Storage and Disposal Facilities
- 31 TAC §501.21, Policies for Discharge of Municipal and Industrial Wastewater to Coastal Waters
- 31 TAC §501.23, Policies for Development in Critical Areas
- 31 TAC §501.24, Policies for Construction of Waterfront Facilities and Other Structures on Submerged Lands
- 31 TAC §501.26, Policies for Construction in the Beach/Dune System
- 31 TAC §501.27, Policies for Development in Coastal Hazard Areas
- 31 TAC §501.28, Policies for Development within Coastal Barrier Resource System Units and Otherwise Protected Areas on Coastal Barriers
- 31 TAC §501.30, Policies for Alteration of Coastal Historic Areas
- 31 TAC §501.32, Policies for Emission of Air Pollutants

3.1 COMPLIANCE WITH 31 TAC §501.15 – POLICY FOR MAJOR ACTIONS

The issuance of launch licenses and/or experimental permits is considered a major Federal action subject to environmental review under NEPA. Cumulative and secondary (induced) impacts of the Proposed Action are discussed in the EIS. The purpose of this determination is to demonstrate whether the Proposed Action is consistent with the goals and policies of the TCMP.

3.2 COMPLIANCE WITH 31 TAC §501.16, POLICY FOR CONSTRUCTION OF ELECTRIC GENERATING AND TRANSMISSION FACILITIES

Electric transmission lines in CBRA system units and otherwise protected areas are required to be located, where practicable, in the existing ROW and to avoid construction in critical areas. Under the Proposed Action, it is estimated that the proposed vertical launch and the control center areas would have a total maximum electrical load of 3,000 kilowatts per hour. The lines required to supply power from the existing electrical distribution system to the vertical launch and control center areas would be buried within the State Highway 4 ROW. The specific requirements for the power lines and substation(s) necessary to meet the demands of the Proposed Action are being finalized. However, initial communications between the Magic Valley Electric Cooperative and SpaceX indicate that ample capacity exists in the Magic Valley Electric Cooperative system to meet the power needs of the vertical launch and control center areas without impact to other system users in the vicinity of the proposed vertical launch and control center areas. Because the electrical lines would be located within the existing State Highway 4 ROW, construction of these lines complies with the TCMP policy.

3.3 COMPLIANCE WITH 31 TAC §501.19 – POLICY FOR CONSTRUCTION AND OPERATION OF SOLID WASTE TREATMENT, STORAGE AND DISPOSAL FACILITIES

The siting and operation requirements for hazardous waste storage, treatment, and disposal facilities is described in 31 TAC §501.19. The vertical launch and control center areas would qualify as a waste generator rather than a waste disposal facility in accordance with 40 CFR §260.10. The estimated amount of hazardous waste anticipated to be generated at the facility during both construction and operation would qualify the facility as a small quantity generator of hazardous waste or as a conditionally exempt small quantity generator as defined by 30 TAC Part 1 §335 (c).

Construction contractors would be responsible for safely removing these construction-generated wastes from the vertical launch and control center areas and for arranging for recycling or disposal in accordance with applicable regulations. During operation, hazardous wastes would be managed on site in accordance with applicable Federal, State, and local regulations.

3.4 COMPLIANCE WITH 31 TAC §501.21, POLICIES FOR DISCHARGE OF MUNICIPAL AND INDUSTRIAL WASTEWATER TO COASTAL WATERS

No discharge of industrial wastewater into coastal waters is planned from the proposed project. During a launch activity, a deluge water system would discharge between 50,000 and 200,000 gallons of water for noise and vibration suppression. Following the launch, this water would then be sampled and analyzed to determine if the water contained controlled contaminants at levels that exceed the Texas Commission on Environmental Quality (TCEQ) water quality standards. Appropriate sampling protocols and water quality criteria would be developed in coordination with TCEQ and in accordance with Texas Surface Water Quality Standards. Water containing contaminants that exceed the water quality criteria would be removed and hauled to an approved industrial wastewater treatment facility outside of the vertical launch area. All other water not containing prohibited chemicals would be pumped back to the water tower.

Management of additional wastewater generated during operation of the vertical launch and control center areas would be conducted in coordination with the U.S. Environmental Protection Agency regarding the CWA's National Pollutant Discharge Elimination System (33 U.S.C. §1251 *et seq*.).

Domestic wastewater generated at the vertical launch and control center areas would be managed by septic systems to be installed during construction. Septic system design would be permitted through the Department of Environmental Health at the Cameron County Department of Health and Human Services. If hazardous fluids were released from the septic system, they could migrate to shallow groundwater underlying the site. Permit compliance would require the implementation of leak monitoring systems to limit impacts to the soil and groundwater associated with septic system malfunctions. In addition, a Spill Prevention, Control and Countermeasure Plan and a Hazardous Waste Management Plan would be implemented to minimize the potential for accidental releases from the septic system and associated hazards to human health and the environment. No significant impacts to coastal waters are expected as a result of domestic or industrial wastewater discharge.

3.5 COMPLIANCE WITH 31 TAC §501.23, POLICIES FOR DEVELOPMENT IN CRITICAL AREAS

For any construction in critical areas (coastal wetlands, oyster reefs, hard substrate reefs, submerged aquatic vegetation, tidal sand, or mud flats) subject to the requirements of §501.15, cumulative and secondary adverse effects must be considered, and construction must be planned with the goal of achieving no net loss of critical area functions and values.

Construction of the vertical launch and control center areas is proposed in critical areas including coastal wetlands and tidal sand flats (see Section 2.5). A total of 2.60 acres of vegetated wetland habitat, 0.08 acres of unvegetated depressional wetland, and 0.62 acres of unvegetated tidal flats would be removed as a result of construction of the proposed vertical launch area; and 0.04 acre of vegetated wetland would be removed for construction of the proposed control center area. In addition, the construction of the vertical launch area would effectively cut off the tidal influence to 2.85 acres of wetland through the construction of buildings and roads. These indirect wetland impacts are comprised of 2.54 acres of high marsh vegetated wetlands and 0.31 acres of unvegetated wetland salt flats. Therefore, a total of 6.19 acres of wetlands would be impacted.

The FAA and SpaceX would coordinate with the USACE for mitigation for wetland functional losses. The wetland delineation results were field verified during a site visit on July 6, 2012, with the USACE. The preliminary Jurisdictional Determination was issued by the USACE on August 31, 2012, providing concurrence on the wetland boundaries. Based on the proposed footprint for the vertical launch area, SpaceX would be required to obtain an individual permit from the USACE, which would require compensatory mitigation to offset wetland impacts. Additionally, in accordance with the DOT Order 5660.1A, the FAA has determined there is no practicable alternative to such construction (refer to Section 2.3, *Alternatives Considered but Not Carried Forward*, of the EIS), and the Proposed Action includes all practicable measures to minimize harm to wetlands which may result from construction (see Section 2.3.1, *SpaceX On-Site Alternatives,* of the EIS). Therefore, the proposed construction would have no significant impacts on wetlands. Operation of the vertical launch and control center areas would not result in wetland impacts.

3.6 COMPLIANCE WITH 31 TAC §501.26, POLICIES FOR CONSTRUCTION IN THE BEACH/DUNE SYSTEM

Construction in critical dune areas, protected sand dune complexes on the Gulf of Mexico shoreline within 1,000 ft of the mean high tide line, may not result in "material weakening of dunes and material damage to dune vegetation."

The property boundary for the proposed vertical launch area abuts the Gulf of Mexico shore beach and includes critical sand dunes. However, no construction is proposed in the sand dunes and therefore construction of the vertical launch area is not expected to compromise dune structure or vegetation. Some of the construction would occur within 1,000 ft of mean high tide. The TGLO rules under the Open Beaches Act and the Dune Protection Act require local governments to issue permits when proposed construction is within 1,000 ft landward from mean-high tide and to ensure that construction does not restrict access or use of local beaches by the public. Before issuing a construction permit, the local

government sends the permit files to the TGLO for comment. Therefore, SpaceX would apply for the required permits and would get approvals before construction would commence.

3.7 COMPLIANCE WITH 31 TAC §501.27, POLICIES FOR DEVELOPMENT IN COASTAL HAZARD AREAS

Coastal hazard areas include critical erosion areas and special hazard areas. The proposed vertical launch area is not within a critical erosion area designated by the TGLO (Section 2.7). The proposed vertical launch and control center areas are located in special hazard areas within Zone A8 and Zone V10 of the Flood Insurance Rate Map for Cameron County, Texas (Section 2.12).

Fill material would be required to elevate various components of the vertical launch area out of the floodplain. Fill material would be sourced from on-site whenever possible. All on-site material would come from within the 20-acre project area. If necessary, additional clean fill material would be sourced from the local region. Approximately 4.22 acres of floodplain would be filled in Zone V10 in the proposed vertical launch area and approximately 4.37 acres would be filled in Zone A8 in the western portion of the vertical launch area. The elevation increase at the vertical launch area was assumed to be 4.6 ft. A 30 percent increase in the fill required for the footprint of the vertical launch area facilities was assumed to account for possible design contingencies. The total amount of fill material for the vertical launch area would be 49,574 cubic yards (yd^3).

As per the requirements of 44 CFR 60.3, fill material would be used to raise the elevations for parking and open storage areas. Structural support for the Hangar, launch pad, and workshop at the vertical launch area would rely on a pile design. Upon completion of the elevation work, an Elevation Certificate (FEMA Form 81-31) verifying the “as built” elevation of the structure complies with the local floodplain ordinance and NFIP floodplain management requirements would be obtained.

Construction at the control center area would require placing fill material to level the land and construction of impervious surface. The total amount of fill material for the control center area would be approximately 53,137 yd3 (Table 4.7-2) and would impact approximately 12.4 acres of Zone A8. Similar to the vertical launch area, an Elevation Certificate (FEMA Form 81-31) verifying the “as built” elevation of the structure complies with the local floodplain ordinance and NFIP floodplain management requirements would be obtained.

In order to comply with the local floodplain zoning required for participation in the NFIP and to obtain development permits, a hydraulic analysis of the floodplain associated with the vertical launch and control center areas would need to be conducted during the preliminary engineering design phase of the project to comply with the local county requirements. The hydraulic analysis would determine if the fill and construction of facilities within the floodplain would affect the base flood elevation. If the study determines that construction would not affect the base flood elevation, a “No-Rise” Determination would be submitted to the county. However, if the hydraulic study determined that the base flood elevation would be affected, further engineering design would need to be conducted to mitigate for the change in base flood elevation in order to comply with NFIP and Cameron County building regulations as required by the National Flood Insurance Act Title 42. The hydraulic study would also ensure that no flood storage would be lost and that the facility is adequately designed to prevent flotation, collapse, or

lateral movement of the structure due to hydrodynamic and hydrostatic loads, including the effects of buoyancy. The design engineer would certify that the design elevation would withstand the depth and velocity of 100-year flood events (hydrostatic and hydrodynamic loads), any potential increase in wind load, or any other relevant load factors. Compliance with the NFIP as well as county regulations would ensure that the construction would have no significant impacts on floodplain storage and base flood elevations.

As discussed in Section 2.12, the construction activities would also be required to comply with EO 11988 through compliance with DOT Order 5650.2 (see Section 3.7 and 4.7 of the EIS for further information). Based on the expected notable adverse impacts on some of the natural and beneficial floodplain values, the Proposed Action would result in significant floodplain encroachment per DOT Order 5650.2.

3.8 COMPLIANCE WITH 31 TAC §501.28 – POLICY FOR DEVELOPMENT WITHIN COASTAL BARRIER RESOURCE SYSTEM UNITS AND OTHERWISE PROTECTED AREAS ON COASTAL BEACHES

Any development of infrastructure within designated Coastal Barrier Resource System Units should be located at sites to the greatest extent practicable to avoid and minimize potential for adverse effects on critical hazard areas and in existing ROWs. Development of publicly funded infrastructure in these areas is limited to that which is essential or required by law. The Proposed Action is not subject to Federal funding, and is therefore not subject to restrictions under the CBRA. A letter was sent by FAA to USFWS on June 18, 2012 requesting concurrence that the CBRA does not apply to this Proposed Action. A response letter from USFWS dated August 14, 2012 concurred that the Proposed Action is exempt from CBRA under Section 3(3)(C) which states that "assistance for environmental studies, planning, and assessments that are required incident to the issuance of permits or other authorizations under Federal law" are not considered financial assistance and therefore CBRA provisions would not apply.

Portions of the proposed vertical launch area are located within the USFWS designated Coastal Federal Resource System Unit T-12, which includes other CNRAs such as coastal preserves, coastal shore areas, coastal wetlands, critical dune areas, critical erosion areas and Gulf beaches. Because the Proposed Action is not expected to significantly impact other CNRAs located within Unit T-12, the Proposed Action would not significantly impact the Coastal Barrier Resource System Unit.

3.9 COMPLIANCE WITH 31 TAC §501. 30, POLICIES FOR ALTERATION OF COASTAL HISTORIC AREAS

Any development affecting a coastal historic area must avoid and minimize disturbance to the historic area. An overview of the historical, architectural, archaeological and cultural resources present within the APE of the vertical launch and control center areas is provided in Section 2.2. The eastern end of the Palmito Ranch Battlefield, an NRHP-listed property, is located approximately 3 miles west of the vertical launch area. Additionally, Palmetto Pilings and Cypress Pilings from former railroad crossings located west of Boca Chica beach, and a 1936 granite marker are considered to be NRHP-eligible sites.

No coastal historic areas are proposed to be physically altered or removed as a result of the Proposed Action. The historical marker may be susceptible to impacts from vibrations caused by high noise levels during launches. Potential indirect impacts to the Palmito Ranch Battlefield could consist of visual effects from construction of permanent structures at the vertical launch area and control center area.

Measures to minimize harm to historic properties from the potential impacts are being developed in consultation with the appropriate Federal agencies.

3.10 COMPLIANCE WITH 31 TAC §501. 32, POLICIES FOR EMISSION OF AIR POLLUTANTS

Emissions of air pollutants within the Texas coastal zone must comply with the Clean Air Act (42 USC §7401) to protect and enhance air quality. Air emissions from the construction activities associated with the Proposed Action would primarily be due to the operation of construction equipment and construction worker commute emissions. Emissions from construction workers driving from the Brownsville area to the proposed vertical launch area and back have been estimated for 47 workers during the years 2014-2015 (a 24-month period). Construction equipment emissions during the period would be intermittent and short-term for various time frames during the construction years. The emissions for the proposed construction of the vertical launch and control center areas represent extremely small percentages of the Cameron County regional emissions and would not cause an exceedance of any of the National Ambient Air Quality Standards (NAAQS). In conclusion, the construction impacts on air quality would not be significant.

Emissions from the Falcon 9 and Falcon Heavy engines have been previously characterized as comprising carbon dioxide (CO_2), carbon monoxide (CO), water vapor, nitrogen oxide (NO_x) and carbon particulates. Most CO emitted by the liquid fuel engines is oxidized to CO_2 during afterburning in the exhaust plume. Thus, CO_2, a greenhouse gas, is the primary emission from the actual launch vehicles and these emissions are presented in the EIS under cumulative impacts. Other pollutants could be emitted during launch operations, including CO that is not oxidized to CO_2. Only a small proportion of the emissions associated with each launch would have the potential to affect ambient air quality, which is defined as the area below the mixing height, and which is typically defined as 3,000 ft above ground level. The launch of both the Falcon 9 and the Falcon Heavy would be expected to reach the mixing height within a few seconds. To estimate the amount of CO that would be released below the mixing height, an estimate of 20 percent of total emissions was used. Further, it was assumed that none of the CO was oxidized to CO_2. Based on this assumption, a total of approximately 2,752 tons per year would be released below the mixing height, which is the equivalent of 4.4 percent of the total CO emissions from sources located in Cameron County. This percentage is not enough to result in an exceedance of the NAAQS for CO. Additionally, it is estimated, based on the assumptions presented, that 11,009 tons per year of CO would be released above the mixing height. Small quantities of other pollutants, such as NO_x would primarily occur above 3,000 ft and would disperse quickly after launch and therefore were not quantified for the analysis. In conclusion, the operational impacts from the Proposed Action on air quality would not be significant.

Johnson, Jaclyn M.

From: Sheri Land <Sheri.Land@GLO.TEXAS.GOV>
Sent: Monday, June 24, 2013 11:21 AM
To: Stacey.Zee@faa.gov; Tony Williams
Cc: Johnson, Jaclyn M.
Subject: Re: SpaceX DEIS
Attachments: Space X DEIS comments.docx

We did not receive any comments from the consistency review. Here is the letter that the GLO submitted.

Sheri Land
Director - Grant Programs and Support
Coastal Resources Division
Texas General Land Office
P.O. Box 12873
Austin, TX 78711-2873
512-463-5058 (phone)
email:sheri.land@glo.texas.gov
512-475-0680 (fax)
>>> <Stacey.Zee@faa.gov> 6/24/2013 10:03 AM >>>

Sheri and Tony -

Do you all have any comments on the SpaceX Texas Launch Site Draft EIS? The comment period closes today. Also - did any comments that came out of coastal consistency review apply to the DEIS?

Thanks!

Stacey M. Zee
Commercial Space Transportation, AST-100
Federal Aviation Administration
800 Independence Ave, SW, Suite 325
Washington, DC 20591
(202)267-9305

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U.S. Department
of Transportation
Federal Aviation Administration

Office of the Associate Administrator for
Commercial Space Transportation

800 Independence Ave., SW
Washington, DC 20591

APR 30 2012

Mr. Mark Wolfe
State Historic Preservation Officer
Texas Historical Commission
108 W. 16th Street
Austin, TX 78701

Dear Mr. Wolfe:

The Federal Aviation Administration (FAA) Office of Commercial Space Transportation (AST) is in the process of preparing an Environmental Impact Statement (EIS) in accordance with the National Environmental Policy Act (NEPA) to assess the potential environmental impacts of the proposed issuance of launch licenses and/or experimental permits to Space Exploration Technologies Corporation (SpaceX) for operating the Falcon 9 and Falcon Heavy vehicle launch programs from a private site located in Cameron County, Texas. The FAA published a Notice of Intent to prepare an EIS in the *Federal Register* on April 10, 2012 (also attached). The decision on whether to issue launch licenses or experimental permits to SpaceX meets the definition of an "undertaking" under the National Historic Preservation Act (NHPA).

Under this proposal, SpaceX would construct a vertical launch area and a control center area to support up to 12 commercial launches per year. The vehicles to be launched include the Falcon 9, Falcon Heavy (up to two per year), and a variety of smaller reusable suborbital launch vehicles. SpaceX would be required to apply for and obtain the appropriate launch licenses and/or experimental permits to be issued by the FAA. SpaceX would be the exclusive user of the site.

The Falcon 9 orbital vertical launch vehicle is a medium-lift class launch vehicle with a gross lift-off weight of approximately 1,000,000 pounds (lbs) with a maximum length of 230 feet (ft). The Falcon 9 uses liquid oxygen (LOX) and highly refined kerosene, also known as rocket propellant-1 or refined petroleum-1 (RP-1), as propellants to carry payloads into orbit. The Falcon Heavy is similar to the Falcon 9, except it has two additional boosters "strapped on," each booster being almost identical to the Falcon 9 first stage core. The Falcon Heavy is a heavy lift class launch vehicle with a gross lift-off weight of approximately 3,400,000 lbs. It has an overall

maximum length of approximately 230 ft. A reusable suborbital launch vehicle could consist of a Falcon 9 Stage 1 tank with a maximum propellant (RP-1 and LOX) load of approximately 6,900 gallons.

As part of the undertaking, SpaceX would construct a vertical launch area and a control center area. The proposed vertical launch area site is currently undeveloped and is located directly adjacent to the eastern terminus of Texas State Highway 4 (Boca Chica Boulevard) and approximately 3 miles north of the Mexican border on the Gulf Coast. It is located approximately 5 miles south of Port Isabel and South Padre Island. Access to the site is from Boca Chica Boulevard. Facilities proposed for the vertical launch area would include an integration- and processing-hangar, a launch pad and stand with its associated flame duct, propellant storage and handling areas, a workshop and office area, and a warehouse for parts storage. The vertical launch area site is approximately 50 acres.

The control center area would be located inland to the west of the vertical launch area and would include: a control center building and a payload processing facility. The control center area may also include a launch vehicle preparation hangar and satellite fuels storage. All facilities would be constructed on private land owned or leased by SpaceX. The proposed control center area would be approximately 8 acres. The development of access and supporting utility infrastructure for the vertical launch area and the control center area may occur on lands outside that which is owned or leased by SpaceX.

All Falcon 9 and Falcon Heavy launches would be expected to have commercial payloads, including satellites or experimental payloads. In addition to standard payloads, the Falcon 9 and Falcon Heavy may also carry a capsule, such as the SpaceX Dragon capsule. All launch trajectories would be to the east over the Gulf of Mexico.

The potential environmental impacts of all proposed construction activities will be analyzed in the EIS in addition to the impacts from operating the facilities and launching orbital and suborbital launch vehicles. In proceeding with the planning of this undertaking, we intend to coordinate our Section 106 NHPA consultation with the development of the EIS to meet our NEPA requirements pursuant to 36 CFR 800.8, and use the EIS as our primary NHPA consultation documentation. Additionally, to fulfill our responsibilities under 36 CFR 800.3(e) and 800.4(a)(3), we will be holding a public scoping meeting to solicit input from the public on potential environmental issues that may need to be evaluated in the EIS. The scoping meeting will be held on May 15, 2012, from 5:00 pm to 8:00 pm, at the International Technology, Education and Commerce Center (ITEC Center), located at 301 Mexico Boulevard G-1, Brownsville, Texas 78520. In addition to the public scoping meeting, **the FAA would like to invite you to a pre-scoping agency-only meeting to be held May 15, 2012, from 9:00 a.m. to 11:00 a.m., at the Brownsville Economic Development Council Board Room, located at 301 Mexico Blvd., Ste. F-1, Brownsville, Texas 78520**. During this time, the FAA will give a brief presentation of the undertaking and have an open discussion with agencies regarding issues and

concerns. A site visit will be conducted immediately following the agency-only meeting. Please identify any concerns you may have regarding this proposed approach so that we may address those concerns and incorporate them in our process.

The FAA is in the process of determining the area of potential effects (APE) for the undertaking per 36 CFR 800.4(a)(1), and completing background research to identify historic properties within the APE per 36 CFR 800.4(a)(2). To this end and pursuant to 36 CFR 800.3(f)(2), we will be initiating consultation with selected federally recognized Indian tribes in Texas affiliated with the APE to determine if there are any properties that may be of religious or cultural significance to the Tribes and potentially affected by the undertaking. Please provide any comments you have regarding our efforts to identify all potential consulting parties and gather information, as outlined in 36 CFR 800.3(f) and 800.4(a)(4).

The results of these identification efforts, in addition to an assessment of the undertaking's effects on any historic properties within the APE, will be the subject of future consultation with your office on this project.

If you have any questions or need further information on the project, please contact Ms. Stacey Zee, of my staff, at 202-267-9305 or at Stacey.Zee@faa.gov. Thank you in advance for your input on this important project.

Sincerely,

Mr. Glenn Rizner
Deputy Manager, Space Transportation Development Division

Enclosures: Notice of Intent to Prepare an EIS, Open a Public Scoping Period, and Conduct a Public Scoping Meeting
Figure 1 – Regional Map of Proposed Launch Site

DEPARTMENT OF STATE

[Public Notice 7814]

Shipping Coordinating Committee; Notice of Committee Meeting

The Shipping Coordinating Committee (SHC) will conduct an open meeting at 9:30 a.m. on Wednesday, April 25, 2012, in Room 2501 of the United States Coast Guard Headquarters Building, 2100 Second Street SW., Washington, DC 20593–7126. The primary purpose of the meeting is to prepare for the 90th Session of the International Maritime Organization's (IMO) Marine Safety Committee to be held at the IMO Headquarters, London, England, United Kingdom, May 16–25, 2012.

The primary matters to be considered include:

Consideration and adoption of amendments to mandatory instruments;
Measures to enhance maritime security;
Goal-based new ship construction standards;
LRIT-related matters;
Flag State implementation;
Radiocommunications and search and rescue;
Ship design and equipment;
Safety of navigation;
Fire protection;
Dangerous goods, solid cargoes and containers;
Stability, load lines and fishing vessel safety;
Bulk liquids and gases;
Implementation of the STCW Convention;
Technical assistance sub-programme in maritime safety and security;
Capacity-building for the implementation of new measures;
Role of the human element;
Formal safety assessment;
Piracy and armed robbery against ships;
General cargo ship safety;
Implementation of instruments and related matters;
Relations with other organizations;
Application of the Committee's Guidelines;
Passenger ship safety.

Members of the public may attend this meeting up to the seating capacity of the room. To facilitate the building security process, and to request reasonable accommodation, those who plan to attend should contact the meeting coordinator, LCDR Matthew Frazee, by email at *imo@uscg.mil*, by phone at (202) 372–1376, or in writing at Commandant (CG–52), U.S. Coast Guard, 2100 2nd Street SW., Stop 7126, Washington, DC 20593–7126 not later than April 18, 2012, 7 days prior to the meeting. Requests made after April 18, 2012 might not be able to be accommodated. Please note that due to security considerations, two valid, government issued photo identifications must be presented to gain entrance to the Headquarters building. The Headquarters building is accessible by taxi and privately owned conveyance (public transportation is not generally available). However, parking in the vicinity of the building is extremely limited. Additional information regarding this and other IMO SHC public meetings may be found at: *www.uscg.mil/imo.*

Dated: March 29, 2012.

Brian Robinson,

Executive Secretary, Shipping Coordinating Committee, Department of State.

[FR Doc. 2012–8636 Filed 4–9–12; 8:45 am]

BILLING CODE 4710–09–P

DEPARTMENT OF TRANSPORTATION

Office of the Secretary

Aviation Proceedings, Agreements Filed the Week Ending March 10, 2011

The following Agreements were filed with the Department of Transportation under the Sections 412 and 414 of the Federal Aviation Act, as amended (49 U.S.C. 1382 and 1384) and procedures governing proceedings to enforce these provisions. Answers may be filed within 21 days after the filing of the application.

Docket Number: DOT–OST–2012–0035.

Date Filed: March 7, 2012.

Parties: Members of the International Air Transport Association.

Subject: Mail Vote 702—Resolution 100 Standard Condition Resolution for Special Fares (Memo 1665) Intended effective date: 1 April 2012.

Renee V. Wright,

Program Manager, Docket Operations, Federal Register Liaison.

[FR Doc. 2012–8446 Filed 4–9–12; 8:45 am]

BILLING CODE 4910–9X–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Office of Commercial Space Transportation; Notice of Intent To Prepare an Environmental Impact Statement (EIS), Open a Public Scoping Period, and Conduct a Public Scoping Meeting

AGENCY: The Federal Aviation Administration (FAA) is the lead Federal agency.

ACTION: Notice of Intent to Prepare an EIS, Open a Public Scoping Period, and Conduct a Public Scoping Meeting.

SUMMARY: This Notice provides information to Federal, State, and local agencies, Native American tribes, and other interested persons regarding the FAA's intent to prepare an EIS for Space Exploration Technologies' (SpaceX's) proposal to launch the Falcon 9 and Falcon Heavy orbital vertical launch vehicles from a private site located in Cameron County, Texas. Under the Proposed Action, SpaceX proposes to construct a vertical launch area and a control center area to support up to 12 commercial launches per year. The vehicles to be launched include the Falcon 9, Falcon Heavy (up to two per year), and a variety of smaller reusable suborbital launch vehicles. SpaceX would be required to apply for the appropriate launch licenses and/or experimental permits to be issued by the FAA. The FAA will prepare the EIS in accordance with the National Environmental Policy Act of 1969 (NEPA; 42 United States Code [U.S.C.] 4321 et seq.), the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] parts 1500–1508), and FAA Order 1050.1E, Change 1, *Environmental Impacts: Policies and Procedures*, as part of its licensing and permitting process.

DATES: The FAA invites interested agencies, organizations, Native American tribes, and members of the public to submit comments or suggestions to assist in identifying significant environmental issues and in determining the appropriate scope of the EIS. The public scoping period starts with the publication of this notice in the **Federal Register**. To ensure sufficient time to consider issues identified during the public scoping period, comments should be submitted to Ms. Stacey M. Zee, FAA Environmental Protection Specialist, by one of the methods listed below no later than May 30, 2012. All comments will receive the same attention and consideration in the preparation of the EIS.

ADDRESSES: Comments, statements, or questions concerning scoping issues or the EIS process should be mailed to: Ms. Stacey M. Zee, FAA Environmental Protection Specialist, SpaceX EIS c/o Cardno TEC Inc., 275 West Street, Suite 110, Annapolis, MD 21409. Comments can also be sent by email to *faaspacexeis@cardnotec.com* or by fax to (410) 990–0455.

SUPPLEMENTARY INFORMATION:

Background

The FAA is preparing an EIS to analyze the potential environmental

impacts of SpaceX's proposal to launch orbital and suborbital launch vehicles from a private site in Cameron County in southern Texas. The EIS will consider the potential environmental impacts of the Proposed Action and reasonable alternatives, including the No Action Alternative. The successful completion of the environmental review process does not guarantee that the FAA would issue launch licenses and/or experimental permits to SpaceX. The project must also meet all FAA safety, risk, and indemnification requirements.

Proposed Action

The Proposed Action is for the FAA to issue launch licenses and/or experimental permits to SpaceX that would allow SpaceX to launch the Falcon 9 and Falcon Heavy orbital vertical launch vehicles and a variety of reusable suborbital launch vehicles from a launch site on privately-owned property in Cameron County, Texas. The Falcon 9 orbital vertical launch vehicle is a medium-lift class launch vehicle with a gross lift-off weight of approximately 1,000,000 pounds (lbs) with a maximum length of 230 feet (ft). The Falcon 9 uses liquid oxygen (LOX) and highly refined kerosene, also known as rocket propellant-1 or refined petroleum-1 (RP–1), as propellants to carry payloads into orbit. The Falcon Heavy is similar to the Falcon 9, except it has an additional two boosters "strapped on," each booster being almost identical to the Falcon 9 first stage core. The Falcon Heavy is a heavy lift class launch vehicle with a gross lift-off weight of approximately 3,400,000 lbs. It has an overall maximum length of approximately 230 ft.

A reusable suborbital launch vehicle could consist of a Falcon 9 Stage 1 tank with a maximum propellant (RP–1 and LOX) load of approximately 6,900 gallons.

As part of the Proposed Action, SpaceX proposes to construct a vertical launch area and a control center area. The proposed vertical launch area site is currently undeveloped and is located directly adjacent to the eastern terminus of Texas State Highway 4 (Boca Chica Boulevard) and approximately 3 miles north of the Mexican border on the Gulf Coast. It is located approximately 5 miles south of Port Isabel and South Padre Island. At the vertical launch area, the new facilities required would include: an integration- and processing-hangar, a launch pad and stand with its associated flame duct, propellant storage and handling areas, a workshop and office area, and a warehouse for parts storage.

The control center area would be located inland to the west of the vertical launch area and would include: A control center building and a payload processing facility; it might also include a launch vehicle preparation hangar and satellite fuels storage. All facilities would be constructed on private land owned or leased by SpaceX. The development of access and supporting utility infrastructure for the vertical launch area and the control center area may occur on lands outside that which is owned or leased by SpaceX.

Operations would consist of up to 12 launches per year with a maximum of two Falcon Heavy launches. All Falcon 9 and Falcon Heavy launches would be expected to have commercial payloads, including satellites or experimental payloads. In addition to standard payloads, the Falcon 9 and Falcon Heavy may also carry a capsule, such as the SpaceX Dragon capsule. All launch trajectories would be to the east over the Gulf of Mexico.

The potential environmental impacts of all proposed construction activities will be analyzed in the EIS, in addition to the impacts from operating the facilities and launching orbital and suborbital launch vehicles. The EIS will evaluate the potential environmental effects associated with: air quality; noise and compatible land use; land use, including Section 4(f) properties and Farmlands; coastal resources; biological resources, including threatened and endangered species; water resources, including surface waters and wetlands, groundwater, floodplains, and water quality; historical, architectural, archeological, and cultural resources; light emissions and visual resources; hazardous materials, pollution prevention, and solid waste; infrastructure and utilities; and socioeconomics, environmental justice, and children's environmental health and safety. The analysis will include an evaluation of the potential direct and indirect impacts, and will account for cumulative impacts from other relevant activities in the area of Cameron County, Texas.

Alternatives

Alternatives under consideration include the Proposed Action and the No Action Alternative. Under the No Action Alternative, the FAA would not issue a license or experimental permit to SpaceX. Based on comments received during the scoping period, the FAA may propose additional alternatives.

Scoping Meetings

A public scoping meeting will be held to solicit input from the public on potential issues that may need to be evaluated in the EIS. The scoping meeting will be held on May 15, 2012 from 5 p.m. to 8 p.m., at the International Technology, Education and Commerce Center (ITEC Center), located at 301 Mexico Blvd. C–1, Brownsville, Texas 78520. The meeting format will include an open-house workshop from 5 p.m. to 6 p.m. The FAA will provide an overview of the environmental process from 6 p.m. to 6:15 p.m. followed by a public comment period from 6:15 p.m. to 8 p.m.

Issued in Washington, DC on April 3, 2012.

Glenn Rizner,

Deputy Manager, Space Transportation Development Division.

[FR Doc. 2012–8556 Filed 4–9–12; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Railroad Administration

[Docket No. FRA–2012–0033]

Notice of the Buy America Waiver Request for Vossloh 101–LV Concrete Ties

AGENCY: Federal Railroad Administration (FRA), United States Department of Transportation (DOT).

ACTION: Notice of Buy America waiver request and request for comment.

SUMMARY: FRA is issuing this notice to advise the public that the Burlington Northern Santa Fe Railway Co. ("BNSF") has submitted to FRA through or with the support of the Washington Department of Transportation ("WSDOT"), the Illinois Department of Transportation ("IDOT"), the Texas Department of Transportation ("TxDOT"), and the California Department of Transportation ("Caltrans") a waiver request from FRA's Buy America Act requirements for the purchase of Vossloh 101–LV concrete ties, which contain certain components not manufactured in the United States. In furtherance of four FRA High-Speed Intercity Passenger Rail ("HSIPR") grants, BNSF, as the railroad infrastructure owner, will construct certain rail project elements that consist of the installation of Vossloh 101–LV concrete ties. FRA has received this request from the four States for the following projects: (a) The Pacific Northwest Rail Corridor Program (b) the Amtrak Quad Cities to Chicago Service Initiation Project, (c) the Tower 55 At-Grade Improvement Project, and (d) the LA to Fullerton Triple Track—Segment 7 Project.

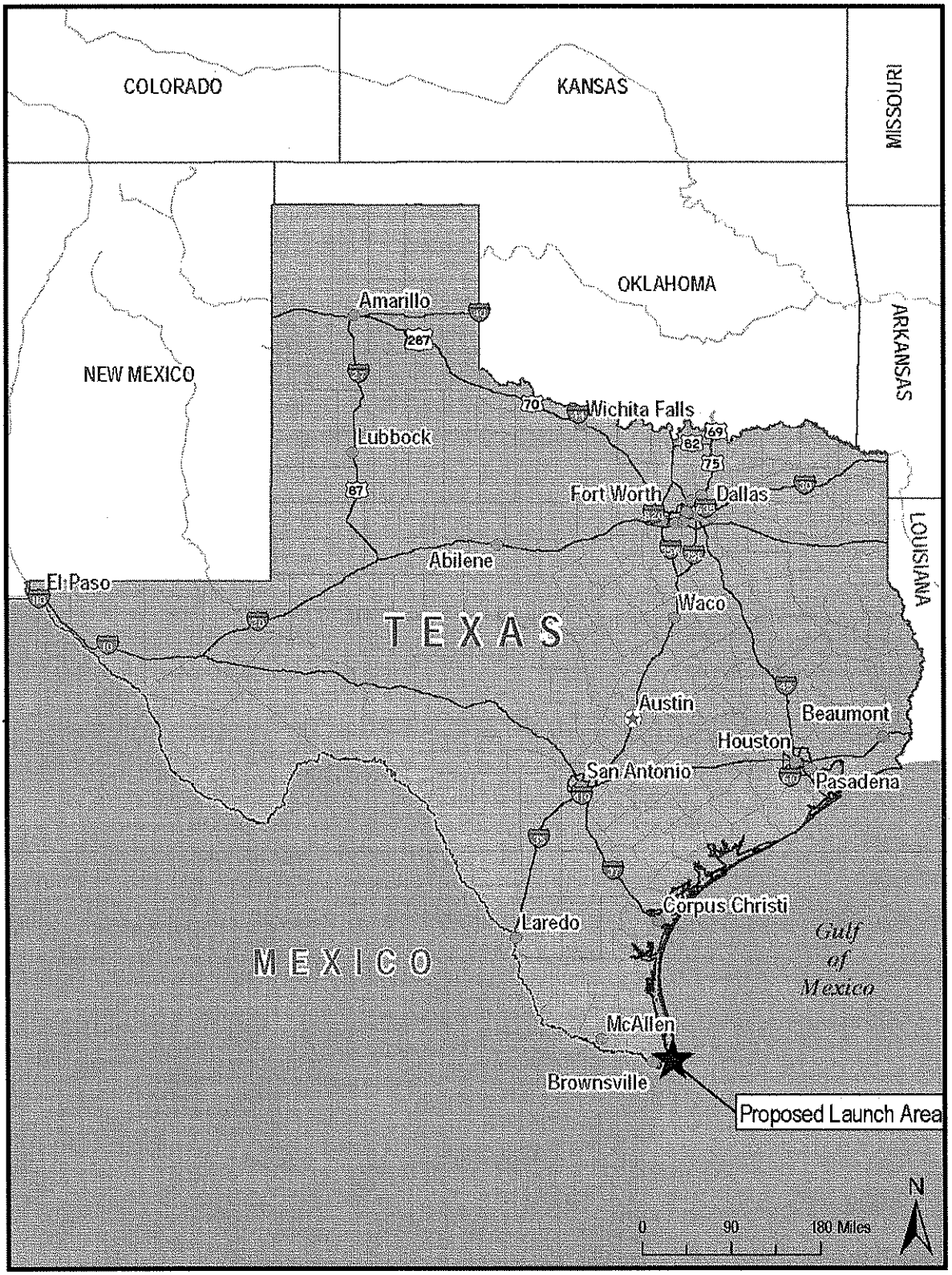

Figure 1 – Regional Map of Proposed Launch Site

U.S. Department
of Transportation
Federal Aviation Administration

Office of the Associate Administrator for
Commercial Space Transportation

800 Independence Ave., SW
Washington, DC 20591

MAY 2 2012

Louis Maynahonah
Chairman
Apache Tribe of Oklahoma
P.O. Box 1220
Anadarko, OK 73005

Dear Mr. Maynahonah:

The Federal Aviation Administration (FAA), Office of Commercial Space Transportation is in the process of preparing an Environmental Impact Statement (EIS) to assess the potential environmental impacts of the proposed issuance of launch licenses and/or experimental permits to Space Exploration Technologies Corporation (SpaceX) for operating the Falcon 9 and Falcon Heavy launch vehicle programs from a private site located in Cameron County, Texas. The FAA published a Notice of Intent to prepare an EIS in the *Federal Register* on April 10, 2012 (attached below).

Under this proposal, SpaceX would construct a vertical launch area and a control center area to support up to 12 commercial launches per year. The vehicles to be launched include the Falcon 9, Falcon Heavy (up to two per year), and a variety of smaller reusable suborbital launch vehicles. SpaceX would be required to apply for and obtain the appropriate launch licenses and/or experimental permits to be issued by the FAA. The FAA will prepare the EIS in accordance with the National Environmental Policy Act of 1969 (NEPA; 42 United States Code [U.S.C.] 4321 et seq.), the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] parts 1500-1508), and FAA Order 1050.1E, Change 1, Environmental Impacts: Policies and Procedures, as part of its licensing and permitting process. The current scope of the EIS includes the proposed construction activities and operations associated with launching orbital and suborbital launch vehicles.

The FAA has invited interested agencies, organizations, Native American tribes, and members of the public to submit comments or suggestions to assist in identifying significant environmental issues and in determining the appropriate scope of the EIS. Accordingly, the FAA will hold a public scoping meeting to solicit input from the public on potential environmental issues that may need to be evaluated in the EIS. The scoping meeting will be held on May 15, 2012, from

5:00 p.m. to 8:00 p.m., at the International Technology, Education and Commerce Center (ITEC Center), located at 301 Mexico Boulevard G-1, Brownsville, Texas. The scoping meeting will include a poster information session from 5:00 p.m. to 6:00 p.m., FAA presentation from 6:00 p.m. to 6:15 p.m., followed by a public statement period in which members of the public may provide up to a 3-minute statement. FAA staff will be present at this meeting to answer general questions on the proposed action and the EIS process. Information on the EIS is available at http://www.faa.gov/about/office_org/headquarters_offices/ast/environmental/nepa_docs/review/documents_progress/spacex_texas_launch_site_environmental_impact_statement/

Public comments can be submitted by attending the public scoping meeting or by mailing comments to: Ms. Stacey M. Zee, Environmental Protection Specialist, Federal Aviation Administration, SpaceX EIS c/o Cardno TEC Inc., 275 West Street, Suite 110, Annapolis, MD 21401; email faaspacexeis@cardnotec.com; or fax (410)-990-0455. Comments must be postmarked by May 30, 2012.

If you have any questions or need further information on the project, please contact Ms. Stacey Zee, of my staff, at 202-267-9305 or at Stacey.Zee@faa.gov. Thank you for your interest in this project.

Sincerely,

Glenn Rizner,
Deputy Manager, Space Transportation Development Division

DEPARTMENT OF STATE

[Public Notice 7814]

Shipping Coordinating Committee; Notice of Committee Meeting

The Shipping Coordinating Committee (SHC) will conduct an open meeting at 9:30 a.m. on Wednesday, April 25, 2012, in Room 2501 of the United States Coast Guard Headquarters Building, 2100 Second Street SW., Washington, DC 20593–7126. The primary purpose of the meeting is to prepare for the 90th Session of the International Maritime Organization's (IMO) Marine Safety Committee to be held at the IMO Headquarters, London, England, United Kingdom, May 16–25, 2012.

The primary matters to be considered include:

Consideration and adoption of amendments to mandatory instruments;
Measures to enhance maritime security;
Goal-based new ship construction standards;
LRIT-related matters;
Flag State implementation;
Radiocommunications and search and rescue;
Ship design and equipment;
Safety of navigation;
Fire protection;
Dangerous goods, solid cargoes and containers;
Stability, load lines and fishing vessel safety;
Bulk liquids and gases;
Implementation of the STCW Convention;
Technical assistance sub-programme in maritime safety and security;
Capacity-building for the implementation of new measures;
Role of the human element;
Formal safety assessment;
Piracy and armed robbery against ships;
General cargo ship safety;
Implementation of instruments and related matters;
Relations with other organizations;
Application of the Committee's Guidelines;
Passenger ship safety.

Members of the public may attend this meeting up to the seating capacity of the room. To facilitate the building security process, and to request reasonable accommodation, those who plan to attend should contact the meeting coordinator, LCDR Matthew Frazee, by email at *imo@uscg.mil*, by phone at (202) 372–1376, or in writing at Commandant (CG–52), U.S. Coast Guard, 2100 2nd Street SW., Stop 7126, Washington, DC 20593–7126 not later than April 18, 2012, 7 days prior to the meeting. Requests made after April 18, 2012 might not be able to be accommodated. Please note that due to security considerations, two valid, government issued photo identifications must be presented to gain entrance to the Headquarters building. The Headquarters building is accessible by taxi and privately owned conveyance (public transportation is not generally available). However, parking in the vicinity of the building is extremely limited. Additional information regarding this and other IMO SHC public meetings may be found at: *www.uscg.mil/imo.*

Dated: March 29, 2012.

Brian Robinson,

Executive Secretary, Shipping Coordinating Committee, Department of State.

[FR Doc. 2012–8636 Filed 4–9–12; 8:45 am]

BILLING CODE 4710–09–P

DEPARTMENT OF TRANSPORTATION

Office of the Secretary

Aviation Proceedings, Agreements Filed the Week Ending March 10, 2011

The following Agreements were filed with the Department of Transportation under the Sections 412 and 414 of the Federal Aviation Act, as amended (49 U.S.C. 1382 and 1384) and procedures governing proceedings to enforce these provisions. Answers may be filed within 21 days after the filing of the application.

Docket Number: DOT–OST–2012–0035.

Date Filed: March 7, 2012.

Parties: Members of the International Air Transport Association.

Subject: Mail Vote 702—Resolution 100 Standard Condition Resolution for Special Fares (Memo 1665) Intended effective date: 1 April 2012.

Renee V. Wright,

Program Manager, Docket Operations, Federal Register Liaison.

[FR Doc. 2012–8446 Filed 4–9–12; 8:45 am]

BILLING CODE 4910–9X–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Office of Commercial Space Transportation; Notice of Intent To Prepare an Environmental Impact Statement (EIS), Open a Public Scoping Period, and Conduct a Public Scoping Meeting

AGENCY: The Federal Aviation Administration (FAA) is the lead Federal agency.

ACTION: Notice of Intent to Prepare an EIS, Open a Public Scoping Period, and Conduct a Public Scoping Meeting.

SUMMARY: This Notice provides information to Federal, State, and local agencies, Native American tribes, and other interested persons regarding the FAA's intent to prepare an EIS for Space Exploration Technologies' (SpaceX's) proposal to launch the Falcon 9 and Falcon Heavy orbital vertical launch vehicles from a private site located in Cameron County, Texas. Under the Proposed Action, SpaceX proposes to construct a vertical launch area and a control center area to support up to 12 commercial launches per year. The vehicles to be launched include the Falcon 9, Falcon Heavy (up to two per year), and a variety of smaller reusable suborbital launch vehicles. SpaceX would be required to apply for the appropriate launch licenses and/or experimental permits to be issued by the FAA. The FAA will prepare the EIS in accordance with the National Environmental Policy Act of 1969 (NEPA; 42 United States Code [U.S.C.] 4321 et seq.), the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] parts 1500–1508), and FAA Order 1050.1E, Change 1, *Environmental Impacts: Policies and Procedures*, as part of its licensing and permitting process.

DATES: The FAA invites interested agencies, organizations, Native American tribes, and members of the public to submit comments or suggestions to assist in identifying significant environmental issues and in determining the appropriate scope of the EIS. The public scoping period starts with the publication of this notice in the **Federal Register**. To ensure sufficient time to consider issues identified during the public scoping period, comments should be submitted to Ms. Stacey M. Zee, FAA Environmental Protection Specialist, by one of the methods listed below no later than May 30, 2012. All comments will receive the same attention and consideration in the preparation of the EIS.

ADDRESSES: Comments, statements, or questions concerning scoping issues or the EIS process should be mailed to: Ms. Stacey M. Zee, FAA Environmental Protection Specialist, SpaceX EIS c/o Cardno TEC Inc., 275 West Street, Suite 110, Annapolis, MD 21409. Comments can also be sent by email to *faaspacexeis@cardnotec.com* or by fax to (410) 990–0455.

SUPPLEMENTARY INFORMATION:

Background

The FAA is preparing an EIS to analyze the potential environmental

impacts of SpaceX's proposal to launch orbital and suborbital launch vehicles from a private site in Cameron County in southern Texas. The EIS will consider the potential environmental impacts of the Proposed Action and reasonable alternatives, including the No Action Alternative. The successful completion of the environmental review process does not guarantee that the FAA would issue launch licenses and/or experimental permits to SpaceX. The project must also meet all FAA safety, risk, and indemnification requirements.

Proposed Action

The Proposed Action is for the FAA to issue launch licenses and/or experimental permits to SpaceX that would allow SpaceX to launch the Falcon 9 and Falcon Heavy orbital vertical launch vehicles and a variety of reusable suborbital launch vehicles from a launch site on privately-owned property in Cameron County, Texas. The Falcon 9 orbital vertical launch vehicle is a medium-lift class launch vehicle with a gross lift-off weight of approximately 1,000,000 pounds (lbs) with a maximum length of 230 feet (ft). The Falcon 9 uses liquid oxygen (LOX) and highly refined kerosene, also known as rocket propellant-1 or refined petroleum-1 (RP–1), as propellants to carry payloads into orbit. The Falcon Heavy is similar to the Falcon 9, except it has an additional two boosters "strapped on," each booster being almost identical to the Falcon 9 first stage core. The Falcon Heavy is a heavy lift class launch vehicle with a gross lift-off weight of approximately 3,400,000 lbs. It has an overall maximum length of approximately 230 ft.

A reusable suborbital launch vehicle could consist of a Falcon 9 Stage 1 tank with a maximum propellant (RP–1 and LOX) load of approximately 6,900 gallons.

As part of the Proposed Action, SpaceX proposes to construct a vertical launch area and a control center area. The proposed vertical launch area site is currently undeveloped and is located directly adjacent to the eastern terminus of Texas State Highway 4 (Boca Chica Boulevard) and approximately 3 miles north of the Mexican border on the Gulf Coast. It is located approximately 5 miles south of Port Isabel and South Padre Island. At the vertical launch area, the new facilities required would include: an integration- and processing-hangar, a launch pad and stand with its associated flame duct, propellant storage and handling areas, a workshop and office area, and a warehouse for parts storage.

The control center area would be located inland to the west of the vertical launch area and would include: A control center building and a payload processing facility; it might also include a launch vehicle preparation hangar and satellite fuels storage. All facilities would be constructed on private land owned or leased by SpaceX. The development of access and supporting utility infrastructure for the vertical launch area and the control center area may occur on lands outside that which is owned or leased by SpaceX.

Operations would consist of up to 12 launches per year with a maximum of two Falcon Heavy launches. All Falcon 9 and Falcon Heavy launches would be expected to have commercial payloads, including satellites or experimental payloads. In addition to standard payloads, the Falcon 9 and Falcon Heavy may also carry a capsule, such as the SpaceX Dragon capsule. All launch trajectories would be to the east over the Gulf of Mexico.

The potential environmental impacts of all proposed construction activities will be analyzed in the EIS, in addition to the impacts from operating the facilities and launching orbital and suborbital launch vehicles. The EIS will evaluate the potential environmental effects associated with: air quality; noise and compatible land use; land use, including Section 4(f) properties and Farmlands; coastal resources; biological resources, including threatened and endangered species; water resources, including surface waters and wetlands, groundwater, floodplains, and water quality; historical, architectural, archaeological, and cultural resources; light emissions and visual resources; hazardous materials, pollution prevention, and solid waste; infrastructure and utilities; and socioeconomics, environmental justice, and children's environmental health and safety. The analysis will include an evaluation of the potential direct and indirect impacts, and will account for cumulative impacts from other relevant activities in the area of Cameron County, Texas.

Alternatives

Alternatives under consideration include the Proposed Action and the No Action Alternative. Under the No Action Alternative, the FAA would not issue a license or experimental permit to SpaceX. Based on comments received during the scoping period, the FAA may propose additional alternatives.

Scoping Meetings

A public scoping meeting will be held to solicit input from the public on potential issues that may need to be evaluated in the EIS. The scoping meeting will be held on May 15, 2012 from 5 p.m. to 8 p.m., at the International Technology, Education and Commerce Center (ITEC Center), located at 301 Mexico Blvd. G–1, Brownsville, Texas 78520. The meeting format will include an open-house workshop from 5 p.m. to 6 p.m. The FAA will provide an overview of the environmental process from 6 p.m. to 6:15 p.m. followed by a public comment period from 6:15 p.m. to 8 p.m.

Issued in Washington, DC on April 3, 2012.

Glenn Rizner,

Deputy Manager, Space Transportation Development Division.

[FR Doc. 2012–8556 Filed 4–9–12; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Railroad Administration

[Docket No. FRA–2012–0033]

Notice of the Buy America Waiver Request for Vossloh 101–LV Concrete Ties

AGENCY: Federal Railroad Administration (FRA), United States Department of Transportation (DOT).

ACTION: Notice of Buy America waiver request and request for comment.

SUMMARY: FRA is issuing this notice to advise the public that the Burlington Northern Santa Fe Railway Co. ("BNSF") has submitted to FRA through or with the support of the Washington Department of Transportation ("WSDOT"), the Illinois Department of Transportation ("IDOT"), the Texas Department of Transportation ("TxDOT"), and the California Department of Transportation ("Caltrans") a waiver request from FRA's Buy America Act requirements for the purchase of Vossloh 101–LV concrete ties, which contain certain components not manufactured in the United States. In furtherance of four FRA High-Speed Intercity Passenger Rail ("HSIPR") grants, BNSF, as the railroad infrastructure owner, will construct certain rail project elements that consist of the installation of Vossloh 101–LV concrete ties. FRA has received this request from the four States for the following projects: (a) The Pacific Northwest Rail Corridor Program (b) the Amtrak Quad Cities to Chicago Service Initiation Project, (c) the Tower 55 At-Grade Improvement Project, and (d) the LA to Fullerton Triple Track—Segment 7 Project.

U.S. Department
of Transportation
Federal Aviation Administration

Office of the Associate Administrator for
Commercial Space Transportation

800 Independence Ave., SW
Washington, DC 20591

MAY 2 2012

Mr. Johnny Wauqua
Chairman
Comanche Nation of Oklahoma
HC-32, Box 1720
Lawton, OK 73502

Dear Mr. Wauqua:

The Federal Aviation Administration (FAA), Office of Commercial Space Transportation is in the process of preparing an Environmental Impact Statement (EIS) to assess the potential environmental impacts of the proposed issuance of launch licenses and/or experimental permits to Space Exploration Technologies Corporation (SpaceX) for operating the Falcon 9 and Falcon Heavy launch vehicle programs from a private site located in Cameron County, Texas. The FAA published a Notice of Intent to prepare an EIS in the *Federal Register* on April 10, 2012 (attached below).

Under this proposal, SpaceX would construct a vertical launch area and a control center area to support up to 12 commercial launches per year. The vehicles to be launched include the Falcon 9, Falcon Heavy (up to two per year), and a variety of smaller reusable suborbital launch vehicles. SpaceX would be required to apply for and obtain the appropriate launch licenses and/or experimental permits to be issued by the FAA. The FAA will prepare the EIS in accordance with the National Environmental Policy Act of 1969 (NEPA; 42 United States Code [U.S.C.] 4321 et seq.), the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] parts 1500-1508), and FAA Order 1050.1E, Change 1, Environmental Impacts: Policies and Procedures, as part of its licensing and permitting process. The current scope of the EIS includes the proposed construction activities and operations associated with launching orbital and suborbital launch vehicles.

The FAA has invited interested agencies, organizations, Native American tribes, and members of the public to submit comments or suggestions to assist in identifying significant environmental issues and in determining the appropriate scope of the EIS. Accordingly, the FAA will hold a public scoping meeting to solicit input from the public on potential environmental issues that may need to be evaluated in the EIS. The scoping meeting will be held on May 15, 2012, from

5:00 p.m. to 8:00 p.m., at the International Technology, Education and Commerce Center (ITEC Center), located at 301 Mexico Boulevard G-1, Brownsville, Texas. The scoping meeting will include a poster information session from 5:00 p.m. to 6:00 p.m., FAA presentation from 6:00 p.m. to 6:15 p.m., followed by a public statement period in which members of the public may provide up to a 3-minute statement. FAA staff will be present at this meeting to answer general questions on the proposed action and the EIS process. Information on the EIS is available at http://www.faa.gov/about/office_org/headquarters_offices/ast/environmental/nepa_docs/review/documents_progress/spacex_texas_launch_site_environmental_impact_statement/

Public comments can be submitted by attending the public scoping meeting or by mailing comments to: Ms. Stacey M. Zee, Environmental Protection Specialist, Federal Aviation Administration, SpaceX EIS c/o Cardno TEC Inc., 275 West Street, Suite 110, Annapolis, MD 21401; email faaspacexeis@cardnotec.com; or fax (410)-990-0455. Comments must be postmarked by May 30, 2012.

If you have any questions or need further information on the project, please contact Ms. Stacey Zee, of my staff, at 202-267-9305 or at Stacey.Zee@faa.gov. Thank you for your interest in this project.

Sincerely,

Glenn Rizner,
Deputy Manager, Space Transportation Development Division

DEPARTMENT OF STATE

[Public Notice 7814]

Shipping Coordinating Committee; Notice of Committee Meeting

The Shipping Coordinating Committee (SHC) will conduct an open meeting at 9:30 a.m. on Wednesday, April 25, 2012, in Room 2501 of the United States Coast Guard Headquarters Building, 2100 Second Street SW., Washington, DC 20593–7126. The primary purpose of the meeting is to prepare for the 90th Session of the International Maritime Organization's (IMO) Marine Safety Committee to be held at the IMO Headquarters, London, England, United Kingdom, May 16–25, 2012.

The primary matters to be considered include:

Consideration and adoption of amendments to mandatory instruments;
Measures to enhance maritime security;
Goal-based new ship construction standards;
LRIT-related matters;
Flag State implementation;
Radiocommunications and search and rescue;
Ship design and equipment;
Safety of navigation;
Fire protection;
Dangerous goods, solid cargoes and containers;
Stability, load lines and fishing vessel safety;
Bulk liquids and gases;
Implementation of the STCW Convention;
Technical assistance sub-programme in maritime safety and security;
Capacity-building for the implementation of new measures;
Role of the human element;
Formal safety assessment;
Piracy and armed robbery against ships;
General cargo ship safety;
Implementation of instruments and related matters;
Relations with other organizations;
Application of the Committee's Guidelines;
Passenger ship safety.

Members of the public may attend this meeting up to the seating capacity of the room. To facilitate the building security process, and to request reasonable accommodation, those who plan to attend should contact the meeting coordinator, LCDR Matthew Frazee, by email at *imo@uscg.mil*, by phone at (202) 372–1376, or in writing at Commandant (CG–52), U.S. Coast Guard, 2100 2nd Street SW., Stop 7126, Washington, DC 20593–7126 not later than April 18, 2012, 7 days prior to the meeting. Requests made after April 18, 2012 might not be able to be accommodated. Please note that due to security considerations, two valid, government issued photo identifications must be presented to gain entrance to the Headquarters building. The Headquarters building is accessible by taxi and privately owned conveyance (public transportation is not generally available). However, parking in the vicinity of the building is extremely limited. Additional information regarding this and other IMO SHC public meetings may be found at: *www.uscg.mil/imo*.

Dated: March 29, 2012.

Brian Robinson,

Executive Secretary, Shipping Coordinating Committee, Department of State.

[FR Doc. 2012–8636 Filed 4–9–12; 8:45 am]

BILLING CODE 4710–09–P

DEPARTMENT OF TRANSPORTATION

Office of the Secretary

Aviation Proceedings, Agreements Filed the Week Ending March 10, 2011

The following Agreements were filed with the Department of Transportation under the Sections 412 and 414 of the Federal Aviation Act, as amended (49 U.S.C. 1382 and 1384) and procedures governing proceedings to enforce these provisions. Answers may be filed within 21 days after the filing of the application.

Docket Number: DOT–OST–2012–0035.

Date Filed: March 7, 2012.

Parties: Members of the International Air Transport Association.

Subject: Mail Vote 702—Resolution 100 Standard Condition Resolution for Special Fares (Memo 1665) Intended effective date: 1 April 2012.

Renee V. Wright,

Program Manager, Docket Operations, Federal Register Liaison.

[FR Doc. 2012–8446 Filed 4–9–12; 8:45 am]

BILLING CODE 4910–9X–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Office of Commercial Space Transportation; Notice of Intent To Prepare an Environmental Impact Statement (EIS), Open a Public Scoping Period, and Conduct a Public Scoping Meeting

AGENCY: The Federal Aviation Administration (FAA) is the lead Federal agency.

ACTION: Notice of Intent to Prepare an EIS, Open a Public Scoping Period, and Conduct a Public Scoping Meeting.

SUMMARY: This Notice provides information to Federal, State, and local agencies, Native American tribes, and other interested persons regarding the FAA's intent to prepare an EIS for Space Exploration Technologies' (SpaceX's) proposal to launch the Falcon 9 and Falcon Heavy orbital vertical launch vehicles from a private site located in Cameron County, Texas. Under the Proposed Action, SpaceX proposes to construct a vertical launch area and a control center area to support up to 12 commercial launches per year. The vehicles to be launched include the Falcon 9, Falcon Heavy (up to two per year), and a variety of smaller reusable suborbital launch vehicles. SpaceX would be required to apply for the appropriate launch licenses and/or experimental permits to be issued by the FAA. The FAA will prepare the EIS in accordance with the National Environmental Policy Act of 1969 (NEPA; 42 United States Code [U.S.C.] 4321 et seq.), the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] parts 1500–1508), and FAA Order 1050.1E, Change 1, *Environmental Impacts: Policies and Procedures*, as part of its licensing and permitting process.

DATES: The FAA invites interested agencies, organizations, Native American tribes, and members of the public to submit comments or suggestions to assist in identifying significant environmental issues and in determining the appropriate scope of the EIS. The public scoping period starts with the publication of this notice in the **Federal Register**. To ensure sufficient time to consider issues identified during the public scoping period, comments should be submitted to Ms. Stacey M. Zee, FAA Environmental Protection Specialist, by one of the methods listed below no later than May 30, 2012. All comments will receive the same attention and consideration in the preparation of the EIS.

ADDRESSES: Comments, statements, or questions concerning scoping issues or the EIS process should be mailed to: Ms. Stacey M. Zee, FAA Environmental Protection Specialist, SpaceX EIS c/o Cardno TEC Inc., 275 West Street, Suite 110, Annapolis, MD 21409. Comments can also be sent by email to *faaspacexeis@cardnotec.com* or by fax to (410) 990–0455.

SUPPLEMENTARY INFORMATION:

Background

The FAA is preparing an EIS to analyze the potential environmental

impacts of SpaceX's proposal to launch orbital and suborbital launch vehicles from a private site in Cameron County in southern Texas. The EIS will consider the potential environmental impacts of the Proposed Action and reasonable alternatives, including the No Action Alternative. The successful completion of the environmental review process does not guarantee that the FAA would issue launch licenses and/or experimental permits to SpaceX. The project must also meet all FAA safety, risk, and indemnification requirements.

Proposed Action

The Proposed Action is for the FAA to issue launch licenses and/or experimental permits to SpaceX that would allow SpaceX to launch the Falcon 9 and Falcon Heavy orbital vertical launch vehicles and a variety of reusable suborbital launch vehicles from a launch site on privately-owned property in Cameron County, Texas. The Falcon 9 orbital vertical launch vehicle is a medium-lift class launch vehicle with a gross lift-off weight of approximately 1,000,000 pounds (lbs) with a maximum length of 230 feet (ft). The Falcon 9 uses liquid oxygen (LOX) and highly refined kerosene, also known as rocket propellant-1 or refined petroleum-1 (RP–1), as propellants to carry payloads into orbit. The Falcon Heavy is similar to the Falcon 9, except it has an additional two boosters "strapped on," each booster being almost identical to the Falcon 9 first stage core. The Falcon Heavy is a heavy lift class launch vehicle with a gross lift-off weight of approximately 3,400,000 lbs. It has an overall maximum length of approximately 230 ft.

A reusable suborbital launch vehicle could consist of a Falcon 9 Stage 1 tank with a maximum propellant (RP–1 and LOX) load of approximately 6,900 gallons.

As part of the Proposed Action, SpaceX proposes to construct a vertical launch area and a control center area. The proposed vertical launch area site is currently undeveloped and is located directly adjacent to the eastern terminus of Texas State Highway 4 (Boca Chica Boulevard) and approximately 3 miles north of the Mexican border on the Gulf Coast. It is located approximately 5 miles south of Port Isabel and South Padre Island. At the vertical launch area, the new facilities required would include: an integration- and processing-hangar, a launch pad and stand with its associated flame duct, propellant storage and handling areas, a workshop and office area, and a warehouse for parts storage.

The control center area would be located inland to the west of the vertical launch area and would include: A control center building and a payload processing facility; it might also include a launch vehicle preparation hangar and satellite fuels storage. All facilities would be constructed on private land owned or leased by SpaceX. The development of access and supporting utility infrastructure for the vertical launch area and the control center area may occur on lands outside that which is owned or leased by SpaceX.

Operations would consist of up to 12 launches per year with a maximum of two Falcon Heavy launches. All Falcon 9 and Falcon Heavy launches would be expected to have commercial payloads, including satellites or experimental payloads. In addition to standard payloads, the Falcon 9 and Falcon Heavy may also carry a capsule, such as the SpaceX Dragon capsule. All launch trajectories would be to the east over the Gulf of Mexico.

The potential environmental impacts of all proposed construction activities will be analyzed in the EIS, in addition to the impacts from operating the facilities and launching orbital and suborbital launch vehicles. The EIS will evaluate the potential environmental effects associated with: air quality; noise and compatible land use; land use, including Section 4(f) properties and Farmlands; coastal resources; biological resources, including threatened and endangered species; water resources, including surface waters and wetlands, groundwater, floodplains, and water quality; historical, architectural, archaeological, and cultural resources; light emissions and visual resources; hazardous materials, pollution prevention, and solid waste; infrastructure and utilities; and socioeconomics, environmental justice, and children's environmental health and safety. The analysis will include an evaluation of the potential direct and indirect impacts, and will account for cumulative impacts from other relevant activities in the area of Cameron County, Texas.

Alternatives

Alternatives under consideration include the Proposed Action and the No Action Alternative. Under the No Action Alternative, the FAA would not issue a license or experimental permit to SpaceX. Based on comments received during the scoping period, the FAA may propose additional alternatives.

Scoping Meetings

A public scoping meeting will be held to solicit input from the public on potential issues that may need to be evaluated in the EIS. The scoping meeting will be held on May 15, 2012 from 5 p.m. to 8 p.m., at the International Technology, Education and Commerce Center (ITEC Center), located at 301 Mexico Blvd. G–1, Brownsville, Texas 78520. The meeting format will include an open-house workshop from 5 p.m. to 6 p.m. The FAA will provide an overview of the environmental process from 6 p.m. to 6:15 p.m. followed by a public comment period from 6:15 p.m. to 8 p.m.

Issued in Washington, DC on April 3, 2012.

Glenn Rizner,

Deputy Manager, Space Transportation Development Division.

[FR Doc. 2012–8556 Filed 4–9–12; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Railroad Administration

[Docket No. FRA–2012–0033]

Notice of the Buy America Waiver Request for Vossloh 101–LV Concrete Ties

AGENCY: Federal Railroad Administration (FRA), United States Department of Transportation (DOT).

ACTION: Notice of Buy America waiver request and request for comment.

SUMMARY: FRA is issuing this notice to advise the public that the Burlington Northern Santa Fe Railway Co. ("BNSF") has submitted to FRA through or with the support of the Washington Department of Transportation ("WSDOT"), the Illinois Department of Transportation ("IDOT"), the Texas Department of Transportation ("TxDOT"), and the California Department of Transportation ("Caltrans") a waiver request from FRA's Buy America Act requirements for the purchase of Vossloh 101–LV concrete ties, which contain certain components not manufactured in the United States. In furtherance of four FRA High-Speed Intercity Passenger Rail ("HSIPR") grants, BNSF, as the railroad infrastructure owner, will construct certain rail project elements that consist of the installation of Vossloh 101–LV concrete ties. FRA has received this request from the four States for the following projects: (a) The Pacific Northwest Rail Corridor Program (b) the Amtrak Quad Cities to Chicago Service Initiation Project, (c) the Tower 55 At-Grade Improvement Project, and (d) the LA to Fullerton Triple Track—Segment 7 Project.

U.S. Department
of Transportation
Federal Aviation Administration

Office of the Associate Administrator for
Commercial Space Transportation

800 Independence Ave., SW
Washington, DC 20591

MAY 2 2012

Mr. Ron Twohatchet
Chairman
Kiowa Tribe of Oklahoma
P.O. Box 369
Carnegie, OK 73015

Dear Mr. Twohatchet:

The Federal Aviation Administration (FAA), Office of Commercial Space Transportation is in the process of preparing an Environmental Impact Statement (EIS) to assess the potential environmental impacts of the proposed issuance of launch licenses and/or experimental permits to Space Exploration Technologies Corporation (SpaceX) for operating the Falcon 9 and Falcon Heavy launch vehicle programs from a private site located in Cameron County, Texas. The FAA published a Notice of Intent to prepare an EIS in the *Federal Register* on April 10, 2012 (attached below).

Under this proposal, SpaceX would construct a vertical launch area and a control center area to support up to 12 commercial launches per year. The vehicles to be launched include the Falcon 9, Falcon Heavy (up to two per year), and a variety of smaller reusable suborbital launch vehicles. SpaceX would be required to apply for and obtain the appropriate launch licenses and/or experimental permits to be issued by the FAA. The FAA will prepare the EIS in accordance with the National Environmental Policy Act of 1969 (NEPA; 42 United States Code [U.S.C.] 4321 et seq.), the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] parts 1500-1508), and FAA Order 1050.1E, Change 1, Environmental Impacts: Policies and Procedures, as part of its licensing and permitting process. The current scope of the EIS includes the proposed construction activities and operations associated with launching orbital and suborbital launch vehicles.

The FAA has invited interested agencies, organizations, Native American tribes, and members of the public to submit comments or suggestions to assist in identifying significant environmental issues and in determining the appropriate scope of the EIS. Accordingly, the FAA will hold a public scoping meeting to solicit input from the public on potential environmental issues that may need to be evaluated in the EIS. The scoping meeting will be held on May 15, 2012, from

5:00 p.m. to 8:00 p.m., at the International Technology, Education and Commerce Center (ITEC Center), located at 301 Mexico Boulevard G-1, Brownsville, Texas. The scoping meeting will include a poster information session from 5:00 p.m. to 6:00 p.m., FAA presentation from 6:00 p.m. to 6:15 p.m., followed by a public statement period in which members of the public may provide up to a 3-minute statement. FAA staff will be present at this meeting to answer general questions on the proposed action and the EIS process. Information on the EIS is available at http://www.faa.gov/about/office_org/headquarters_offices/ast/environmental/nepa_docs/review/documents_progress/spacex_texas_launch_site_environmental_impact_statement/

Public comments can be submitted by attending the public scoping meeting or by mailing comments to: Ms. Stacey M. Zee, Environmental Protection Specialist, Federal Aviation Administration, SpaceX EIS c/o Cardno TEC Inc., 275 West Street, Suite 110, Annapolis, MD 21401; email faaspacexeis@cardnotec.com; or fax (410)-990-0455. Comments must be postmarked by May 30, 2012.

If you have any questions or need further information on the project, please contact Ms. Stacey Zee, of my staff, at 202-267-9305 or at Stacey.Zee@faa.gov. Thank you for your interest in this project.

Sincerely,

Glenn Rizner,
Deputy Manager, Space Transportation Development Division

DEPARTMENT OF STATE

[Public Notice 7814]

Shipping Coordinating Committee; Notice of Committee Meeting

The Shipping Coordinating Committee (SHC) will conduct an open meeting at 9:30 a.m. on Wednesday, April 25, 2012, in Room 2501 of the United States Coast Guard Headquarters Building, 2100 Second Street SW., Washington, DC 20593–7126. The primary purpose of the meeting is to prepare for the 90th Session of the International Maritime Organization's (IMO) Marine Safety Committee to be held at the IMO Headquarters, London, England, United Kingdom, May 16–25, 2012.

The primary matters to be considered include:

Consideration and adoption of amendments to mandatory instruments;
Measures to enhance maritime security;
Goal-based new ship construction standards;
LRIT-related matters;
Flag State implementation;
Radiocommunications and search and rescue;
Ship design and equipment;
Safety of navigation;
Fire protection;
Dangerous goods, solid cargoes and containers;
Stability, load lines and fishing vessel safety;
Bulk liquids and gases;
Implementation of the STCW Convention;
Technical assistance sub-programme in maritime safety and security;
Capacity-building for the implementation of new measures;
Role of the human element;
Formal safety assessment;
Piracy and armed robbery against ships;
General cargo ship safety;
Implementation of instruments and related matters;
Relations with other organizations;
Application of the Committee's Guidelines;
Passenger ship safety.

Members of the public may attend this meeting up to the seating capacity of the room. To facilitate the building security process, and to request reasonable accommodation, those who plan to attend should contact the meeting coordinator, LCDR Matthew Frazee, by email at *imo@uscg.mil,* by phone at (202) 372–1376, or in writing at Commandant (CG–52), U.S. Coast Guard, 2100 2nd Street SW., Stop 7126, Washington, DC 20593–7126 not later than April 18, 2012, 7 days prior to the meeting. Requests made after April 18, 2012 might not be able to be accommodated. Please note that due to security considerations, two valid, government issued photo identifications must be presented to gain entrance to the Headquarters building. The Headquarters building is accessible by taxi and privately owned conveyance (public transportation is not generally available). However, parking in the vicinity of the building is extremely limited. Additional information regarding this and other IMO SHC public meetings may be found at: *www.uscg.mil/imo.*

Dated: March 29, 2012.

Brian Robinson,

Executive Secretary, Shipping Coordinating Committee, Department of State.

[FR Doc. 2012–8636 Filed 4–9–12; 8:45 am]

BILLING CODE 4710–09–P

DEPARTMENT OF TRANSPORTATION

Office of the Secretary

Aviation Proceedings, Agreements Filed the Week Ending March 10, 2011

The following Agreements were filed with the Department of Transportation under the Sections 412 and 414 of the Federal Aviation Act, as amended (49 U.S.C. 1382 and 1384) and procedures governing proceedings to enforce these provisions. Answers may be filed within 21 days after the filing of the application.

Docket Number: DOT–OST–2012–0035.

Date Filed: March 7, 2012.

Parties: Members of the International Air Transport Association.

Subject: Mail Vote 702—Resolution 100 Standard Condition Resolution for Special Fares (Memo 1665) Intended effective date: 1 April 2012.

Renee V. Wright,

Program Manager, Docket Operations, Federal Register Liaison.

[FR Doc. 2012–8446 Filed 4–9–12; 8:45 am]

BILLING CODE 4910–9X–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Office of Commercial Space Transportation; Notice of Intent To Prepare an Environmental Impact Statement (EIS), Open a Public Scoping Period, and Conduct a Public Scoping Meeting

AGENCY: The Federal Aviation Administration (FAA) is the lead Federal agency.

ACTION: Notice of Intent to Prepare an EIS, Open a Public Scoping Period, and Conduct a Public Scoping Meeting.

SUMMARY: This Notice provides information to Federal, State, and local agencies, Native American tribes, and other interested persons regarding the FAA's intent to prepare an EIS for Space Exploration Technologies' (SpaceX's) proposal to launch the Falcon 9 and Falcon Heavy orbital vertical launch vehicles from a private site located in Cameron County, Texas. Under the Proposed Action, SpaceX proposes to construct a vertical launch area and a control center area to support up to 12 commercial launches per year. The vehicles to be launched include the Falcon 9, Falcon Heavy (up to two per year), and a variety of smaller reusable suborbital launch vehicles. SpaceX would be required to apply for the appropriate launch licenses and/or experimental permits to be issued by the FAA. The FAA will prepare the EIS in accordance with the National Environmental Policy Act of 1969 (NEPA; 42 United States Code [U.S.C.] 4321 et seq.), the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] parts 1500–1508), and FAA Order 1050.1E, Change 1, *Environmental Impacts: Policies and Procedures,* as part of its licensing and permitting process.

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ADDRESSES: Comments, statements, or questions concerning scoping issues or the EIS process should be mailed to: Ms. Stacey M. Zee, FAA Environmental Protection Specialist, SpaceX EIS c/o Cardno TEC Inc., 275 West Street, Suite 110, Annapolis, MD 21409. Comments can also be sent by email to *faaspacexeis@cardnotec.com* or by fax to (410) 990–0455.

SUPPLEMENTARY INFORMATION:

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impacts of SpaceX's proposal to launch orbital and suborbital launch vehicles from a private site in Cameron County in southern Texas. The EIS will consider the potential environmental impacts of the Proposed Action and reasonable alternatives, including the No Action Alternative. The successful completion of the environmental review process does not guarantee that the FAA would issue launch licenses and/or experimental permits to SpaceX. The project must also meet all FAA safety, risk, and indemnification requirements.

Proposed Action

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Scoping Meetings

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Issued in Washington, DC on April 3, 2012.

Glenn Rizner,

Deputy Manager, Space Transportation Development Division.

[FR Doc. 2012–8556 Filed 4–9–12; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Railroad Administration

[Docket No. FRA–2012–0033]

Notice of the Buy America Waiver Request for Vossloh 101–LV Concrete Ties

AGENCY: Federal Railroad Administration (FRA), United States Department of Transportation (DOT).

ACTION: Notice of Buy America waiver request and request for comment.

SUMMARY: FRA is issuing this notice to advise the public that the Burlington Northern Santa Fe Railway Co. ("BNSF") has submitted to FRA through or with the support of the Washington Department of Transportation ("WSDOT"), the Illinois Department of Transportation ("IDOT"), the Texas Department of Transportation ("TxDOT"), and the California Department of Transportation ("Caltrans") a waiver request from FRA's Buy America Act requirements for the purchase of Vossloh 101–LV concrete ties, which contain certain components not manufactured in the United States. In furtherance of four FRA High-Speed Intercity Passenger Rail ("HSIPR") grants, BNSF, as the railroad infrastructure owner, will construct certain rail project elements that consist of the installation of Vossloh 101–LV concrete ties. FRA has received this request from the four States for the following projects: (a) The Pacific Northwest Rail Corridor Program (b) the Amtrak Quad Cities to Chicago Service Initiation Project, (c) the Tower 55 At-Grade Improvement Project, and (d) the LA to Fullerton Triple Track—Segment 7 Project.

U.S. Department
of Transportation
Federal Aviation Administration

Office of the Associate Administrator for
Commercial Space Transportation

800 Independence Ave., SW
Washington, DC 20591

MAY 2 2012

Ms. Holly Houghten
THPO
Mescalero Apache Tribe
P.O. Box 227
Mescalero, NM 88340

Dear Ms. Houghten:

The Federal Aviation Administration (FAA), Office of Commercial Space Transportation is in the process of preparing an Environmental Impact Statement (EIS) to assess the potential environmental impacts of the proposed issuance of launch licenses and/or experimental permits to Space Exploration Technologies Corporation (SpaceX) for operating the Falcon 9 and Falcon Heavy launch vehicle programs from a private site located in Cameron County, Texas. The FAA published a Notice of Intent to prepare an EIS in the *Federal Register* on April 10, 2012 (attached below).

Under this proposal, SpaceX would construct a vertical launch area and a control center area to support up to 12 commercial launches per year. The vehicles to be launched include the Falcon 9, Falcon Heavy (up to two per year), and a variety of smaller reusable suborbital launch vehicles. SpaceX would be required to apply for and obtain the appropriate launch licenses and/or experimental permits to be issued by the FAA. The FAA will prepare the EIS in accordance with the National Environmental Policy Act of 1969 (NEPA; 42 United States Code [U.S.C.] 4321 et seq.), the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] parts 1500-1508), and FAA Order 1050.1E, Change 1, Environmental Impacts: Policies and Procedures, as part of its licensing and permitting process. The current scope of the EIS includes the proposed construction activities and operations associated with launching orbital and suborbital launch vehicles.

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5:00 p.m. to 8:00 p.m., at the International Technology, Education and Commerce Center (ITEC Center), located at 301 Mexico Boulevard G-1, Brownsville, Texas. The scoping meeting will include a poster information session from 5:00 p.m. to 6:00 p.m., FAA presentation from 6:00 p.m. to 6:15 p.m., followed by a public statement period in which members of the public may provide up to a 3-minute statement. FAA staff will be present at this meeting to answer general questions on the proposed action and the EIS process. Information on the EIS is available at http://www.faa.gov/about/office_org/headquarters_offices/ast/environmental/nepa_docs/review/documents_progress/spacex_texas_launch_site_environmental_impact_statement/

Public comments can be submitted by attending the public scoping meeting or by mailing comments to: Ms. Stacey M. Zee, Environmental Protection Specialist, Federal Aviation Administration, SpaceX EIS c/o Cardno TEC Inc., 275 West Street, Suite 110, Annapolis, MD 21401; email faaspacexeis@cardnotec.com; or fax (410)-990-0455. Comments must be postmarked by May 30, 2012.

If you have any questions or need further information on the project, please contact Ms. Stacey Zee, of my staff, at 202-267-9305 or at Stacey.Zee@faa.gov. Thank you for your interest in this project.

Sincerely,

Glenn Rizner,
Deputy Manager, Space Transportation Development Division

DEPARTMENT OF STATE

[Public Notice 7814]

Shipping Coordinating Committee; Notice of Committee Meeting

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The primary matters to be considered include:

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Goal-based new ship construction standards;
LRIT-related matters;
Flag State implementation;
Radiocommunications and search and rescue;
Ship design and equipment;
Safety of navigation;
Fire protection;
Dangerous goods, solid cargoes and containers;
Stability, load lines and fishing vessel safety;
Bulk liquids and gases;
Implementation of the STCW Convention;
Technical assistance sub-programme in maritime safety and security;
Capacity-building for the implementation of new measures;
Role of the human element;
Formal safety assessment;
Piracy and armed robbery against ships;
General cargo ship safety;
Implementation of instruments and related matters;
Relations with other organizations;
Application of the Committee's Guidelines;
Passenger ship safety.

Members of the public may attend this meeting up to the seating capacity of the room. To facilitate the building security process, and to request reasonable accommodation, those who plan to attend should contact the meeting coordinator, LCDR Matthew Frazee, by email at *imo@uscg.mil*, by phone at (202) 372–1376, or in writing at Commandant (CG–52), U.S. Coast Guard, 2100 2nd Street SW., Stop 7126, Washington, DC 20593–7126 not later than April 18, 2012, 7 days prior to the meeting. Requests made after April 18, 2012 might not be able to be accommodated. Please note that due to security considerations, two valid, government issued photo identifications must be presented to gain entrance to the Headquarters building. The Headquarters building is accessible by taxi and privately owned conveyance (public transportation is not generally available). However, parking in the vicinity of the building is extremely limited. Additional information regarding this and other IMO SHC public meetings may be found at: *www.uscg.mil/imo.*

Dated: March 29, 2012.

Brian Robinson,

Executive Secretary, Shipping Coordinating Committee, Department of State.

[FR Doc. 2012–8636 Filed 4–9–12; 8:45 am]

BILLING CODE 4710–09–P

DEPARTMENT OF TRANSPORTATION

Office of the Secretary

Aviation Proceedings, Agreements Filed the Week Ending March 10, 2011

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Parties: Members of the International Air Transport Association.

Subject: Mail Vote 702—Resolution 100 Standard Condition Resolution for Special Fares (Memo 1665) Intended effective date: 1 April 2012.

Renee V. Wright,

Program Manager, Docket Operations, Federal Register Liaison.

[FR Doc. 2012–8446 Filed 4–9–12; 8:45 am]

BILLING CODE 4910–9X–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

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AGENCY: The Federal Aviation Administration (FAA) is the lead Federal agency.

ACTION: Notice of Intent to Prepare an EIS, Open a Public Scoping Period, and Conduct a Public Scoping Meeting.

SUMMARY: This Notice provides information to Federal, State, and local agencies, Native American tribes, and other interested persons regarding the FAA's intent to prepare an EIS for Space Exploration Technologies' (SpaceX's) proposal to launch the Falcon 9 and Falcon Heavy orbital vertical launch vehicles from a private site located in Cameron County, Texas. Under the Proposed Action, SpaceX proposes to construct a vertical launch area and a control center area to support up to 12 commercial launches per year. The vehicles to be launched include the Falcon 9, Falcon Heavy (up to two per year), and a variety of smaller reusable suborbital launch vehicles. SpaceX would be required to apply for the appropriate launch licenses and/or experimental permits to be issued by the FAA. The FAA will prepare the EIS in accordance with the National Environmental Policy Act of 1969 (NEPA; 42 United States Code [U.S.C.] 4321 et seq.), the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] parts 1500–1508), and FAA Order 1050.1E, Change 1, *Environmental Impacts: Policies and Procedures*, as part of its licensing and permitting process.

DATES: The FAA invites interested agencies, organizations, Native American tribes, and members of the public to submit comments or suggestions to assist in identifying significant environmental issues and in determining the appropriate scope of the EIS. The public scoping period starts with the publication of this notice in the **Federal Register**. To ensure sufficient time to consider issues identified during the public scoping period, comments should be submitted to Ms. Stacey M. Zee, FAA Environmental Protection Specialist, by one of the methods listed below no later than May 30, 2012. All comments will receive the same attention and consideration in the preparation of the EIS.

ADDRESSES: Comments, statements, or questions concerning scoping issues or the EIS process should be mailed to: Ms. Stacey M. Zee, FAA Environmental Protection Specialist, SpaceX EIS c/o Cardno TEC Inc., 275 West Street, Suite 110, Annapolis, MD 21409. Comments can also be sent by email to *faaspacexeis@cardnotec.com* or by fax to (410) 990–0455.

SUPPLEMENTARY INFORMATION:

Background

The FAA is preparing an EIS to analyze the potential environmental

impacts of SpaceX's proposal to launch orbital and suborbital launch vehicles from a private site in Cameron County in southern Texas. The EIS will consider the potential environmental impacts of the Proposed Action and reasonable alternatives, including the No Action Alternative. The successful completion of the environmental review process does not guarantee that the FAA would issue launch licenses and/or experimental permits to SpaceX. The project must also meet all FAA safety, risk, and indemnification requirements.

Proposed Action

The Proposed Action is for the FAA to issue launch licenses and/or experimental permits to SpaceX that would allow SpaceX to launch the Falcon 9 and Falcon Heavy orbital vertical launch vehicles and a variety of reusable suborbital launch vehicles from a launch site on privately-owned property in Cameron County, Texas. The Falcon 9 orbital vertical launch vehicle is a medium-lift class launch vehicle with a gross lift-off weight of approximately 1,000,000 pounds (lbs) with a maximum length of 230 feet (ft). The Falcon 9 uses liquid oxygen (LOX) and highly refined kerosene, also known as rocket propellant-1 or refined petroleum-1 (RP–1), as propellants to carry payloads into orbit. The Falcon Heavy is similar to the Falcon 9, except it has an additional two boosters "strapped on," each booster being almost identical to the Falcon 9 first stage core. The Falcon Heavy is a heavy lift class launch vehicle with a gross lift-off weight of approximately 3,400,000 lbs. It has an overall maximum length of approximately 230 ft.

A reusable suborbital launch vehicle could consist of a Falcon 9 Stage 1 tank with a maximum propellant (RP–1 and LOX) load of approximately 6,900 gallons.

As part of the Proposed Action, SpaceX proposes to construct a vertical launch area and a control center area. The proposed vertical launch area site is currently undeveloped and is located directly adjacent to the eastern terminus of Texas State Highway 4 (Boca Chica Boulevard) and approximately 3 miles north of the Mexican border on the Gulf Coast. It is located approximately 5 miles south of Port Isabel and South Padre Island. At the vertical launch area, the new facilities required would include: an integration- and processing-hangar, a launch pad and stand with its associated flame duct, propellant storage and handling areas, a workshop and office area, and a warehouse for parts storage.

The control center area would be located inland to the west of the vertical launch area and would include: A control center building and a payload processing facility; it might also include a launch vehicle preparation hangar and satellite fuels storage. All facilities would be constructed on private land owned or leased by SpaceX. The development of access and supporting utility infrastructure for the vertical launch area and the control center area may occur on lands outside that which is owned or leased by SpaceX.

Operations would consist of up to 12 launches per year with a maximum of two Falcon Heavy launches. All Falcon 9 and Falcon Heavy launches would be expected to have commercial payloads, including satellites or experimental payloads. In addition to standard payloads, the Falcon 9 and Falcon Heavy may also carry a capsule, such as the SpaceX Dragon capsule. All launch trajectories would be to the east over the Gulf of Mexico.

The potential environmental impacts of all proposed construction activities will be analyzed in the EIS, in addition to the impacts from operating the facilities and launching orbital and suborbital launch vehicles. The EIS will evaluate the potential environmental effects associated with: air quality; noise and compatible land use; land use, including Section 4(f) properties and Farmlands; coastal resources; biological resources, including threatened and endangered species; water resources, including surface waters and wetlands, groundwater, floodplains, and water quality; historical, architectural, archaeological, and cultural resources; light emissions and visual resources; hazardous materials, pollution prevention, and solid waste; infrastructure and utilities; and socioeconomics, environmental justice, and children's environmental health and safety. The analysis will include an evaluation of the potential direct and indirect impacts, and will account for cumulative impacts from other relevant activities in the area of Cameron County, Texas.

Alternatives

Alternatives under consideration include the Proposed Action and the No Action Alternative. Under the No Action Alternative, the FAA would not issue a license or experimental permit to SpaceX. Based on comments received during the scoping period, the FAA may propose additional alternatives.

Scoping Meetings

A public scoping meeting will be held to solicit input from the public on potential issues that may need to be evaluated in the EIS. The scoping meeting will be held on May 15, 2012 from 5 p.m. to 8 p.m., at the International Technology, Education and Commerce Center (ITEC Center), located at 301 Mexico Blvd. G–1, Brownsville, Texas 78520. The meeting format will include an open-house workshop from 5 p.m. to 6 p.m. The FAA will provide an overview of the environmental process from 6 p.m. to 6:15 p.m. followed by a public comment period from 6:15 p.m. to 8 p.m.

Issued in Washington, DC on April 3, 2012.

Glenn Rizner,

Deputy Manager, Space Transportation Development Division.

[FR Doc. 2012–8556 Filed 4–9–12; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Railroad Administration

[Docket No. FRA–2012–0033]

Notice of the Buy America Waiver Request for Vossloh 101–LV Concrete Ties

AGENCY: Federal Railroad Administration (FRA), United States Department of Transportation (DOT).

ACTION: Notice of Buy America waiver request and request for comment.

SUMMARY: FRA is issuing this notice to advise the public that the Burlington Northern Santa Fe Railway Co. ("BNSF") has submitted to FRA through or with the support of the Washington Department of Transportation ("WSDOT"), the Illinois Department of Transportation ("IDOT"), the Texas Department of Transportation ("TxDOT"), and the California Department of Transportation ("Caltrans") a waiver request from FRA's Buy America Act requirements for the purchase of Vossloh 101–LV concrete ties, which contain certain components not manufactured in the United States. In furtherance of four FRA High-Speed Intercity Passenger Rail ("HSIPR") grants, BNSF, as the railroad infrastructure owner, will construct certain rail project elements that consist of the installation of Vossloh 101–LV concrete ties. FRA has received this request from the four States for the following projects: (a) The Pacific Northwest Rail Corridor Program (b) the Amtrak Quad Cities to Chicago Service Initiation Project, (c) the Tower 55 At-Grade Improvement Project, and (d) the LA to Fullerton Triple Track—Segment 7 Project.

U.S. Department
of Transportation
Federal Aviation Administration

Office of the Associate Administrator for
Commercial Space Transportation

800 Independence Ave., SW
Washington, DC 20591

MAY 2 2012

Mr. Donal Patterson
President
Tonkawa Tribe of Oklahoma
1 Rush Buffalo Rd.
Tonkawa, OK 74653-4449

Dear Mr. Patterson:

The Federal Aviation Administration (FAA), Office of Commercial Space Transportation is in the process of preparing an Environmental Impact Statement (EIS) to assess the potential environmental impacts of the proposed issuance of launch licenses and/or experimental permits to Space Exploration Technologies Corporation (SpaceX) for operating the Falcon 9 and Falcon Heavy launch vehicle programs from a private site located in Cameron County, Texas. The FAA published a Notice of Intent to prepare an EIS in the *Federal Register* on April 10, 2012 (attached below).

Under this proposal, SpaceX would construct a vertical launch area and a control center area to support up to 12 commercial launches per year. The vehicles to be launched include the Falcon 9, Falcon Heavy (up to two per year), and a variety of smaller reusable suborbital launch vehicles. SpaceX would be required to apply for and obtain the appropriate launch licenses and/or experimental permits to be issued by the FAA. The FAA will prepare the EIS in accordance with the National Environmental Policy Act of 1969 (NEPA; 42 United States Code [U.S.C.] 4321 et seq.), the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] parts 1500-1508), and FAA Order 1050.1E, Change 1, Environmental Impacts: Policies and Procedures, as part of its licensing and permitting process. The current scope of the EIS includes the proposed construction activities and operations associated with launching orbital and suborbital launch vehicles.

The FAA has invited interested agencies, organizations, Native American tribes, and members of the public to submit comments or suggestions to assist in identifying significant environmental issues and in determining the appropriate scope of the EIS. Accordingly, the FAA will hold a public scoping meeting to solicit input from the public on potential environmental issues that may need to be evaluated in the EIS. The scoping meeting will be held on May 15, 2012, from

5:00 p.m. to 8:00 p.m., at the International Technology, Education and Commerce Center (ITEC Center), located at 301 Mexico Boulevard G-1, Brownsville, Texas. The scoping meeting will include a poster information session from 5:00 p.m. to 6:00 p.m., FAA presentation from 6:00 p.m. to 6:15 p.m., followed by a public statement period in which members of the public may provide up to a 3-minute statement. FAA staff will be present at this meeting to answer general questions on the proposed action and the EIS process. Information on the EIS is available at http://www.faa.gov/about/office_org/headquarters_offices/ast/environmental/nepa_docs/review/documents_progress/spacex_texas_launch_site_environmental_impact_statement/

Public comments can be submitted by attending the public scoping meeting or by mailing comments to: Ms. Stacey M. Zee, Environmental Protection Specialist, Federal Aviation Administration, SpaceX EIS c/o Cardno TEC Inc., 275 West Street, Suite 110, Annapolis, MD 21401; email faaspacexeis@cardnotec.com; or fax (410)-990-0455. Comments must be postmarked by May 30, 2012.

If you have any questions or need further information on the project, please contact Ms. Stacey Zee, of my staff, at 202-267-9305 or at Stacey.Zee@faa.gov. Thank you for your interest in this project.

Sincerely,

Glenn Rizner,
Deputy Manager, Space Transportation Development Division

DEPARTMENT OF STATE

[Public Notice 7814]

Shipping Coordinating Committee; Notice of Committee Meeting

The Shipping Coordinating Committee (SHC) will conduct an open meeting at 9:30 a.m. on Wednesday, April 25, 2012, in Room 2501 of the United States Coast Guard Headquarters Building, 2100 Second Street SW., Washington, DC 20593–7126. The primary purpose of the meeting is to prepare for the 90th Session of the International Maritime Organization's (IMO) Marine Safety Committee to be held at the IMO Headquarters, London, England, United Kingdom, May 16–25, 2012.

The primary matters to be considered include:

Consideration and adoption of amendments to mandatory instruments;
Measures to enhance maritime security;
Goal-based new ship construction standards;
LRIT-related matters;
Flag State implementation;
Radiocommunications and search and rescue;
Ship design and equipment;
Safety of navigation;
Fire protection;
Dangerous goods, solid cargoes and containers;
Stability, load lines and fishing vessel safety;
Bulk liquids and gases;
Implementation of the STCW Convention;
Technical assistance sub-programme in maritime safety and security;
Capacity-building for the implementation of new measures;
Role of the human element;
Formal safety assessment;
Piracy and armed robbery against ships;
General cargo ship safety;
Implementation of instruments and related matters;
Relations with other organizations;
Application of the Committee's Guidelines;
Passenger ship safety.

Members of the public may attend this meeting up to the seating capacity of the room. To facilitate the building security process, and to request reasonable accommodation, those who plan to attend should contact the meeting coordinator, LCDR Matthew Frazee, by email at *imo@uscg.mil*, by phone at (202) 372–1376, or in writing at Commandant (CG–52), U.S. Coast Guard, 2100 2nd Street SW., Stop 7126, Washington, DC 20593–7126 not later than April 18, 2012. 7 days prior to the meeting. Requests made after April 18, 2012 might not be able to be accommodated. Please note that due to security considerations, two valid, government issued photo identifications must be presented to gain entrance to the Headquarters building. The Headquarters building is accessible by taxi and privately owned conveyance (public transportation is not generally available). However, parking in the vicinity of the building is extremely limited. Additional information regarding this and other IMO SHC public meetings may be found at: *www.uscg.mil/imo.*

Dated: March 29, 2012.

Brian Robinson,

Executive Secretary, Shipping Coordinating Committee, Department of State.

[FR Doc. 2012–8636 Filed 4–9–12; 8:45 am]

BILLING CODE 4710–09–P

DEPARTMENT OF TRANSPORTATION

Office of the Secretary

Aviation Proceedings, Agreements Filed the Week Ending March 10, 2011

The following Agreements were filed with the Department of Transportation under the Sections 412 and 414 of the Federal Aviation Act, as amended (49 U.S.C. 1382 and 1384) and procedures governing proceedings to enforce these provisions. Answers may be filed within 21 days after the filing of the application.

Docket Number: DOT–OST–2012–0035.

Date Filed: March 7, 2012.

Parties: Members of the International Air Transport Association.

Subject: Mail Vote 702—Resolution 100 Standard Condition Resolution for Special Fares (Memo 1665) Intended effective date: 1 April 2012.

Renee V. Wright,

Program Manager, Docket Operations, Federal Register Liaison.

[FR Doc. 2012–8446 Filed 4–9–12; 8:45 am]

BILLING CODE 4910–9X–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Office of Commercial Space Transportation; Notice of Intent To Prepare an Environmental Impact Statement (EIS), Open a Public Scoping Period, and Conduct a Public Scoping Meeting

AGENCY: The Federal Aviation Administration (FAA) is the lead Federal agency.

ACTION: Notice of Intent to Prepare an EIS, Open a Public Scoping Period, and Conduct a Public Scoping Meeting.

SUMMARY: This Notice provides information to Federal, State, and local agencies, Native American tribes, and other interested persons regarding the FAA's intent to prepare an EIS for Space Exploration Technologies' (SpaceX's) proposal to launch the Falcon 9 and Falcon Heavy orbital vertical launch vehicles from a private site located in Cameron County, Texas. Under the Proposed Action, SpaceX proposes to construct a vertical launch area and a control center area to support up to 12 commercial launches per year. The vehicles to be launched include the Falcon 9, Falcon Heavy (up to two per year), and a variety of smaller reusable suborbital launch vehicles. SpaceX would be required to apply for the appropriate launch licenses and/or experimental permits to be issued by the FAA. The FAA will prepare the EIS in accordance with the National Environmental Policy Act of 1969 (NEPA; 42 United States Code [U.S.C.] 4321 et seq.), the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] parts 1500–1508), and FAA Order 1050.1E, Change 1, *Environmental Impacts: Policies and Procedures*, as part of its licensing and permitting process.

DATES: The FAA invites interested agencies, organizations, Native American tribes, and members of the public to submit comments or suggestions to assist in identifying significant environmental issues and in determining the appropriate scope of the EIS. The public scoping period starts with the publication of this notice in the **Federal Register**. To ensure sufficient time to consider issues identified during the public scoping period, comments should be submitted to Ms. Stacey M. Zee, FAA Environmental Protection Specialist, by one of the methods listed below no later than May 30, 2012. All comments will receive the same attention and consideration in the preparation of the EIS.

ADDRESSES: Comments, statements, or questions concerning scoping issues or the EIS process should be mailed to: Ms. Stacey M. Zee, FAA Environmental Protection Specialist, SpaceX EIS c/o Cardno TEC Inc., 275 West Street, Suite 110, Annapolis, MD 21409. Comments can also be sent by email to *faaspacexeis@cardnotec.com* or by fax to (410) 990–0455.

SUPPLEMENTARY INFORMATION:

Background

The FAA is preparing an EIS to analyze the potential environmental

impacts of SpaceX's proposal to launch orbital and suborbital launch vehicles from a private site in Cameron County in southern Texas. The EIS will consider the potential environmental impacts of the Proposed Action and reasonable alternatives, including the No Action Alternative. The successful completion of the environmental review process does not guarantee that the FAA would issue launch licenses and/or experimental permits to SpaceX. The project must also meet all FAA safety, risk, and indemnification requirements.

Proposed Action

The Proposed Action is for the FAA to issue launch licenses and/or experimental permits to SpaceX that would allow SpaceX to launch the Falcon 9 and Falcon Heavy orbital vertical launch vehicles and a variety of reusable suborbital launch vehicles from a launch site on privately-owned property in Cameron County, Texas. The Falcon 9 orbital vertical launch vehicle is a medium-lift class launch vehicle with a gross lift-off weight of approximately 1,000,000 pounds (lbs) with a maximum length of 230 feet (ft). The Falcon 9 uses liquid oxygen (LOX) and highly refined kerosene, also known as rocket propellant-1 or refined petroleum-1 (RP–1), as propellants to carry payloads into orbit. The Falcon Heavy is similar to the Falcon 9, except it has an additional two boosters "strapped on," each booster being almost identical to the Falcon 9 first stage core. The Falcon Heavy is a heavy lift class launch vehicle with a gross lift-off weight of approximately 3,400,000 lbs. It has an overall maximum length of approximately 230 ft.

A reusable suborbital launch vehicle could consist of a Falcon 9 Stage 1 tank with a maximum propellant (RP–1 and LOX) load of approximately 6,900 gallons.

As part of the Proposed Action, SpaceX proposes to construct a vertical launch area and a control center area. The proposed vertical launch area site is currently undeveloped and is located directly adjacent to the eastern terminus of Texas State Highway 4 (Boca Chica Boulevard) and approximately 3 miles north of the Mexican border on the Gulf Coast. It is located approximately 5 miles south of Port Isabel and South Padre Island. At the vertical launch area, the new facilities required would include: an integration- and processing-hangar, a launch pad and stand with its associated flame duct, propellant storage and handling areas, a workshop and office area, and a warehouse for parts storage.

The control center area would be located inland to the west of the vertical launch area and would include: A control center building and a payload processing facility; it might also include a launch vehicle preparation hangar and satellite fuels storage. All facilities would be constructed on private land owned or leased by SpaceX. The development of access and supporting utility infrastructure for the vertical launch area and the control center area may occur on lands outside that which is owned or leased by SpaceX.

Operations would consist of up to 12 launches per year with a maximum of two Falcon Heavy launches. All Falcon 9 and Falcon Heavy launches would be expected to have commercial payloads, including satellites or experimental payloads. In addition to standard payloads, the Falcon 9 and Falcon Heavy may also carry a capsule, such as the SpaceX Dragon capsule. All launch trajectories would be to the east over the Gulf of Mexico.

The potential environmental impacts of all proposed construction activities will be analyzed in the EIS, in addition to the impacts from operating the facilities and launching orbital and suborbital launch vehicles. The EIS will evaluate the potential environmental effects associated with: air quality; noise and compatible land use; land use, including Section 4(f) properties and Farmlands; coastal resources; biological resources, including threatened and endangered species; water resources, including surface waters and wetlands, groundwater, floodplains, and water quality; historical, architectural, archaeological, and cultural resources; light emissions and visual resources; hazardous materials, pollution prevention, and solid waste; infrastructure and utilities; and socioeconomics, environmental justice, and children's environmental health and safety. The analysis will include an evaluation of the potential direct and indirect impacts, and will account for cumulative impacts from other relevant activities in the area of Cameron County, Texas.

Alternatives

Alternatives under consideration include the Proposed Action and the No Action Alternative. Under the No Action Alternative, the FAA would not issue a license or experimental permit to SpaceX. Based on comments received during the scoping period, the FAA may propose additional alternatives.

Scoping Meetings

A public scoping meeting will be held to solicit input from the public on potential issues that may need to be evaluated in the EIS. The scoping meeting will be held on May 15, 2012 from 5 p.m. to 8 p.m., at the International Technology, Education and Commerce Center (ITEC Center), located at 301 Mexico Blvd. G–1, Brownsville, Texas 78520. The meeting format will include an open-house workshop from 5 p.m. to 6 p.m. The FAA will provide an overview of the environmental process from 6 p.m. to 6:15 p.m. followed by a public comment period from 6:15 p.m. to 8 p.m.

Issued in Washington, DC on April 3, 2012.

Glenn Rizner,

Deputy Manager, Space Transportation Development Division.

[FR Doc. 2012–8556 Filed 4–9–12; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Railroad Administration

[Docket No. FRA–2012–0033]

Notice of the Buy America Waiver Request for Vossloh 101–LV Concrete Ties

AGENCY: Federal Railroad Administration (FRA), United States Department of Transportation (DOT).

ACTION: Notice of Buy America waiver request and request for comment.

SUMMARY: FRA is issuing this notice to advise the public that the Burlington Northern Santa Fe Railway Co. ("BNSF") has submitted to FRA through or with the support of the Washington Department of Transportation ("WSDOT"), the Illinois Department of Transportation ("IDOT"), the Texas Department of Transportation ("TxDOT"), and the California Department of Transportation ("Caltrans") a waiver request from FRA's Buy America Act requirements for the purchase of Vossloh 101–LV concrete ties, which contain certain components not manufactured in the United States. In furtherance of four FRA High-Speed Intercity Passenger Rail ("HSIPR") grants, BNSF, as the railroad infrastructure owner, will construct certain rail project elements that consist of the installation of Vossloh 101–LV concrete ties. FRA has received this request from the four States for the following projects: (a) The Pacific Northwest Rail Corridor Program (b) the Amtrak Quad Cities to Chicago Service Initiation Project, (c) the Tower 55 At-Grade Improvement Project, and (d) the LA to Fullerton Triple Track—Segment 7 Project.

U.S. Department
of Transportation
**Federal Aviation
Administration**

Office of the Associate Administrator for
Commercial Space Transportation

800 Independence Ave., SW.
Washington, DC 20591

JUN 18 2012

Mr. John Wessels
Regional Director
Intermountain Region
National Park Service
12795 West Alameda Parkway
Lakewood, CO 80228

RE: Space Exploration Technologies Corp. (SpaceX) Texas Environmental Impact Statement

Dear Mr. Wessel:

Per your May 30th comment letter regarding the Federal Aviation Administration's Notice of Intent to prepare an Environmental Impact Statement (EIS) for SpaceX's proposal to operate launch vehicles from a private site in Cameron County, Texas, you requested to participate as a cooperating agency in the development of the EIS. We accept your request to participate as a cooperating agency and look forward to you providing relevant expertise related to national historic properties to facilitate the National Environmental Policy Act process.

This letter also serves as a formal invitation to the National Park Service to participate in the consultation process per Section 106 of the National Historic Preservation Act and 36 CFR Part 800.2(c). Please let the FAA know if the National Park Service intends to participate in the Section 106 process as a consulting party.

Please feel free to contact Ms. Stacey M. Zee, Environmental Protection Specialist, from my staff at (202) 267-9305 or by email at Stacey.Zee@faa.gov with any questions.

Sincerely,

Mr. Michael McElligott
Manager, Space Transportation Development Division

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U.S. Department
of Transportation
Federal Aviation Administration

Office of the Associate Administrator for
Commercial Space Transportation

800 Independence Ave., SW
Washington, DC 20591

JUN 14 2012

Mr. Mark Wolfe
State Historic Preservation Officer
Texas Historical Commission
108 W. 16th Street
Austin, TX 78701

SUBJECT: Determination of Areas of Potential Effects for SpaceX Texas Launch Site

Dear Mr. Wolfe:

The Federal Aviation Administration (FAA) Office of Commercial Space Transportation (AST) is in the process of preparing an Environmental Impact Statement (EIS) to assess the potential environmental impacts of the proposed issuance of launch licenses and/or experimental permits to Space Explorations Technologies Corp. (SpaceX) for operating the Falcon 9 and Falcon Heavy vehicle programs from a proposed launch site in Cameron County, Texas. The EIS also evaluates the potential environmental consequences of the construction of necessary infrastructure and operations and maintenance of the proposed SpaceX facilities.

The Proposed Action is for the FAA to issue launch licenses and/or experimental permits to SpaceX that would allow SpaceX to launch the Falcon 9 and Falcon Heavy orbital vertical launch vehicles and a variety of reusable suborbital launch vehicles from a launch site on privately-owned property in Cameron County, Texas. As part of the Proposed Action, SpaceX proposes to construct a vertical launch area and a launch control center area.

The proposed vertical launch area is located on undeveloped land on the south side of Texas State Highway 4 near its eastern terminus at Boca Chica Beach, approximately 3 miles north of the Mexican border on the Gulf Coast (Figure 1). At the vertical launch area, the new facilities required would include an integration- and processing-hangar, a launch pad and stand with its associated flame duct, propellant storage and handling areas, a workshop and office area, and a warehouse for parts storage. The project area is expected to be approximately 50 acres in size.

The control center area would be located approximately 1.5 miles inland to the west of the vertical launch area within three separate parcels adjacent to the Boca Chica housing development on the north side of Texas State Highway 4 (Figure 1). Facilities at the site would include a control center building, parking lot, and a payload processing facility. It might also include a launch vehicle preparation hangar and satellite fuels storage area. All facilities would be constructed on private land owned or leased by SpaceX. Access and utilities infrastructure at the vertical launch area and the control center area may extend on private lands not owned or leased by Space X. The design and location of these elements of the project are still being determined.

The potential environmental impacts of all proposed construction activities will be analyzed in the EIS, in addition to the impacts from operating the facilities and launching orbital and suborbital launch vehicles. In accordance with 36 CFR 800.4(a)(1), an area of potential effects (APE) needs to be established for both the vertical launch area and the control center area by the FAA in consultation with your office and with other stakeholders. As we discussed during a teleconference with Mr. Bill Martin and Ms. Linda Henderson on Thursday, June 7, 2012, the FAA has determined APEs in consideration of both potential direct and indirect impacts to archaeological and architectural resources as a result of implementing the Proposed Action.

Based on the potential for direct and indirect impacts to archaeological resources at the vertical launch area, FAA has determined an APE for archaeological resources that encompasses the entire 50-acre site under consideration (Figure 1). While the current plan of development for the vertical launch area would restrict construction to the northern portion of the parcel, final plans may necessitate some adjustments to the location of some facilities within the parcel.

Based on the potential for direct and indirect impacts to archaeological resources at the control center area, FAA has determined an APE for archaeological resources that encompasses all three parcels under consideration (Figure 1). The total combined area of the three parcels is approximately 21 acres. The final layout of the facilities at the site is currently undetermined, but all development will be contained within the three parcels as shown in Figure 1.

Based on potential direct and indirect impacts to architectural resources, FAA has determined a radial APE of 5 miles centered on the vertical launch area (Figure 2). Direct impacts on architectural resources would be the physical impacts on historic structural properties within the project area from construction and sound pressure. Indirect impacts would consist of potential visual effects to the setting of historic properties from construction of permanent structures at the vertical launch area and control center area and auditory effects from the launches.

Please provide any comments you have regarding the APEs that have been defined by the FAA within 30 days. If you have any questions or need further information on the project, please contact me at 202-267-9305 or at Stacey.Zee@faa.gov. Thank you in advance for your input on this important project.

Sincerely,

Stacey M. Zee

Stacey M. Zee
Environmental Protection Specialist

cc: Najah Duvall-Gabriel, Advisory Council on Historic Preservation
Mark Spier, National Park Service

Enclosures: Figure 1. APE of Proposed Vertical Launch Area and Control Center Area for Archaeological Resources
Figure 2. APE for Architectural Resources

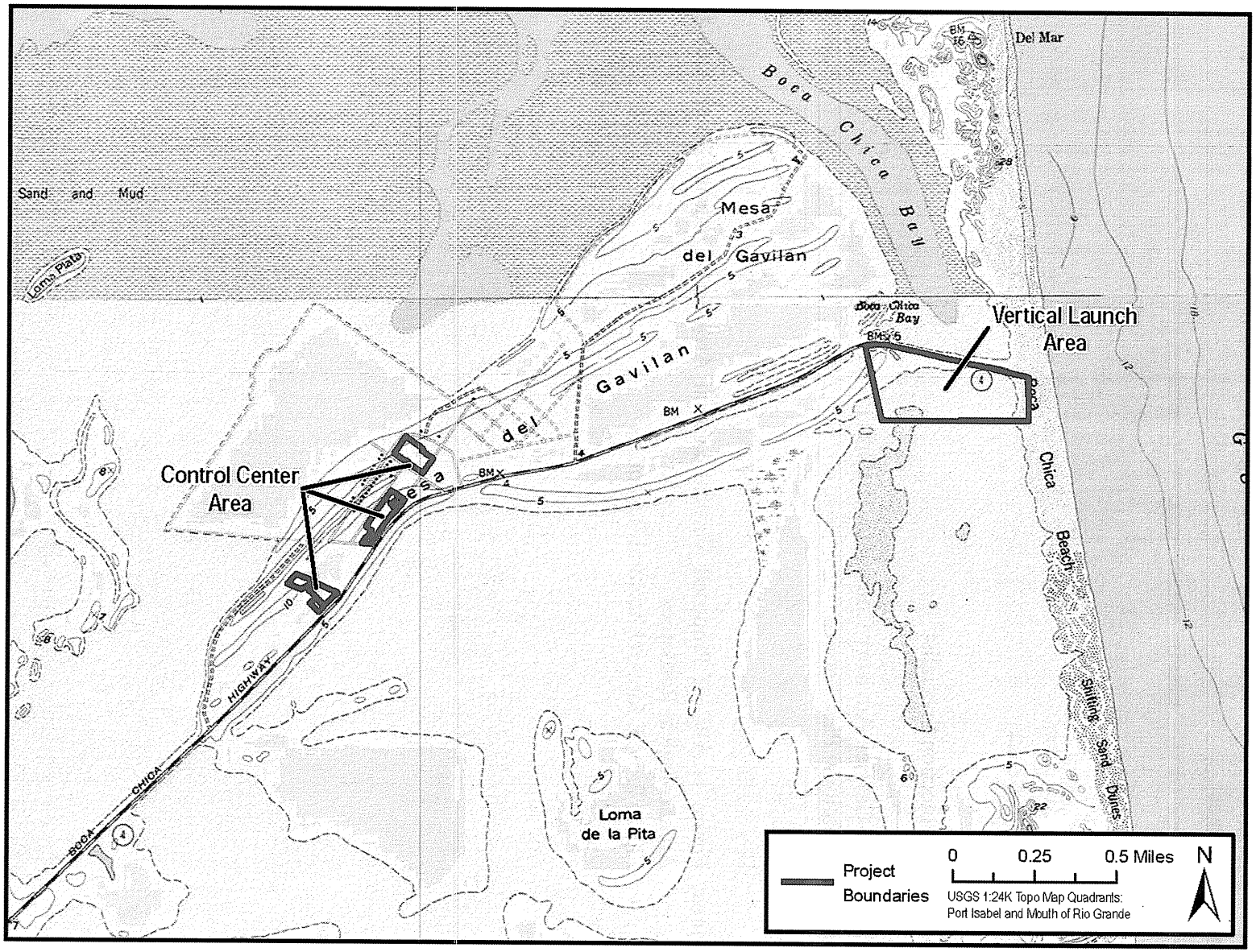

Figure 1. APE of Proposed Vertical Launch Area and Control Center Area for Archaeological Resources

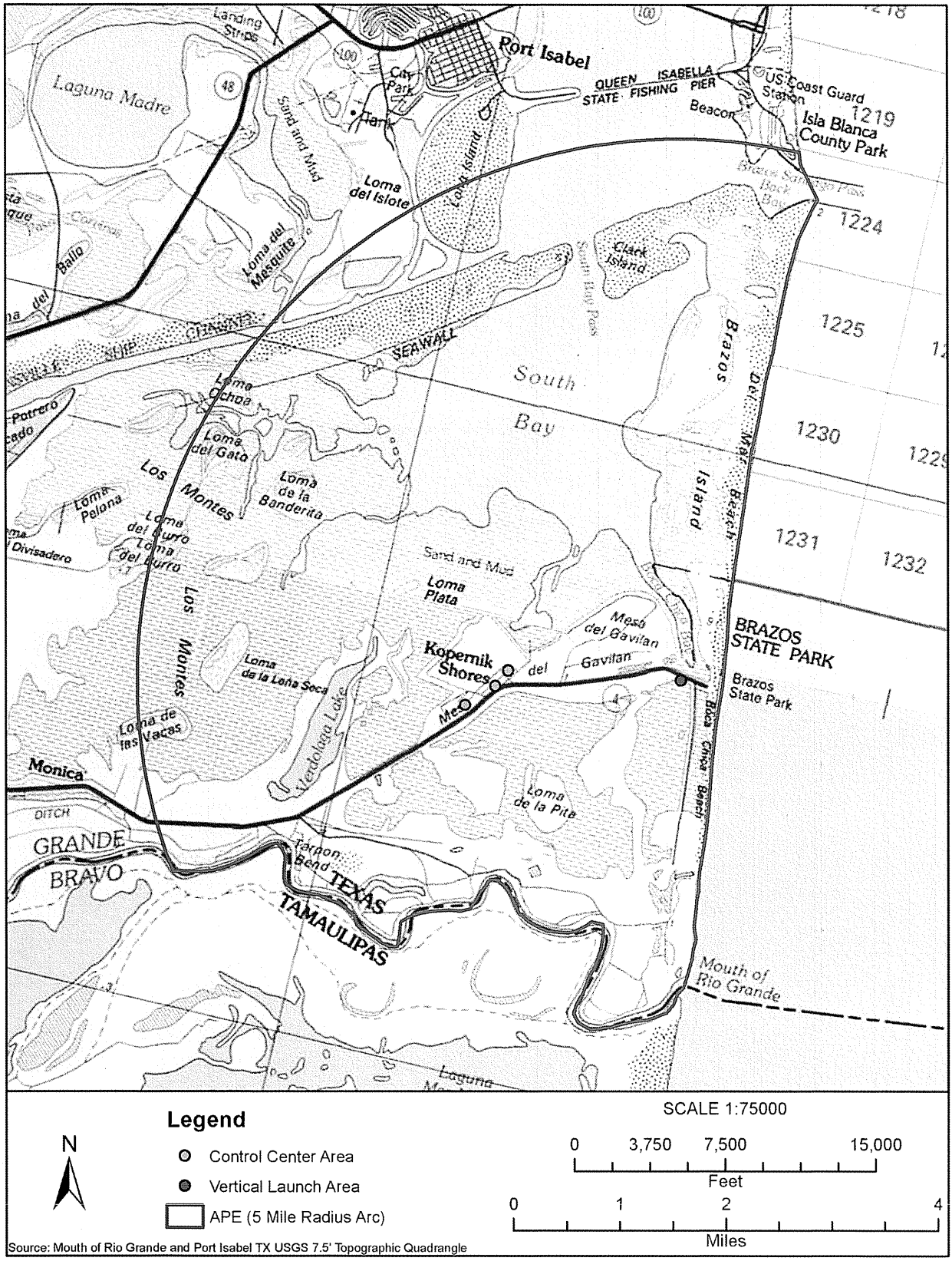

Figure 2. APE for Architectural Resources

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U.S. Department
of Transportation
Federal Aviation Administration

Office of the Associate Administrator for
Commercial Space Transportation

800 Independence Ave., SW
Washington, DC 20591

RECEIVED
JUN 20 2012
Texas Historical Commission

JUN 14 2012

Mr. Mark Wolfe
State Historic Preservation Officer
Texas Historical Commission
108 W. 16th Street
Austin, TX 78701

SUBJECT: Determination of Areas of Potential Effects for SpaceX Texas Launch Site

Dear Mr. Wolfe:

The Federal Aviation Administration (FAA) Office of Commercial Space Transportation (AST) is in the process of preparing an Environmental Impact Statement (EIS) to assess the potential environmental impacts of the proposed issuance of launch licenses and/or experimental permits to Space Explorations Technologies Corp. (SpaceX) for operating the Falcon 9 and Falcon Heavy vehicle programs from a proposed launch site in Cameron County, Texas. The EIS also evaluates the potential environmental consequences of the construction of necessary infrastructure and operations and maintenance of the proposed SpaceX facilities.

The Proposed Action is for the FAA to issue launch licenses and/or experimental permits to SpaceX that would allow SpaceX to launch the Falcon 9 and Falcon Heavy orbital vertical launch vehicles and a variety of reusable suborbital launch vehicles from a launch site on privately-owned property in Cameron County, Texas. As part of the Proposed Action, SpaceX proposes to construct a vertical launch area and a launch control center area.

The proposed vertical launch area is located on undeveloped land on the south side of Texas State Highway 4 near its eastern terminus at Boca Chica Beach, approximately 3 miles north of the Mexican border on the Gulf Coast (Figure 1). At the vertical launch area, the new facilities required would include an integration- and processing-hangar, a launch pad and stand with its associated flame duct, propellant storage and handling areas, a workshop and office area, and a warehouse for parts storage. The project area is expected to be approximately 50 acres in size.

The control center area would be located approximately 1.5 miles inland to the west of the vertical launch area within three separate parcels adjacent to the Boca Chica housing development on the north side of Texas State Highway 4 (Figure 1). Facilities at the site would include a control center building, parking lot, and a payload processing facility. It might also include a launch vehicle preparation hangar and satellite fuels storage area. All facilities would be constructed on private land owned or leased by SpaceX. Access and utilities infrastructure at the vertical launch area and the control center area may extend on private lands not owned or leased by Space X. The design and location of these elements of the project are still being determined.

The potential environmental impacts of all proposed construction activities will be analyzed in the EIS, in addition to the impacts from operating the facilities and launching orbital and suborbital launch vehicles. In accordance with 36 CFR 800.4(a)(1), an area of potential effects (APE) needs to be established for both the vertical launch area and the control center area by the FAA in consultation with your office and with other stakeholders. As we discussed during a teleconference with Mr. Bill Martin and Ms. Linda Henderson on Thursday, June 7, 2012, the FAA has determined APEs in consideration of both potential direct and indirect impacts to archaeological and architectural resources as a result of implementing the Proposed Action.

Based on the potential for direct and indirect impacts to archaeological resources at the vertical launch area, FAA has determined an APE for archaeological resources that encompasses the entire 50-acre site under consideration (Figure 1). While the current plan of development for the vertical launch area would restrict construction to the northern portion of the parcel, final plans may necessitate some adjustments to the location of some facilities within the parcel.

Based on the potential for direct and indirect impacts to archaeological resources at the control center area, FAA has determined an APE for archaeological resources that encompasses all three parcels under consideration (Figure 1). The total combined area of the three parcels is approximately 21 acres. The final layout of the facilities at the site is currently undetermined, but all development will be contained within the three parcels as shown in Figure 1.

Based on potential direct and indirect impacts to architectural resources, FAA has determined a radial APE of 5 miles centered on the vertical launch area (Figure 2). Direct impacts on architectural resources would be the physical impacts on historic structural properties within the project area from construction and sound pressure. Indirect impacts would consist of potential visual effects to the setting of historic properties from construction of permanent structures at the vertical launch area and control center area and auditory effects from the launches.

Please provide any comments you have regarding the APEs that have been defined by the FAA within 30 days. If you have any questions or need further information on the project, please contact me at 202-267-9305 or at Stacey.Zee@faa.gov. Thank you in advance for your input on this important project.

Sincerely,

Stacey M. Zee

Stacey M. Zee
Environmental Protection Specialist

cc: Najah Duvall-Gabriel, Advisory Council on Historic Preservation
Mark Spier, National Park Service

Enclosures: Figure 1. APE of Proposed Vertical Launch Area and Control Center Area for Archaeological Resources
Figure 2. APE for Architectural Resources

CONCUR
By: William M. Stark
for State Historic Preservation Officer
Date: 6/27/12

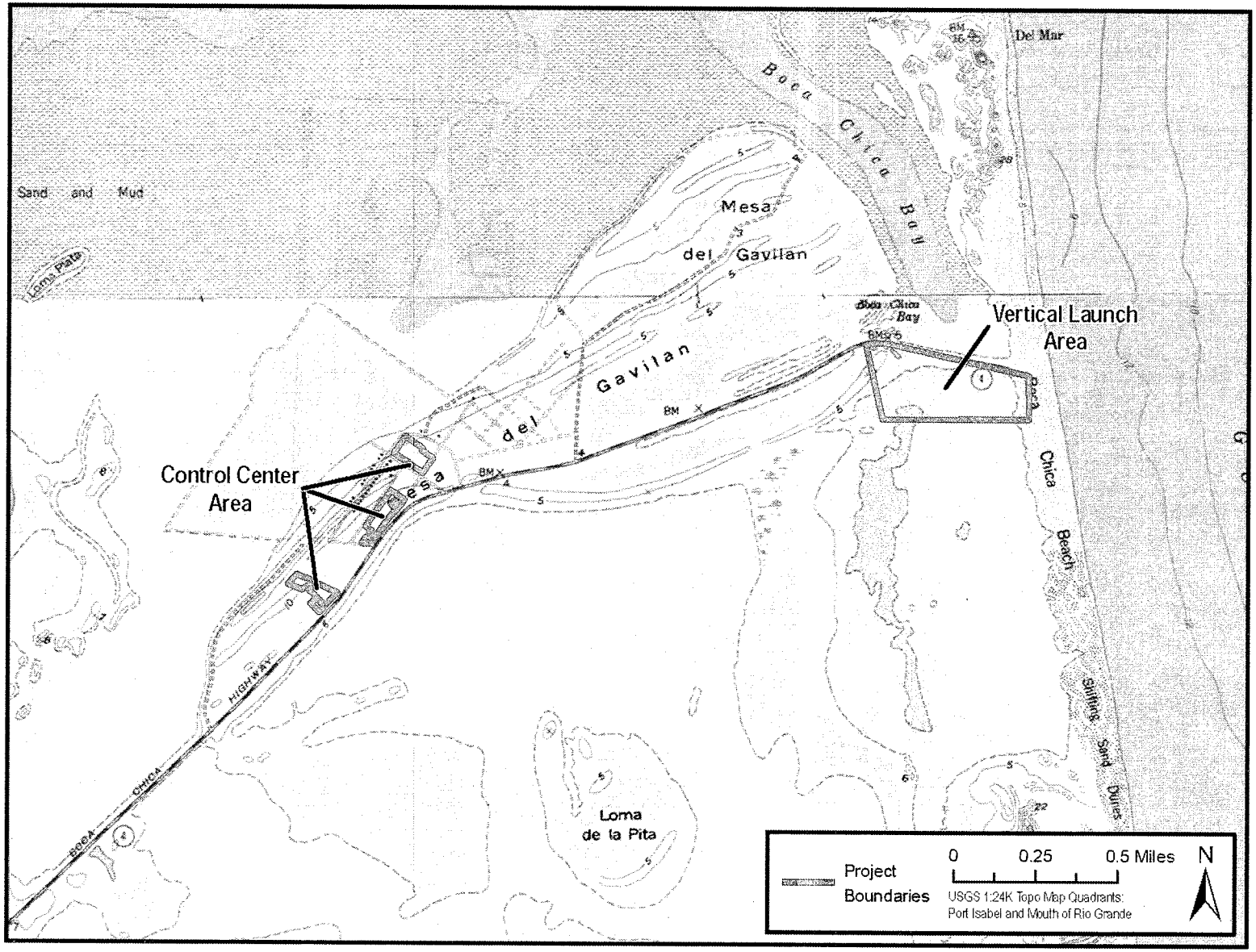

Figure 1. APE of Proposed Vertical Launch Area and Control Center Area for Archaeological Resources

U.S. Department
of Transportation
Federal Aviation Administration

Office of the Associate Administrator for
Commercial Space Transportation

800 Independence Ave., SW
Washington, DC 20591

JUN 28 2012

Mr. Reid Nelson
Director, Office of Federal Agency Programs
Advisory Council on Historic Preservation
Office of Federal Agency Programs
1100 Pennsylvania Avenue, NW, Suite 803
Old Post Office Building
Washington, DC 20004

SUBJECT: EIS for SpaceX Texas Launch Site, Cameron County, Texas

Dear Mr. Nelson:

The Federal Aviation Administration (FAA) Office of Commercial Space Transportation (AST) is in the process of preparing an Environmental Impact Statement (EIS) to assess the potential environmental impacts of the proposed issuance of a launch licenses and/or experimental permits to Space Exploration Technologies Corp. (SpaceX) for operating the Falcon 9 and Falcon Heavy vehicle launch programs from a private site located in Cameron County, Texas. Under this proposal, SpaceX would construct a vertical launch area and a control center area, using private funding, to support up to 12 commercial launches per year. The vehicles to be launched include the Falcon 9, Falcon Heavy (up to two per year), and a variety of smaller reusable suborbital launch vehicles. SpaceX would be required to apply for and obtain the appropriate launch licenses and/or experimental permits to be issued by the FAA. SpaceX would be the exclusive user of the site and all construction and operation of the site would be privately funded.

The Falcon 9 orbital vertical launch vehicle is a medium-lift class launch vehicle with a gross lift-off weight of approximately 1,100,000 pounds (lbs) with a maximum length of 230 feet (ft). The Falcon 9 uses liquid oxygen (LOX) and highly refined kerosene, also known as rocket propellant-1 or refined petroleum-1 (RP-1), as propellants to carry payloads into orbit. The Falcon Heavy is similar to the Falcon 9, except it has two additional boosters "strapped on," each booster being almost identical to the Falcon 9 first stage core. The Falcon Heavy is a heavy lift class launch vehicle with a gross lift-off weight of approximately 3,400,000 lbs. It has an overall maximum length of

approximately 230 ft. A reusable suborbital launch vehicle could consist of a Falcon 9 Stage 1 tank with a maximum propellant (RP-1 and LOX) load of approximately 6,900 gallons. All launch trajectories would be to the east over the Gulf of Mexico.

As part of the Proposed Action, SpaceX would construct a vertical launch area and a control center area. The proposed vertical launch area is located on undeveloped land on the south side of Texas State Highway 4 near its eastern terminus at Boca Chica Beach, approximately 3 miles north of the Mexican border on the Gulf Coast and approximately 5 miles south of Port Isabel and South Padre island. At the vertical launch area, the new facilities required would include an integration- and processing-hangar, a launch pad and stand with its associated flame duct, propellant storage and handling areas, a workshop and office area, and a warehouse for parts storage. The project area is approximately 50 acres in size.

The control center area would be located approximately 1.5 miles inland to the west of the vertical launch area within three separate parcels adjacent to the Boca Chica housing development on the north side of Texas State Highway 4. Facilities at the site would include a control center building, parking lot, and a payload processing facility. It might also include a launch vehicle preparation hangar and satellite fuels storage area. The proposed control center area facilities would occupy three parcels of land totaling approximately 13 acres. The design and location of these elements of the project are still being determined. All facilities would be constructed on private land owned or leased by SpaceX. Access and utilities infrastructure at the vertical launch area and the control center area may extend on private lands not owned or leased by Space X.

The potential environmental impacts of all proposed construction activities will be analyzed in the EIS in addition to the impacts from operating the facilities and launching orbital and suborbital launch vehicles. In proceeding with the planning of this undertaking, we intend to coordinate our Section 106 National Historic Preservation Act (NHPA) consultation with the development of the EIS to meet our National Environmental Policy Act (NEPA) requirements pursuant to 36 CFR 800.8, and use the EIS as our primary NHPA consultation documentation. Additionally, to fulfill our responsibilities under 36 CFR 800.3(e) and 800.4(a)(3), we held a public scoping meeting to solicit input from the public on potential environmental issues that may need to be evaluated in the EIS. The scoping meeting was held on May 15, 2012, at the International Technology, Education and Commerce Center (ITEC Center), located at 301 Mexico Boulevard G-1, Brownsville, Texas 78520. In addition to the public scoping meeting, the FAA held an agency scoping meeting on May 15, 2012, from 9:00 a.m. to 11:00 a.m., at the Brownsville Economic Development Council Board Room, located at 301 Mexico Blvd., Ste. F-1, Brownsville, Texas 78520. During that time, FAA gave a brief presentation of the Proposed Action and had an open discussion with agencies regarding

issues and concerns. A site visit was conducted immediately following the agency scoping meeting.

Pursuant to 36 CFR 800.4(a)(1), the FAA, in consultation with the Texas Historical Commission (THC), has determined an Area of Potential Effects (APE) for both the proposed vertical launch area and the control center area. The vertical launch area is located several miles east of the Palmito Ranch Battlefield (41CF93), a notable Civil War battlefield that is currently listed on the National Register of Historic Places (NRHP) and is a designated National Historic Landmark (NHL). The FAA has determined that the APE for the vertical launch area and the control center area will be the entirety of the selected parcels of land. This APE is considered adequate for the assessment of potential direct, indirect, and cumulative impacts on archaeological resources from the proposed undertaking. The FAA determined an APE of a 5-mile radial area around the vertical launch area will be adequate for assessing the potential indirect (i.e., visual and auditory) impacts of the proposed facility on the Palmito Ranch Battlefield and other aboveground historic properties in the vicinity.

To this end and pursuant to 36 CFR 800.3(f)(2), the FAA will be initiating consultation with selected federally recognized Indian tribes in Texas affiliated with the APE to determine if there are any properties that may be of religious or cultural significance to the Tribes and potentially affected by the undertaking. Please provide any comments you have regarding our efforts to identify all potential consulting parties and gather information, as outlined in 36 CFR 800.3(f) and 800.4(a)(4).

Pursuant to 36 CFR 800.4(a)(2), background research and cultural resource surveys of the vertical launch area and the control center area have been initiated to identify historic properties within the APE. The results of these identification efforts, in addition to an assessment of the undertaking's effects on any historic properties within the APE, will be the subject of future consultation with your office on this project as part of the Section 106 process.

The FAA invites the Advisory Council on Historic Preservation to participate in the Section 106 consultation. For this initial phase of consultation, the FAA respectfully requests that you identify any concerns you may have regarding the Proposed Action and respond by July 27th so that we may address those concerns and incorporate them into the Draft EIS.

If you have any questions or need further information on the project, please contact Ms. Stacey Zee, of my staff, at 202-267-9305 or at Stacey.Zee@faa.gov. Thank you in advance for your input on this important project.

Sincerely,

Michael McElligott
Manager, Space Transportation Development Division

Cc Mark Wolfe, Texas Historical Commission
Mark Spier, National Park Service

Enclosures: Notice of Intent to Prepare an EIS, Open a Public Scoping Period, and Conduct a Public Scoping Meeting
Figure 1. Location of the Proposed Vertical Launch Area and the Control Center Area
Figure 2. APE for Archaeological Resources
Figure 3. APE for Architectural Resources

DEPARTMENT OF STATE

[Public Notice 7814]

Shipping Coordinating Committee; Notice of Committee Meeting

The Shipping Coordinating Committee (SHC) will conduct an open meeting at 9:30 a.m. on Wednesday, April 25, 2012, in Room 2501 of the United States Coast Guard Headquarters Building, 2100 Second Street SW., Washington, DC 20593–7126. The primary purpose of the meeting is to prepare for the 90th Session of the International Maritime Organization's (IMO) Marine Safety Committee to be held at the IMO Headquarters, London, England, United Kingdom, May 16–25, 2012.

The primary matters to be considered include:

Consideration and adoption of amendments to mandatory instruments;
Measures to enhance maritime security;
Goal-based new ship construction standards;
LRIT-related matters;
Flag State implementation;
Radiocommunications and search and rescue;
Ship design and equipment;
Safety of navigation;
Fire protection;
Dangerous goods, solid cargoes and containers;
Stability, load lines and fishing vessel safety;
Bulk liquids and gases;
Implementation of the STCW Convention;
Technical assistance sub-programme in maritime safety and security;
Capacity-building for the implementation of new measures;
Role of the human element;
Formal safety assessment;
Piracy and armed robbery against ships;
General cargo ship safety;
Implementation of instruments and related matters;
Relations with other organizations;
Application of the Committee's Guidelines;
Passenger ship safety.

Members of the public may attend this meeting up to the seating capacity of the room. To facilitate the building security process, and to request reasonable accommodation, those who plan to attend should contact the meeting coordinator, LCDR Matthew Frazee, by email at *imo@uscg.mil,* by phone at (202) 372–1376, or in writing at Commandant (CG–52), U.S. Coast Guard, 2100 2nd Street SW., Stop 7126, Washington, DC 20593–7126 not later than April 18, 2012, 7 days prior to the meeting. Requests made after April 18, 2012 might not be able to be accommodated. Please note that due to security considerations, two valid, government issued photo identifications must be presented to gain entrance to the Headquarters building. The Headquarters building is accessible by taxi and privately owned conveyance (public transportation is not generally available). However, parking in the vicinity of the building is extremely limited. Additional information regarding this and other IMO SHC public meetings may be found at: *www.uscg.mil/imo.*

Dated: March 29, 2012.

Brian Robinson,

Executive Secretary, Shipping Coordinating Committee, Department of State.

[FR Doc. 2012–8636 Filed 4–9–12; 8:45 am]

BILLING CODE 4710–09–P

DEPARTMENT OF TRANSPORTATION

Office of the Secretary

Aviation Proceedings, Agreements Filed the Week Ending March 10, 2011

The following Agreements were filed with the Department of Transportation under the Sections 412 and 414 of the Federal Aviation Act, as amended (49 U.S.C. 1382 and 1384) and procedures governing proceedings to enforce these provisions. Answers may be filed within 21 days after the filing of the application.

Docket Number: DOT–OST–2012–0035.

Date Filed: March 7, 2012.

Parties: Members of the International Air Transport Association.

Subject: Mail Vote 702—Resolution 100 Standard Condition Resolution for Special Fares (Memo 1665) Intended effective date: 1 April 2012.

Renee V. Wright,

Program Manager, Docket Operations, Federal Register Liaison.

[FR Doc. 2012–8446 Filed 4–9–12; 8:45 am]

BILLING CODE 4910–9X–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Office of Commercial Space Transportation; Notice of Intent To Prepare an Environmental Impact Statement (EIS), Open a Public Scoping Period, and Conduct a Public Scoping Meeting

AGENCY: The Federal Aviation Administration (FAA) is the lead Federal agency.

ACTION: Notice of Intent to Prepare an EIS, Open a Public Scoping Period, and Conduct a Public Scoping Meeting.

SUMMARY: This Notice provides information to Federal, State, and local agencies, Native American tribes, and other interested persons regarding the FAA's intent to prepare an EIS for Space Exploration Technologies' (SpaceX's) proposal to launch the Falcon 9 and Falcon Heavy orbital vertical launch vehicles from a private site located in Cameron County, Texas. Under the Proposed Action, SpaceX proposes to construct a vertical launch area and a control center area to support up to 12 commercial launches per year. The vehicles to be launched include the Falcon 9, Falcon Heavy (up to two per year), and a variety of smaller reusable suborbital launch vehicles. SpaceX would be required to apply for the appropriate launch licenses and/or experimental permits to be issued by the FAA. The FAA will prepare the EIS in accordance with the National Environmental Policy Act of 1969 (NEPA; 42 United States Code [U.S.C.] 4321 et seq.), the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] parts 1500–1508), and FAA Order 1050.1E, Change 1, *Environmental Impacts: Policies and Procedures,* as part of its licensing and permitting process.

DATES: The FAA invites interested agencies, organizations, Native American tribes, and members of the public to submit comments or suggestions to assist in identifying significant environmental issues and in determining the appropriate scope of the EIS. The public scoping period starts with the publication of this notice in the **Federal Register.** To ensure sufficient time to consider issues identified during the public scoping period, comments should be submitted to Ms. Stacey M. Zee, FAA Environmental Protection Specialist, by one of the methods listed below no later than May 30, 2012. All comments will receive the same attention and consideration in the preparation of the EIS.

ADDRESSES: Comments, statements, or questions concerning scoping issues or the EIS process should be mailed to: Ms. Stacey M. Zee, FAA Environmental Protection Specialist, SpaceX EIS c/o Cardno TEC Inc., 275 West Street, Suite 110, Annapolis, MD 21409. Comments can also be sent by email to *faaspacexeis@cardnotec.com* or by fax to (410) 990–0455.

SUPPLEMENTARY INFORMATION:

Background

The FAA is preparing an EIS to analyze the potential environmental

impacts of SpaceX's proposal to launch orbital and suborbital launch vehicles from a private site in Cameron County in southern Texas. The EIS will consider the potential environmental impacts of the Proposed Action and reasonable alternatives, including the No Action Alternative. The successful completion of the environmental review process does not guarantee that the FAA would issue launch licenses and/or experimental permits to SpaceX. The project must also meet all FAA safety, risk, and indemnification requirements.

Proposed Action

The Proposed Action is for the FAA to issue launch licenses and/or experimental permits to SpaceX that would allow SpaceX to launch the Falcon 9 and Falcon Heavy orbital vertical launch vehicles and a variety of reusable suborbital launch vehicles from a launch site on privately-owned property in Cameron County, Texas. The Falcon 9 orbital vertical launch vehicle is a medium-lift class launch vehicle with a gross lift-off weight of approximately 1,000,000 pounds (lbs) with a maximum length of 230 feet (ft). The Falcon 9 uses liquid oxygen (LOX) and highly refined kerosene, also known as rocket propellant-1 or refined petroleum-1 (RP–1), as propellants to carry payloads into orbit. The Falcon Heavy is similar to the Falcon 9, except it has an additional two boosters "strapped on," each booster being almost identical to the Falcon 9 first stage core. The Falcon Heavy is a heavy lift class launch vehicle with a gross lift-off weight of approximately 3,400,000 lbs. It has an overall maximum length of approximately 230 ft.

A reusable suborbital launch vehicle could consist of a Falcon 9 Stage 1 tank with a maximum propellant (RP–1 and LOX) load of approximately 6,900 gallons.

As part of the Proposed Action, SpaceX proposes to construct a vertical launch area and a control center area. The proposed vertical launch area site is currently undeveloped and is located directly adjacent to the eastern terminus of Texas State Highway 4 (Boca Chica Boulevard) and approximately 3 miles north of the Mexican border on the Gulf Coast. It is located approximately 5 miles south of Port Isabel and South Padre Island. At the vertical launch area, the new facilities required would include: an integration- and processing-hangar, a launch pad and stand with its associated flame duct, propellant storage and handling areas, a workshop and office area, and a warehouse for parts storage.

The control center area would be located inland to the west of the vertical launch area and would include: A control center building and a payload processing facility; it might also include a launch vehicle preparation hangar and satellite fuels storage. All facilities would be constructed on private land owned or leased by SpaceX. The development of access and supporting utility infrastructure for the vertical launch area and the control center area may occur on lands outside that which is owned or leased by SpaceX.

Operations would consist of up to 12 launches per year with a maximum of two Falcon Heavy launches. All Falcon 9 and Falcon Heavy launches would be expected to have commercial payloads, including satellites or experimental payloads. In addition to standard payloads, the Falcon 9 and Falcon Heavy may also carry a capsule, such as the SpaceX Dragon capsule. All launch trajectories would be to the east over the Gulf of Mexico.

The potential environmental impacts of all proposed construction activities will be analyzed in the EIS, in addition to the impacts from operating the facilities and launching orbital and suborbital launch vehicles. The EIS will evaluate the potential environmental effects associated with: air quality; noise and compatible land use; land use, including Section 4(f) properties and Farmlands; coastal resources; biological resources, including threatened and endangered species; water resources, including surface waters and wetlands, groundwater, floodplains, and water quality; historical, architectural, archaeological, and cultural resources; light emissions and visual resources; hazardous materials, pollution prevention, and solid waste; infrastructure and utilities; and socioeconomics, environmental justice, and children's environmental health and safety. The analysis will include an evaluation of the potential direct and indirect impacts, and will account for cumulative impacts from other relevant activities in the area of Cameron County, Texas.

Alternatives

Alternatives under consideration include the Proposed Action and the No Action Alternative. Under the No Action Alternative, the FAA would not issue a license or experimental permit to SpaceX. Based on comments received during the scoping period, the FAA may propose additional alternatives.

Scoping Meetings

A public scoping meeting will be held to solicit input from the public on potential issues that may need to be evaluated in the EIS. The scoping meeting will be held on May 15, 2012 from 5 p.m. to 8 p.m., at the International Technology, Education and Commerce Center (ITEC Center), located at 301 Mexico Blvd. G–1, Brownsville, Texas 78520. The meeting format will include an open-house workshop from 5 p.m. to 6 p.m. The FAA will provide an overview of the environmental process from 6 p.m. to 6:15 p.m. followed by a public comment period from 6:15 p.m. to 8 p.m.

Issued in Washington, DC on April 3, 2012.

Glenn Rizner,

Deputy Manager, Space Transportation Development Division.

[FR Doc. 2012–8556 Filed 4–9–12; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Railroad Administration

[Docket No. FRA–2012–0033]

Notice of the Buy America Waiver Request for Vossloh 101–LV Concrete Ties

AGENCY: Federal Railroad Administration (FRA), United States Department of Transportation (DOT).

ACTION: Notice of Buy America waiver request and request for comment.

SUMMARY: FRA is issuing this notice to advise the public that the Burlington Northern Santa Fe Railway Co. ("BNSF") has submitted to FRA through or with the support of the Washington Department of Transportation ("WSDOT"), the Illinois Department of Transportation ("IDOT"), the Texas Department of Transportation ("TxDOT"), and the California Department of Transportation ("Caltrans") a waiver request from FRA's Buy America Act requirements for the purchase of Vossloh 101–LV concrete ties, which contain certain components not manufactured in the United States. In furtherance of four FRA High-Speed Intercity Passenger Rail ("HSIPR") grants, BNSF, as the railroad infrastructure owner, will construct certain rail project elements that consist of the installation of Vossloh 101–LV concrete ties. FRA has received this request from the four States for the following projects: (a) The Pacific Northwest Rail Corridor Program (b) the Amtrak Quad Cities to Chicago Service Initiation Project, (c) the Tower 55 At-Grade Improvement Project, and (d) the LA to Fullerton Triple Track—Segment 7 Project.

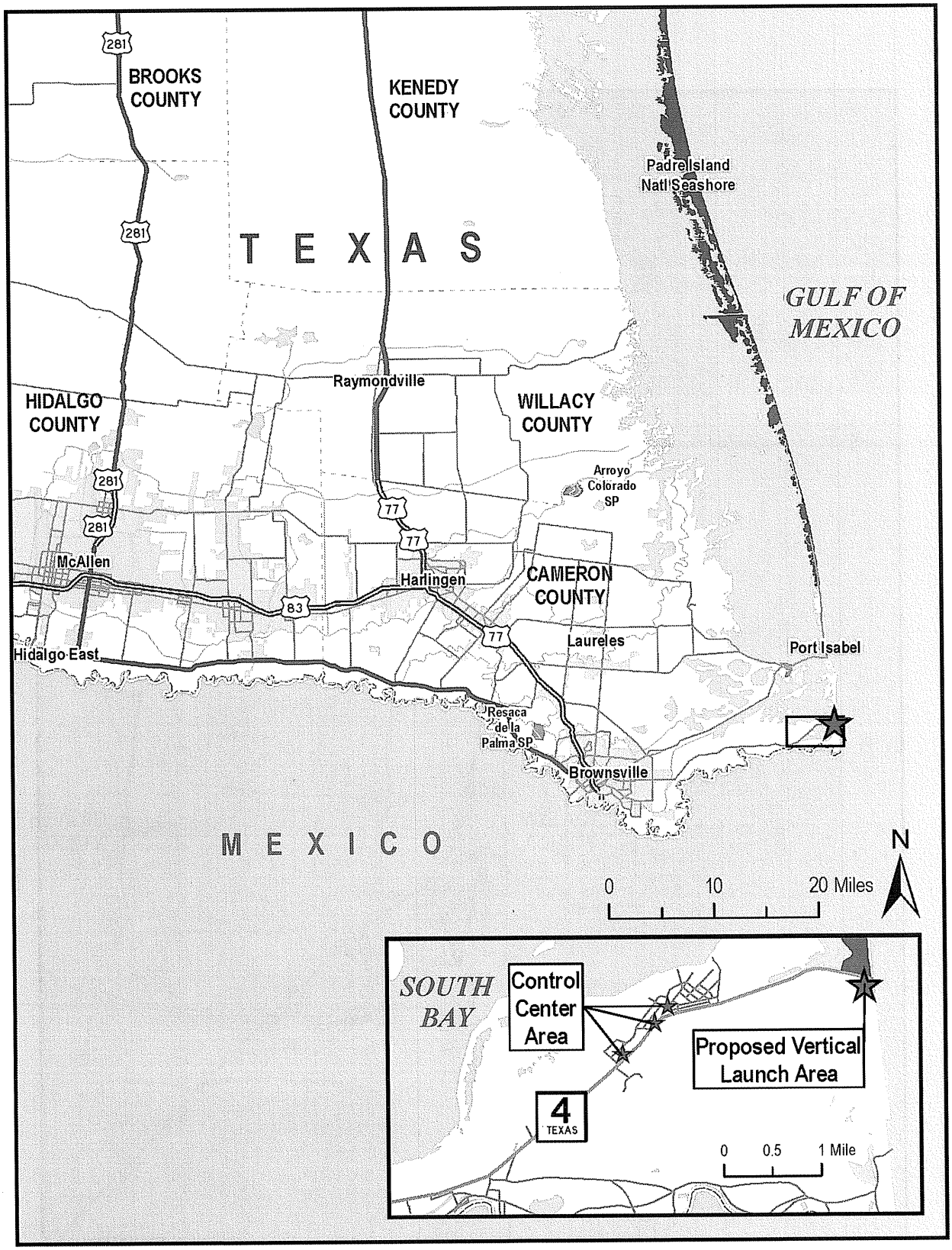

Figure 1. Location of the Proposed Vertical Launch Area and the Control Center Area

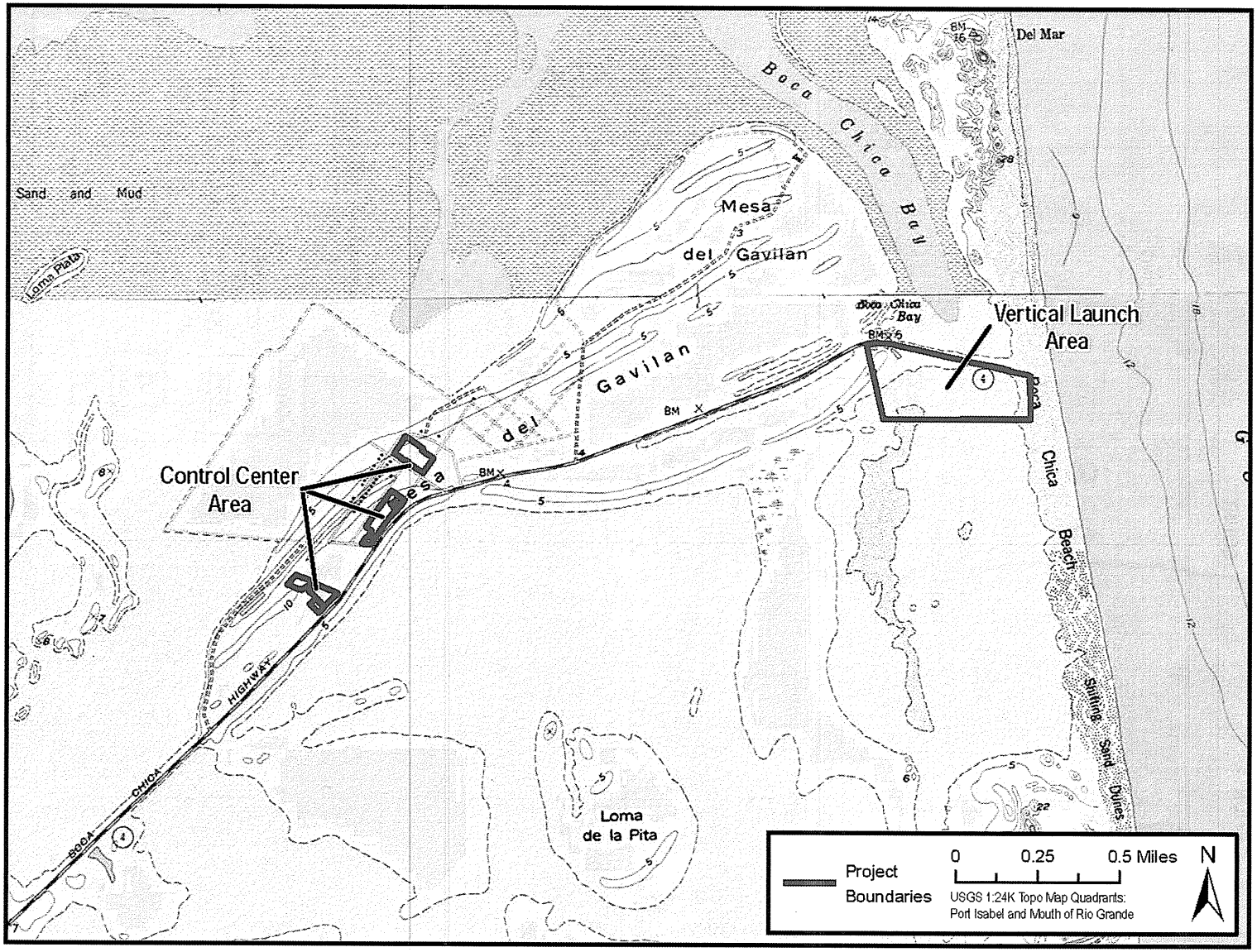

Figure 2. APE for Archaeological Resources

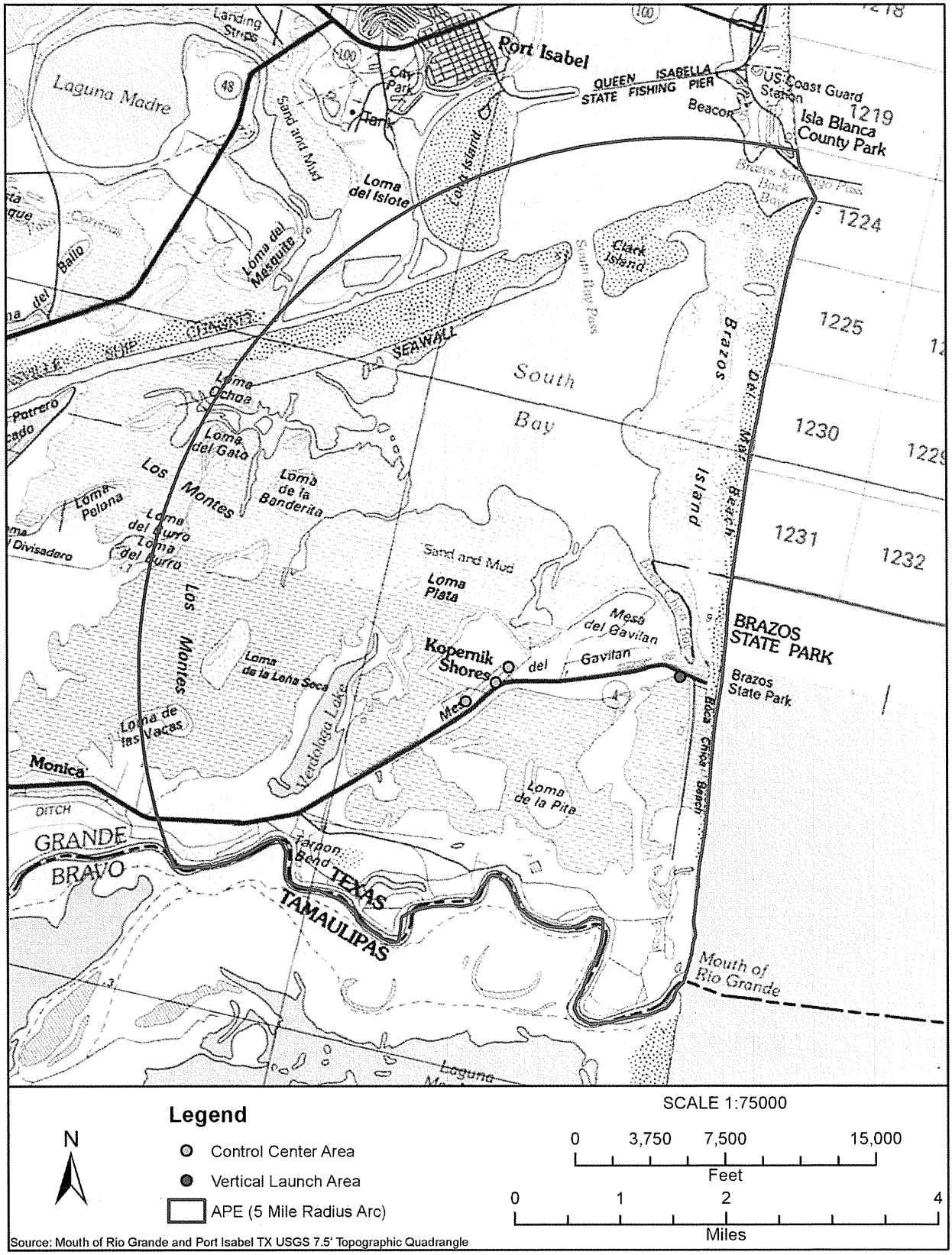

Figure 3. APE for Architectural Resources

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Milford Wayne Donaldson, FAIA
Chairman

Clement A. Price Ph.D.
Vice Chairman

John M. Fowler
Executive Director

Preserving America's Heritage

July 23, 2012

Mr. Michael Huerta
Acting Administrator
Federal Aviation Administration
800 Independence Ave. SW
Washington, DC 20591

Ref: *Proposed Environmental Impact Statement (EIS) for the SpaceX Texas Launch Site Cameron County, Texas*

Dear Mr. Huerta:

In response to a notification from the Federal Aviation Administration (FAA), the Advisory Council on Historic Preservation (ACHP) will participate in the Section 106 consultation for the proposed issuance of a launch license and/or experimental permit to Space Exploration Technologies Corporation (SpaceX) for operating the Falcon 9 and Falcon Heavy vehicle launch programs from a private site in Cameron County, Texas. Our decision to participate in this consultation is based on the *Criteria for Council Involvement in Reviewing Individual Section 106 Cases*, contained within our regulations. The criteria are met for this proposed undertaking because the programs may have substantial impacts on important historic properties.

Section 800.6(a)(1)(iii) of our regulations requires that we notify you, as the head of the agency, of our decision to participate in the consultation. By copy of this letter, we are also notifying Mr. Michael McElligott, Manager of the Space Transportation Development Division, of this decision.

Our participation in this consultation will be handled by Ms. Najah Duvall-Gabriel who can be reached at (202) 606-8585 or via e-mail at ngabriel@achp.gov. We look forward to working with your agency and other consulting parties to consider alternatives to this undertaking that could avoid, minimize, or mitigate potential adverse effects on historic properties.

Sincerely,

John M. Fowler
Executive Director

ADVISORY COUNCIL ON HISTORIC PRESERVATION
1100 Pennsylvania Avenue NW, Suite 803 • Washington, DC 20004
Phone: 202-606-8503 • Fax: 202-606-8647 • achp@achp.gov • www.achp.gov

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U.S. Department
of Transportation
Federal Aviation Administration

Office of the Associate Administrator for
Commercial Space Transportation

800 Independence Ave., SW
Washington, DC 20591

OCT 18 2012

Mr. Mark Wolfe
State Historic Preservation Officer
Texas Historical Commission
108 W. 16th Street
Austin, TX 78701

SUBJECT: SpaceX Texas Launch Site, Cultural Resources Reports

Dear Mr. Wolfe:

The Federal Aviation Administration (FAA) Office of Commercial Space Transportation (AST) submits for your review the enclosed cultural resources reports on the architectural and archaeological resources investigations of the proposed Space Exploration Technologies Corp. (Space X) private launch site in Cameron County, Texas. SpaceX proposes to operate the Falcon 9 and Falcon Heavy vehicle launch programs from the Project Area and must obtain launch licenses and/or experimental permits from the FAA/AST. As the issuance of launch licenses and/or experimental permits is considered a major Federal action subject to environmental review under the National Environmental Policy Act (NEPA) of 1969 and is considered an undertaking under the regulations of the Advisory Council on Historic Preservation (36 CFR Part 800.16(y)), the enclosed reports are being submitted in partial fulfillment of the requirements of Section 106 of the National Historic Preservation Act (NHPA).

The Area of Potential Effects (APE) for this undertaking was determined in consultation with your office on June 27, 2012. The APE for indirect effects on archaeological and architectural resources was determined to be a 5-mile radial area centered on the vertical launch area. The APE for direct effects on archaeological and architectural resources was determined to be all areas of disturbance for the vertical launch area and the control center area.

Archaeological Resources – Determination of Eligibility
The archaeological resources investigation identified one historic site (LS #1) and 19 isolated finds within the APE for the vertical launch area and the control center area. The FAA

concludes that the historic site and the isolated finds are not eligible for the National Register. The FAA requests your concurrence on these determinations of eligibility.

Fifteen historic and archaeological resources were identified within the 5 mile APE. These include the Palmito Ranch Battlefield National Historic Landmark (NHL), the Palmetto Pilings site, and 13 other archaeological sites. Of the 15 resources, two are listed in the National Register: the Palmito Ranch Battlefield NHL and the Brazos Santiago Depot (41CF4); and five are eligible for inclusion in the National Register: the Del Mar Resort (41CF127), Clarksville town site (41CF7), Pilings Site (41CF117), White's Ranch (41CF6), and the Boca Chica Beach Wreck (41CF125). The Boca Chica Wreck #2 (41CF184) is unevaluated for the National Register, and another ship wreck (41CF5) is of unknown eligibility. The Palmetto Pilings archaeological site, consisting of two sets of pilings, is unevaluated for the National Register, but is assumed to be an eligible site by the FAA for the purposes of this investigation.

Architectural – Determination of Eligibility
Architectural resources within the APE include the 29-residence Boca Chica development, various private residences, a oil and gas tank farm, a drainage channel, and jetties. The FAA has determined that these resources do not qualify for listing in the National Register, and requests your concurrence. A 1936 Texas Centennial Historical Marker is located adjacent to the Palmetto Pilings archaeological site and is assumed by the FAA to be eligible for listing on the National Register for the purposes of this investigation.

Assessment of Adverse Effect
Based on the results of these identification efforts, the FAA applied the criteria of adverse effect (36 CFR 800.5(a)(1)), and has determined that seven historic properties within the APE would be adversely affected by the proposed undertaking. The following summarizes these findings, which are outlined in the attached reports:

- Construction of permanent facilities of the vertical launch area, in particular, a 250-foot tall water tower, would result in adverse visual effects to the following historic properties in which setting is central to their National Register significance:
    - Palmito Ranch Battlefield NHL
    - Brazos Santiago Depot (41CF4)
    - Clarksville Townsite (41CF7)
    - Pilings Site (41CF117)
    - Del Mar Resort (41CF127)
    - Palmetto Pilings (both sets of pilings; no site number)
    - Palmetto Pilings Texas Centennial Historical Marker

- Operation of the launch site would likely result in a direct adverse effect to the Palmetto Pilings (both sets of pilings) and the Palmetto Pilings Texas Centennial Historical Marker

from vibrations caused by high noise levels of the Falcon 9 and Falcon Heavy vehicle launches.

The FAA is requesting your concurrence with the finding of an adverse effect. Potential mitigation measures for the adversely affected historic properties are suggested in the Archaeological Report. The FAA will continue consultation with your office to determine how to effectively mitigate the adverse effects to historic properties, and develop an Agreement document with specific stipuations, which will be incorporated into the forthcoming EIS. The FAA is copying the National Park Service, which is a consulting party in the Section 106 process and a cooperating agency in the development of the EIS, concerning potential adverse effects to the Palmito Ranch Battlefield NHL. Per 36 CFR 800.6(a)(1), the FAA has invited the Advisory Council on Historic Preservation (ACHP) to the Section 106 process. The Council also is copied for notification of the adverse effect finding to an NHL and other historic properties.

On May 2, 2012, the FAA sent letters to the Apache Tribe of Oklahoma, the Comanche Nation of Oklahoma, the Kiowa Tribe of Oklahoma, the Mescalero Apache Tribe, and the Tonkawa Tribe of Oklahoma to request their comments on the proposed undertaking. To date, the FAA has not received responses from any of the tribes.

If you have any questions or need further information on the project, please contact me at 202-267-9305 or at Stacey.Zee@faa.gov.

Sincerely,

Stacey M. Zee

Stacey M. Zee
Environmental Protection Specialist

Enclosures:

- Architectural Survey for the Proposed SpaceX Texas Launch Site, Cameron County, Texas
- Archaeological Resources Investigation for the Proposed SpaceX Texas Launch Site, Cameron County, Texas

cc Najah Duvall-Gabriel, ACHP
Cheryl Eckhardt, NPS
Don Scata, FAA-FPO

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November 16, 2012

Stacey M. Zee
Environmental Protection Specialist
Federal Aviation Administration
U.S. Department of Transportation
800 Independence Avenue, SW
Washington, DC 20591

Re: Section 106 of the National Historic Preservation Act of 1966, as amended
Proposed SpaceX Texas Launch Site, Cameron County, Texas
106/FAA (THC Track #201301576)

Dear Ms. Zee:

Thank you for your correspondence concerning the above referenced project which we received on October 24, 2012. This letter serves as comment on the proposed undertaking from the State Historic Preservation Officer, the Executive Director of the Texas Historical Commission.

It is our understanding that the proposed project consists of the construction of a private space launch site for the Falcon 9 and Falcon Heavy orbital vertical launch vehicles as well as a variety of reusable suborbital launch vehicles. Our staff concurs with your determinations of eligibility for above-ground resources, including that the only National Register-eligible resource within the 5-mile Area of Potential Effect is the 1936 Centennnial marker for the Palmetto Pilings along with the Palmito Ranch Battlefield National Historic Landmark (NHL). Further, we concur that the proposed undertaking will have adverse effects on both the marker and Palmito Ranch Battlefield. Please be sure to copy our agency in correspondence with the National Park Service and Advisory Council on Historic Preservation regarding the undertaking and effects. We look forward to working with you through the consultation process, and anticipate communication on potential avoidance and minimization before negotiating mitigation.

Our Archeology Division staff has the following additional comments. After examining the documentation, the review staff concurs with the assessments of eligibility presented by Cardno TEC staff. Specifically, we concur with the recommendation that site LS #1 is ineligible for inclusion in the National Register of Historic Places. There are few clearly datable materials, and a portion of the site is deflated on the tidal flats. We also concur with the recommendation that the 19 isolated finds are ineligible for inclusion in the National Register of Historic Places. Therefore, there are no historic properties affected in the direct footprint of the project.

RICK PERRY, GOVERNOR • SHERI S. KRAUSE, CHAIRMAN • MARK WOLFE, EXECUTIVE DIRECTOR
P.O. BOX 12276 • AUSTIN, TEXAS • 78711-2276 • P 512.463.6100 • F 512.475.4872 • TDD 1.800.735.2989 • www.thc.state.tx.us

We wish to see some corrections and clarifications included in the final report. Specifically, site LS #1 needs to be listed by its official trinomial in the final report. Also, although we concur that most of the artifacts appear to date to the late 19th and early 20th centuries, the green glass bottle base could be older. The report should include approximate ranges of dates of manufacture for all of the artifacts discovered (aside from unidentifiable iron), citing published references to support the dates.

Finally, there are some minor copy editing issues that should be resolved in the final report. The cities, Corpus Christi, Matamoros, and Bagdad are misspelled throughout most of the report. Please correct the spellings. On p. 5-7, line 24, "which would rendered coastal areas…" should read, "which would have rendered coastal areas." On p. 5-11, line 5, "surrender" should read, "surrendered." Finally, on p. 5-13, line 5, "large parts for the property" should read, "large parts of the property" and in line 14, "airways" should read, "airwaves."

We look forward to further consultation with your office and hope to maintain a partnership that will foster effective historic preservation. Thank you for your cooperation in this federal review process, and for your efforts to preserve the irreplaceable heritage of Texas. **If you have any questions concerning our review or if we can be of further assistance, please contact Kim Barker at 512/463-8952.**

Sincerely,

Kim Barker, Project Reviewer
for: Mark Wolfe, State Historic Preservation Office

cc: Mary Torres, Chair, Cameron County Historical Commission
Najah Duvall-Gabriel, Advisory Council on Historic Preservation
Cheryl Eckhardt, National Park Service

February 6, 2013

Stacey M. Zee
Environmental Protection Specialist
Federal Aviation Administration
U.S. Department of Transportation
800 Independence Avenue, SW
Washington, DC 20591

Re: Section 106 of the National Historic Preservation Act of 1966, as amended
Proposed SpaceX Texas Launch Site, Cameron County, Texas
106/FAA (THC Track #201303691; see also #201301576)

Dear Ms. Zee:

Thank you for your correspondence proving additional information regarding the above referenced project which we received on January 9, 2013. This letter serves as comment on the proposed undertaking from the State Historic Preservation Officer, the Executive Director of the Texas Historical Commission.

In our letter of November 16, 2012, we concurred with your determinations of eligibility and adverse effect on the 1936 Centennial marker for the Palmetto Pilings and the Palmito Ranch Battlefield National Historic Landmark (NHL). Your letter notes that we did not address effects to other resources determined NR-eligible within the APE. This office believes that only direct impact can adversely affect an archeological site, so we do not concur with your determinations that the NR-eligible archeological sites would be adversely affected by impacts to the viewshed. Further, we do not concur to that the pilings would be adversely affected by vibration. Please note that Palo Alto Ranch Battlefield is not only an archeological site as you have identified, but also a cultural landscape, and we believe it is possible to have adverse visual, auditory, and other effects on cultural landscapes.

We appreciate the inclusion of a visual effect study in the final report. Although we believe that the vantage point should have been at the edge of the Palmito Ranch Battlefield NHL instead of one mile to the west, we find that given other modern modifications to the viewshed, the impact of the launch towers appears minimal. We have particularly come to this conclusion given the white coloration shown in the rendering, and seek clarification that the towers will indeed be painted solid white.

Given the minimal visual impact to Palmito Ranch Battlefield NHL shown in the rendering, our previous effect concurrence may have been premature. We now seek additional information that thoroughly describes the undertaking so that we may fully gauge the existence and severity of any potential effects including noise, vibration, light, construction, road widening, viewing stations, related future development, and anything else potentially related to the undertaking. We want to fully consider the potential effects and discuss avoidance prior to negotiating appropriate mitigation, should it be necessary.

All comments made on the previous draft archeology report appear to have been addressed adequately. Unfortunately, while reviewing the final report, a few errors were noted in the eligibility column of two tables for some of the sites. We understand some of the confusion, but cannot see how some of the determinations were made.

Specifically, how was NRHP eligibility determined as reported in Tables 1-1 and 5-2? The first paragraph on p. 1-2 states that certain sites are recommended as eligible, ineligible or unevaluated. Please clarify who made the eligibility recommendations. Are these the recommendations found on the site forms that were made by the archeologists who originally recorded the sites, or are they determinations made by the SHPO or are they Cardno's recommendations? While we may have ultimately concurred with the assessment listed on the site forms, any such assessment is not the official determination made by this office.

Similarly, it is unclear how the SAL eligibility recommendations were made. Several of the sites are listed in the tables as ineligible for SAL designation, but the site forms (several completed by THC personnel on behalf of the NPS) stated that they had the potential to be designated. In one case (41CF125), the table indicates that this shipwreck is ineligible for SAL designation, but the Archeological Sites Atlas clearly shows that it is already designated as a SAL. Also, in the case of 41CF184, the shipwreck is noted as eligible in the table, but the Atlas indicates that it is already designated. Please correct these inaccuracies.

One final issue is the eligibility of site 41CF117 and the nearby pilings. This is extremely confusing because there are two site forms included in the Atlas, both of which were completed by former THC employees about 15 years apart. The first site form refers to the palmetto pilings from the 1865 bridge as the site (even though the sketch map labels them as the 1846 pilings associated with Taylor). The second form discusses the loma immediately adjacent to the cypress pilings, which contains the remains of a historic camp with 1846-1865 artifacts. That more recent site form actually lists the site number for the camp as "41CF117.2." So, in Table 5-2, the status of the cypress pilings should be changed from unevaluated to eligible. Nobody has ever adequately recorded the extent of the palmetto pilings, at least as far as the Archeological Sites Atlas is concerned. Also, they are so minimal that it is impossible to detect them in the photo included in the report. Is there a close up photo that could be included so that the reader can get a better idea of what they look like?

We look forward to receiving a revised final archeological report. Thank you for your cooperation in this federal review process, and for your efforts to preserve the irreplaceable heritage of Texas. **If you have any questions concerning our review or if we can be of further assistance, please contact Kim Barker at 512/463-8952.**

Sincerely,

Kim Barker, Project Reviewer
for: Mark Wolfe, State Historic Preservation Office

cc: Mary Torres, Chair, Cameron County Historical Commission
Najah Duvall-Gabriel, Advisory Council on Historic Preservation
Cheryl Eckhardt, National Park Service

February 25, 2013

Stacey M. Zee
Environmental Protection Specialist
Federal Aviation Administration
U.S. Department of Transportation
800 Independence Avenue, SW
Washington, DC 20591

Re: Section 106 of the National Historic Preservation Act of 1966, as amended
Proposed SpaceX Texas Launch Site, Cameron County, Texas
106/FAA (THC Track #201303691; see also #201301576)

Dear Ms. Zee:

Our letter of February 6, 2013, incorrectly identified Palmito Ranch Battlefield as Palo Alto Ranch Battlefield in the second paragraph. This letter corrects the mistake; all other information remains the same. We regret the error.

Thank you for your correspondence proving additional information regarding the above referenced project which we received on January 9, 2013. This letter serves as comment on the proposed undertaking from the State Historic Preservation Officer, the Executive Director of the Texas Historical Commission.

In our letter of November 16, 2012, we concurred with your determinations of eligibility and adverse effect on the 1936 Centennial marker for the Palmetto Pilings and the Palmito Ranch Battlefield National Historic Landmark (NHL). Your letter notes that we did not address effects to other resources determined NR-eligible within the APE. This office believes that only direct impact can adversely affect an archeological site, so we do not concur with your determinations that the NR-eligible archeological sites would be adversely affected by impacts to the viewshed. Further, we do not concur to that the pilings would be adversely affected by vibration. Please note that Palmito Ranch Battlefield is not only an archeological site as you have identified, but also a cultural landscape, and we believe it is possible to have adverse visual, auditory, and other effects on cultural landscapes.

We appreciate the inclusion of a visual effect study in the final report. Although we believe that the vantage point should have been at the edge of the Palmito Ranch Battlefield NHL instead of one mile to the west, we find that given other modern modifications to the viewshed, the impact of the launch towers appears minimal. We have particularly come to this conclusion given the white coloration shown in the rendering, and seek clarification that the towers will indeed be painted solid white.

Given the minimal visual impact to Palmito Ranch Battlefield NHL shown in the rendering, our previous effect concurrence may have been premature. We now seek additional information that thoroughly describes the undertaking so that we may fully gauge the existence and severity of any potential effects including noise, vibration, light, construction, road widening, viewing stations, related future development, and anything else potentially related to the undertaking. We want to

fully consider the potential effects and discuss avoidance prior to negotiating appropriate mitigation, should it be necessary.

All comments made on the previous draft archeology report appear to have been addressed adequately. Unfortunately, while reviewing the final report, a few errors were noted in the eligibility column of two tables for some of the sites. We understand some of the confusion, but cannot see how some of the determinations were made.

Specifically, how was NRHP eligibility determined as reported in Tables 1-1 and 5-2? The first paragraph on p. 1-2 states that certain sites are recommended as eligible, ineligible or unevaluated. Please clarify who made the eligibility recommendations. Are these the recommendations found on the site forms that were made by the archeologists who originally recorded the sites, or are they determinations made by the SHPO or are they Cardno's recommendations? While we may have ultimately concurred with the assessment listed on the site forms, any such assessment is not the official determination made by this office.

Similarly, it is unclear how the SAL eligibility recommendations were made. Several of the sites are listed in the tables as ineligible for SAL designation, but the site forms (several completed by THC personnel on behalf of the NPS) stated that they had the potential to be designated. In one case (41CF125), the table indicates that this shipwreck is ineligible for SAL designation, but the Archeological Sites Atlas clearly shows that it is already designated as a SAL. Also, in the case of 41CF184, the shipwreck is noted as eligible in the table, but the Atlas indicates that it is already designated. Please correct these inaccuracies.

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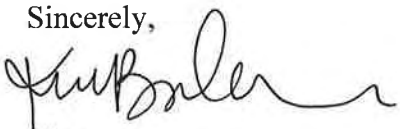
We look forward to receiving a revised final archeological report. Thank you for your cooperation in this federal review process, and for your efforts to preserve the irreplaceable heritage of Texas. **If you have any questions concerning our review or if we can be of further assistance, please contact Kim Barker at 512/463-8952.**

Sincerely,



Kim Barker, Project Reviewer
for: Mark Wolfe, State Historic Preservation Office

cc: Mary Torres, Chair, Cameron County Historical Commission
Najah Duvall-Gabriel, Advisory Council on Historic Preservation
Cheryl Eckhardt, National Park Service

March 12, 2013

Stacey M. Zee
Environmental Protection Specialist
Federal Aviation Administration
U.S. Department of Transportation
800 Independence Avenue, SW
Washington, DC 20591

Re: Section 106 of the National Historic Preservation Act of 1966, as amended
Proposed SpaceX Texas Launch Site, Cameron County, Texas
106/FAA (THC Track #201305556; see also #201303691, #201301576)

Dear Ms. Zee:

Thank you for your correspondence providing additional information regarding the above referenced project, which we received on March 4, 2013, as well as through teleconference on March 7th. This letter serves as comment on the proposed undertaking from the State Historic Preservation Officer, the Executive Director of the Texas Historical Commission.

Based on additional consideration and discussion, we now confirm our previous concurrence of adverse effect on the 1936 Centennial marker for the Palmetto Pilings and on the Palmito Ranch Battlefield National Historic Landmark (NHL). Further, we now concur that the proposed project will have adverse effects on both the 1846-65 pilings and the 1865 pilings, both of which are within the APE. We look forward to working with you through Section 106 procedures to resolve these adverse effects.

Thank you for your cooperation in this federal review process, and for your efforts to preserve the irreplaceable heritage of Texas. **If you have any questions concerning our review or if we can be of further assistance, please contact Kim Barker at 512/463-8952.**

Sincerely,

Kim Barker, Project Reviewer
for: Mark Wolfe, State Historic Preservation Office

cc: Mary Torres, Chair, Cameron County Historical Commission
Najah Duvall-Gabriel, Advisory Council on Historic Preservation
Cheryl Eckhardt, National Park Service

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U.S. Department of Transportation
Federal Aviation Administration

Office of the Associate Administrator for Commercial Space Transportation

800 Independence Ave., SW
Washington, DC 20591

DEC 4 2013

Mr. Mark Wolfe
State Historic Preservation Officer
Texas Historical Commission
108 W. 16th Street
Austin, TX 78701

SUBJECT: Additional Effects Assessment, SpaceX Texas Launch Site, Cameron County

Dear Mr. Wolfe:

This letter continues consultation with your office regarding a Proposed Undertaking by the Federal Aviation Administration (FAA) Office of Commercial Space Transportation (AST) to issue launch licenses and/or experimental permits to Space Explorations Technologies Corp. (SpaceX) for operating the Falcon 9 and Falcon Heavy vehicle programs from a proposed launch site in Cameron County, Texas. The FAA is preparing an Environmental Impact Statement (EIS) to assess the potential environmental impacts of the construction of a vertical launch area and a launch control center area, in addition to the impacts from operating the facilities and launching orbital and suborbital launch vehicles by SpaceX.

The FAA initiated consultation with your office on the Proposed Undertaking on April 30, 2012, and consulted with your office on the determination of the area of potential effects (APE) on June 14, 2012. The FAA subsequently consulted with your office on the identification of historic properties and our finding of historic properties adversely affected. Your office concurred with this finding on March 12, 2013.

Since receipt of your office's concurrence on this consultation, the Advisory Council on Historic Preservation, a consulting party in the Section 106 process for the Proposed Undertaking, requested the FAA complete an additional adverse effects assessment to consider the potential visual effects of mid-air launch vehicles on the Palmito Ranch Battlefield National Historic Landmark (NHL), a historic property in the APE. This letter addresses the additional adverse effects assessment.

Before presenting the additional adverse effects assessment, the FAA feels it is important to review the results of previous adverse effects assessments concerning the NHL. In previous consultations with your office, the FAA determined the construction of permanent facilities at the vertical launch and control center areas would result in an adverse effect to the NHL, as the facilities would add several new visual elements to the landscape that would diminish the historic property's integrity. Further, the FAA determined that adverse effects to the NHL may occur from secondary (induced) impacts from the increased visitation and use of the area due to the presence of the launch facilities. A Programmatic Agreement is currently being developed to resolve the adverse effects. For this additional adverse effects assessment, the FAA considered whether the visibility of a launched vehicle under the proposed operations would also diminish the integrity of the NHL and result in an adverse effect.

As you are aware, operations under the Proposed Undertaking would consist of up to 12 commercial launch operations per year with a maximum of two Falcon Heavy launches. Launch operations include not only launches, but also pre-flight activities such as mission rehearsals and static fire engine tests. SpaceX proposes to construct a vertical launch area and a control center area to support these operations. The facilities would be constructed on private land, and the vertical launch area would be located adjacent to the eastern terminus of State Highway 4, approximately 3 miles east of the eastern extent of the NHL.

The approximate overall length of both the Falcon 9 and the Falcon Heavy is 224 feet. The width of the Falcon 9 is 12 feet, and the width of the Falcon Heavy is 36 feet. The Falcon 9 and Falcon Heavy launch trajectories would be specific to each particular mission. However, all launch trajectories would be to the east over the Gulf of Mexico, similar to what is depicted on the enclosed map. Each launch of a Falcon 9, Falcon Heavy, or smaller reusable launch vehicle would be visible for several miles around the vertical launch area. Each type of launch vehicle would leave an exhaust plume, as a result of the fuel mixture being combusted. The Falcon launch vehicles are expected to be visible for approximately 3 minutes after they are launched (the length of the Stage 1 flight, as described in Section 2.1.1 in the Draft EIS).

Through the consultation process, the FAA and SpaceX have agreed to the suggestion presented at the May 7, 2013 agency meeting to move the soft checkpoint to a location west of the U.S. Customs and Border Protection checkpoint (approximately 14–16 miles west of the State Highway 4 terminus at Boca Chica Beach). This location would therefore result in full closure of the NHL for launches, thus reducing the potential for secondary (induced) impacts on the NHL from the viewing public during a launch. This would alleviate some of the concerns regarding the potential impacts from the viewing public harming or visiting the NHL during a launch.

Because the NHL would be closed for the duration of every launch, no individuals would be within the NHL to see a launch vehicle in mid-air from the historic property. Thus, when public access to the NHL is available (approximately 97 percent of the year), the movement of a launch vehicle above the landscape would not occur, and there would be no new visual elements in the setting of the historic property from operations of the facility. Therefore, with the condition of

the closure of the NHL for launches imposed as part of the Proposed Undertaking, the FAA has determined there would be no adverse visual effect to the integrity of the NHL from mid-air launch vehicles as the flight of the launch vehicle could not be viewed from within the NHL.

The FAA is requesting your concurrence with this finding in concert with the development of the Programmatic Agreement. Please provide any comments you have within 30 days. The FAA looks forward to continuing consultation with your office and the consulting parties on the development of measures to minimize and mitigate adverse effects to the historic properties in the APE.

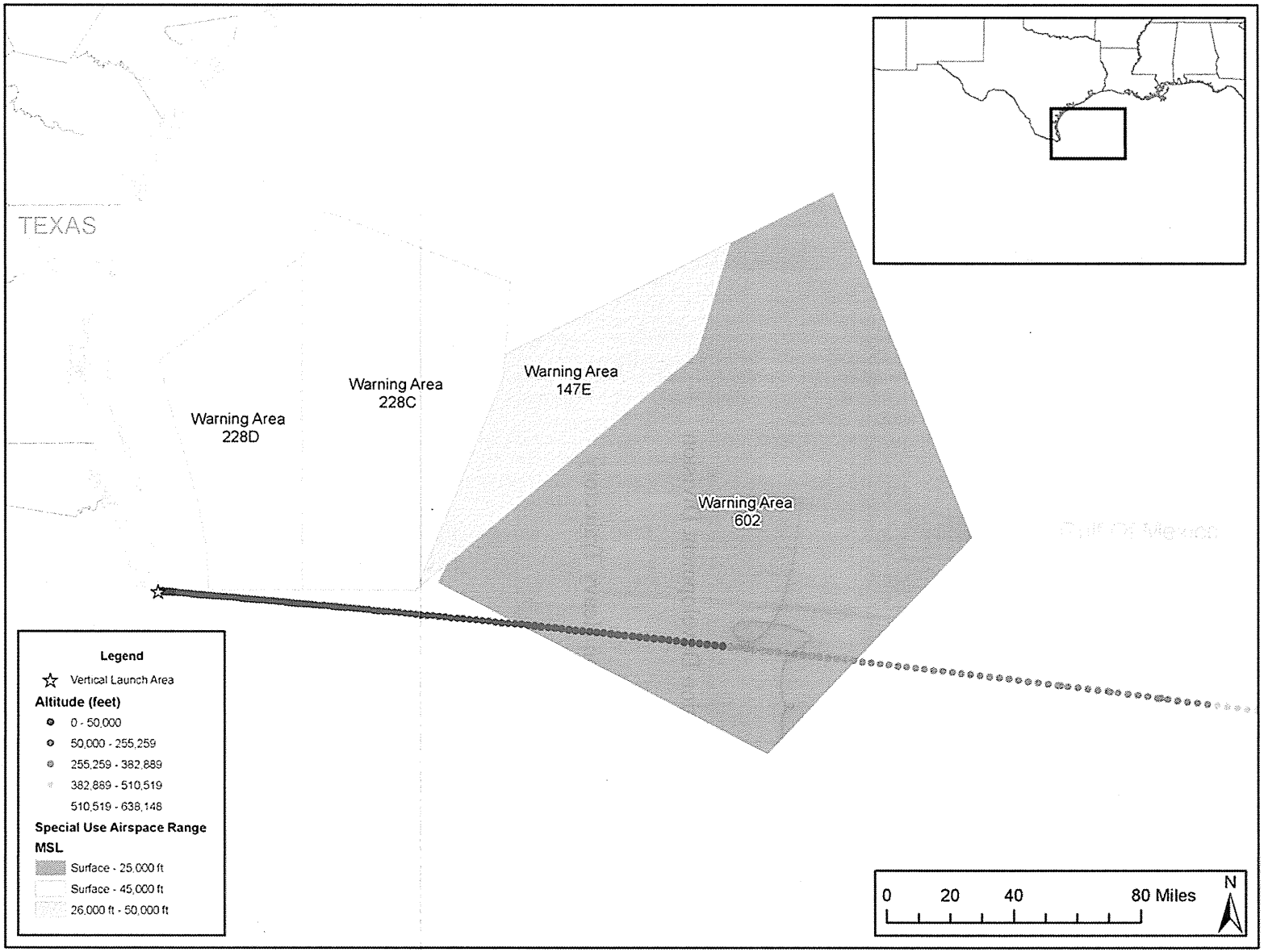
If you have any questions or need further information on the project, please contact Ms. Stacey Zee at 202-267-9305 or via e-mail at Stacey.Zee@faa.gov.

Sincerely,

Daniel Murray
Manager, Space Transportation Development Division

Enclosure: 1. Example Falcon Heavy Trajectory

cc:
Cheryl Eckhardt, National Park Service
Najah Duvall-Gabriel, Advisory Council on Historic Preservation
Bryan Winton, USFWS
Russ Melinchuk, TPWD
Steve Davis, SpaceX



Enclosure 1. Example Falcon Heavy Trajectory

January 9, 2014

Daniel Murray
Acting Manager, Space Transportation Development Division
Federal Aviation Administration
U.S. Department of Transportation
800 Independence Avenue, SW
Washington, DC 20591

Re: Section 106 of the National Historic Preservation Act of 1966, as amended
Proposed SpaceX Texas Launch Site, Cameron County, Texas
Additional Assessment of Effects on the Palmito Ranch Battlefield (NHL)
106/FAA (THC Track #201403337; #201309867; see also #201308914)

Dear Mr. Murray:

Thank you for the Additional Effects Assessment related to the visual effects of mid-air launch vehicles on the Palmito Ranch Battlefield National Historic Landmark (NHL), regarding the above referenced project which we received on December 9, 2013. As noted in our email on January 8, 2013, we met with the Texas Parks and Wildlife Department (TPWD) today to discuss our collective concerns. This letter serves as comment on the proposed undertaking from the State Historic Preservation Officer, the Executive Director of the Texas Historical Commission. The TPWD will submit comments separately.

We appreciate the additional level of assessment you have conducted, at the request of the Advisory Council of Historic Preservation, specifically targeting the mid-air visual impacts to the NHL. We understand the intent of having up to 12 commercial launch operations per year, with a maximum of two Falcon Heavy launches. Such operations would also include the pre-flight activities (i.e. static fire engine tests). Our comments herein are specific to the mid-flight visual impacts resulting from the actual launches. Therefore, our focus is on the three minutes in which the launch vehicle is visible, in addition to the visibility of the exhaust plume (for which no estimated time of visibility has been provided). We did note that the vehicle will be visible for several miles in all directions, as we also expect the plume to be.

We understand that the FAA is proposing to move the soft checkpoint west of the NHL entrance and closing the NHL during launch activities, as an avoidance measure of these mid-air visual effects. During initial consultation, this proposal appeared very promising. However, in light of our discussions with TPWD staff, which are very familiar with the historic property, we now understand that the full closure of the NHL to the viewing public would be impossible. The NHL has multiple and uncontrolled points of entry for persons with all-terrain or four-wheel drive vehicles. Closure of the roads may exacerbate an existing problem of site destruction caused by such vehicles as launch enthusiasts find ways to circumvent the road closure. We have determined that the mid-air visual impacts remain **an *indirect* adverse effect** and the proposed avoidance measure is not appropriate, as it has a great potential to lead to **a *direct* adverse effect**.

We continue to avail ourselves for discussion of possible avoidance measures to the indirect adverse effects, prior to exploration of mitigating actions. Thank you for your cooperation in this federal review process, and for your efforts to preserve the irreplaceable heritage of Texas. **If you have any questions concerning our review or if we can be of further assistance, please contact Theresa A. de la Garza at 512/463-8952.**

RICK PERRY, GOVERNOR • MATTHEW F. KREISLE, III, CHAIRMAN • MARK WOLFE, EXECUTIVE DIRECTOR
P.O. BOX 12276 • AUSTIN, TEXAS • 78711-2276 • P 512.463.6100 • F 512.475.4872 • www.thc.state.tx.us

Sincerely,

Theresa A. de la Garza, Project Reviewer
for: Mark Wolfe, State Historic Preservation Office

cc: Stacey Zee, Federal Aviation Administration (via email)
Daniel Czelusniak, Federal Aviation Administration (via email)
Najah Duvall-Gabriel, Advisory Council on Historic Preservation (via email)
Cheryl Eckhardt, National Park Service (via email)
Mark Spier, National Park Service (via email)
Christine Whitacre, National Park Service (via email)
Tom Keohan, National Park Service (via email)
Michael Strutt, Texas Parks and Wildlife (via email)
Steve Davis, SpaceX (via email)
N. Sullivan, ICF International (via email)
Betty Agado, Chair, Cameron County Historical Commission

MW/tg

U.S. Department
of Transportation
Federal Aviation Administration

Office of Commercial Space Transportation

800 Independence Ave., SW.
Washington, DC 20591

MAR 24 2014

RECEIVED
MAR 26 2014
TEXAS HISTOR

Mr. Mark Wolfe
State Historic Preservation Officer
Texas Historical Commission
108 W. 16th Street
Austin, TX 78701

SUBJECT: Additional Adverse Effects Assessment, SpaceX Texas Launch Site, Cameron County

Dear Mr. Wolfe:

Thank you for your comment letter of January 9, 2014, with regards to the FAA's Additional Adverse Effects Assessment of mid-air launch vehicles on the Palmito Ranch Battlefield National Historic Landmark (NHL). This letter constitutes our response to those comments.

In your letter, you state that you have determined mid-air visual impacts would remain an indirect adverse effect. The FAA never considered mid-air visual impacts to be an indirect adverse effect to the NHL because the area would be closed to the public during each launch operation. As you are aware, SpaceX expanded the soft checkpoint closure area west of the U.S. Customs and Border Protection checkpoint to include the entire extent of the NHL and Lower Rio Grande Valley National Wildlife Refuge (NWR) after the National Park Service (NPS) and U.S. Fish and Wildlife Service (USFWS) raised concerns about protecting the NHL and NWR from public intrusion in May 2013. The intent of the closure area is to keep the general public from passing the soft checkpoint during the time of a launch operation. Government personnel, SpaceX personnel, emergency personnel, and anyone with property beyond this soft checkpoint could pass, but the general public would be denied access. With the inclusion of the entire NHL within the soft checkpoint closure area, no individuals without access permission would be within the NHL to see a launch vehicle in mid-air from the historic property. Therefore, the FAA stands by its determination that there would be no adverse indirect effect to the integrity of the NHL from mid-air launch vehicles as the flight of the launch vehicle could not be viewed from within the NHL.

Also in your letter of January 9, 2014, your stated understanding of the movement of the soft checkpoint west of the NHL to be a proposed avoidance measure of mid-air visual effects is incorrect. The location of the soft checkpoint west of the Border Protection checkpoint is part of the Proposed Action/Undertaking and thus not considered an avoidance measure for mid-air visual effects.

Your office also states that the "avoidance measure" (i.e., the location of the soft checkpoint west of the NHL and NWR) has a "great potential to lead to a direct adverse effect" to the NHL from site destruction that would result from persons who presumably would circumvent the road closure and enter the closure area anyway to view a launch. The FAA disagrees with this assessment. The primary purpose for moving the soft checkpoint further west was to encompass the entire extent of the NHL and NWR and protect these resources from unauthorized entry during launch operations. As indicated in the Preliminary Final Environmental Impact Statement, Version 2 (Table 2.1-1), SpaceX would establish the soft checkpoint in coordination with local law enforcement 12 hours prior to the scheduled launch time. Once the soft checkpoint is established, SpaceX would verify the evacuation of the closure area and continually monitor for unauthorized entry using video surveillance. Other means may be employed as necessary, including unmanned and/or manned aerial surveillance. With these measures in place, anyone who would try to circumvent the closure would be identified immediately and safely removed from the closure area in coordination with local law enforcement. It is important to note that SpaceX must develop and implement agreements and plans with local authorities whose support is needed to ensure public safety during launch processing and flight, in accordance with the FAA's regulations for launch safety by a launch operator (codified in 14 Code of Federal Regulations § 417.111).

To further allay concerns of site damage from unauthorized entry, based on SpaceX discussions with USFWS, NPS, and Texas Department of Transportation in February 2014, the soft checkpoint will be moved further to the west, at a point east of where State Highway (SH) 1419 crosses SH 4 and west of where a north-south canal crosses SH 4. Locating the soft checkpoint west of the canal provides an increased physical barrier to prevent access by all types of vehicles onto the NHL and USFWS lands. This is considered an avoidance measure and will be described in a separate plan/report in accordance with the Programmatic Agreement.

For the reasons described above, the FAA has determined the location of the soft checkpoint closure area west of the NHL would have no adverse effect to the historic property. The FAA is requesting your concurrence with this finding, and with our finding of no adverse effect to the NHL from mid-air launch vehicles. Please provide any comments you have within 30 days.

The FAA looks forward to continuing consultation with your office and the consulting parties on the development of measures to avoid, minimize, and mitigate adverse effects to the historic properties in the Area of Potential Effects.

If you have any questions or need further information on the project, please contact Ms. Stacey Zee at 202-267-9305 or via e-mail at Stacey.Zee@faa.gov.

Sincerely,

Daniel Murray
Manager, Space Transportation Development Division

cc:
Cheryl Eckhardt, National Park Service
Najah Duvall-Gabriel, Advisory Council on Historic

Track# 20140758 7

CONCUR

by _____

for Mark Wolfe
State Historic Preservation Officer

Date 4/8/2014

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United States Department of the Interior

NATIONAL PARK SERVICE
INTERMOUNTAIN REGION
12795 West Alameda Parkway
PO Box 25287
Denver, Colorado 80225-0287

IN REPLY REFER TO:
IMR-EQ

VIA ELECTRONIC COPY ONLY - NO HARD COPY TO FOLLOW

Subject: National Park Service Request for Justification of the Section 106 Undertaking and Area of Potential Effect for the Space X Project.

Dear Ms. Zee:

In light of recent conversations with FAA regarding connected actions and cumulative effects on the Space X project, NPS respectfully requests that FAA provide a detailed description of the Space X undertaking and area of potential effect. We do not believe that the project description as stated in the Draft Programmatic Agreement (PA) and Draft Environmental Impact Statement adequately define the full scope of the project. We are aware of several other projects in the area that appear to be directly connected to the Space X project, including, but not limited to, roadway widening, utility improvements, and other facilities. These activities would likely not be occurring if the Space X project were not happening. The Draft PA mentions these activities, but excludes them from further consideration for reasons that are not clear to us.

Per 36 CFR 800.5, adverse effects may include reasonably forseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative. In addition to the Space X project itself, we believe that these connected actions will result in adverse effects to historic properties including the National Historic Landmark and that these connected actions should be analyzed and mitigated as part of this undertaking.

We are requesting a description of the undertaking specifying the federal involvement for the Space X project including any reasonably forseeable actions caused by the undertaking as well as the area of potential effects. Please include photographs, maps, drawings, as necessary. Once received, we would also like to request the Advisory Council on Historic Preservation's assessment of the federal undertaking and the area of potential effects.

We thank you for the opportunity to make this request and look forward to your response. Please direct any questions to Cheryl Eckhardt, Environmental Compliance Specialist, NPS Intermountain Region, 303-969-2851 or at cheryl_eckhardt@nps.gov.

for Melissa R. Trenchik
Chief of Environmental Quality

cc: Christine Whitacre, Historic Partnerships Program Manager, NPS-Intermountain Region
Tom Keohan, Historical Architect, NPS-Intermountain Region
Mark Spier, Superintendent, NPS-Palo Alto Battlefield National Historical Park
Cheryl Eckhardt, Environmental Compliance Specialist, NPS-Intermountain Region
Patrick Malone, Assistant Regional Director for Natural Resources, NPS-Intermountain Region
Melissa Trenchik, Chief of Environmental Compliance, NPS-Intermountain Region
Randy Stanley, Physical Scientist, NPS-Intermountain Region
Theresa Ely, Soundscapes and Night Skies Coordinator, NPS-Intermountain Region
Bryan Winton, U.S. Fish and Wildlife Service
Ross Melinchuk, Texas Parks and Wildlife Department
Najah Gabriel, Advisory Council on Historic Preservation
Theresa de la Garza, Texas Historical Commission

U.S. Department
of Transportation
**Federal Aviation
Administration**

Office of Commercial Space Transportation

800 Independence Ave., SW
Washington, DC 20591

APR 10 2014

Ms. Melissa R. Trenchik
Chief of Environmental Quality
National Park Service
12795 West Alameda Parkway
P.O. Box 25287
Denver Colorado, 80225-0287

SUBJECT: Section 106 Undertaking and the Area of Potential Effects, SpaceX Texas Launch Site, Cameron County

Dear Ms. Trenchik:

Thank you for your comment letter emailed on April 8, 2014, with regards to the Section 106 Undertaking and Area of Potential Effects (APE) for the SpaceX Texas Launch Site. This letter constitutes our response to that letter.

In your letter, you requested that the Federal Aviation Administration (FAA) provide a detailed description of the Undertaking and the APE. You have expressed concerns regarding the definition of the Undertaking, stating that the FAA is excluding parts of the project from the definition of the Undertaking — namely, (1) utility upgrades stemming from Brownsville to the control center, (2) water lines, (3) sewer lines, (4) improvements/widening of State Highway 4, and (5) the STARGATE project. It appears the confusion stems from previous statements in the Programmatic Agreement (PA) that stated what the project does NOT include. The FAA maintains the description of the Undertaking as currently described in the Environmental Impact Statement (EIS) and the PA is accurate.

Electricity

As described in Section 2.1.2.1, *Vertical Launch Area*, of the EIS, utilities for the vertical launch area would include power, potable water, fire protection water, and a septic system. Primary power for the vertical launch area would be provided by commercial power from the control center area to the vertical launch area. Power and data lines would be installed underground within the Right-of-Way (ROW) along State Highway 4 (Boca Chica Boulevard) between the

control center area and the vertical launch area. A total of approximately 1,000-3,000 kilowatts per hour would be required by the vertical launch and control center areas during launch operations.

As described in Section 2.1.2.2, *Control Center Area*, of the EIS, primary power for the control center area would be provided by commercial power. There are existing power lines to Boca Chica Village. However, these are not of sufficient capacity to support SpaceX's proposed operations. Therefore, these power lines would need to be upgraded. During this upgrade, it is FAA's understanding that the lines that are currently underground would remain underground, and lines that are currently aboveground would remain aboveground. The specific requirements for the power lines and substation(s) necessary to meet the demands of the vertical launch and control center areas have not been developed. Magic Valley Electric Cooperative (MVEC) or the appropriate company would coordinate with U.S. Fish and Wildlife Service (USFWS) and Texas Department of Transportation to obtain the appropriate approvals to upgrade the utilities, including obtaining utility permits in accordance with the Utility Accommodation Policy found in the Texas Administrative Code.

If utility poles would be installed within refuge property, the USFWS would have to issue a special use permit (a Federal action). The USFWS' Federal action would require compliance with all applicable Federal regulations, including Section 106. The USFWS could comply with Section 106 by agreeing in writing to the terms of the PA for this project (per Stipulation VII of the PA).

Water

As described in Section 2.1.2.1, *Vertical Launch Area*, of the EIS, potable water would either be delivered by truck to the water tower at the vertical launch area or a well would be installed. In either case, water distribution lines would be installed within the boundaries of the vertical launch area to provide potable water to the area. The septic system would consist of a mobile aboveground processing unit and holding tank.

As described in Section 2.1.2.2, *Control Center Area*, of the EIS, potable water would either be delivered by truck to holding tanks at the control center area or obtained from the well at the vertical launch area, in which case water distribution lines would be installed underground within the ROW along State Highway 4 (Boca Chica Boulevard) between the vertical launch and control center areas. The water lines between the vertical launch and control center area would remain private, for use only by SpaceX. Regardless of how the water is obtained, water distribution lines would be installed at the control center area to supply potable water to the buildings.

Other than water distribution lines between the control center and vertical launch area (and within the boundaries of the control center and vertical launch area), there are no other water lines proposed. This is explained in the EIS and accounted for in the Undertaking as part of the overall construction of both sites.

Wastewater

There are no sewer lines proposed. As stated in Section 2.1.2.1, *Vertical Launch Area*, of the EIS, a septic system would consist of a mobile aboveground processing unit and holding tank. Wastewater collection would not be conveyed to an existing municipal treatment system. Septic systems are proposed at both the vertical launch and control center areas.

Road Improvements

There are no State Highway 4 modifications/improvements proposed as part of this Undertaking. The FAA is not aware of any current plans for modifications or improvements to State Highway 4.

STARGATE

This proposed project by the University of Texas – Brownsville was analyzed in Chapter 5.0, *Cumulative Impacts*, of the EIS, because it could move forward with or without the existence of the SpaceX Texas launch site. The STARGATE project will not be used to support SpaceX launches and the FAA has no authority over this project. Therefore, the FAA does not consider this project as part of the Undertaking.

Area of Potential Effects

APEs were established for both the vertical launch and control center areas by the FAA in consultation with the State Historic Preservation Officer (SHPO), NPS, and the Advisory Council on Historic Preservation. The FAA determined APEs in consideration of both potential direct and indirect impacts to archaeological and architectural resources as a result of implementing the Undertaking. Based on the potential for direct and indirect impacts to archaeological resources at the vertical launch area, the FAA determined an APE for archaeological resources that encompasses the entire 50-acre site. Based on the potential for direct and indirect impacts to archaeological resources at the control center area, the FAA determined an APE for archaeological resources that encompasses all three parcels. Based on potential direct and indirect impacts to architectural resources, the FAA determined a radial APE of 5 miles centered on the vertical launch area. Direct impacts on architectural resources would be the physical impacts on historic structural properties within the project area from construction and sound pressure. Indirect impacts would consist of potential visual effects to the setting of historic properties from construction of permanent structures at the vertical launch area and

control center area and auditory effects from the launches. The SHPO concurred with the APEs on June 27, 2012 (see Volume II of the EIS, Appendix C, page C-19). The FAA maintains the APEs as currently described in the EIS and the PA are appropriate.

The FAA looks forward to continuing consultation with your office and the consulting parties on the completion of the EIS and the PA. If you have any questions or need further information on the project, please contact Ms. Stacey Zee at 202-267-9305 or via e-mail at Stacey.Zee@faa.gov.

Sincerely,

Daniel Murray
Manager, Space Transportation Development Division

cc:
Cheryl Eckhardt, National Park Service
Christine Whitacre, Historic Partnerships Program Manager, NPS-Intermountain Region
Najah Duvall-Gabriel, Advisory Council on Historic Preservation
Tom Keohan, Historical Architect, NPS-Intermountain Region

PROGRAMMATIC AGREEMENT
AMONG
THE FEDERAL AVIATION ADMINISTRATION,
THE TEXAS STATE HISTORIC PRESERVATION OFFICER,
NATIONAL PARK SERVICE,
THE ADVISORY COUNCIL ON HISTORIC PRESERVATION,
SPACE EXPLORATION TECHNOLOGIES CORP.,
UNITED STATES FISH AND WILDLIFE SERVICE, AND
TEXAS PARKS AND WILDLIFE DEPARTMENT,
REGARDING THE
CONSTRUCTION AND OPERATION OF A SPACEX TEXAS LAUNCH SITE,
CAMERON COUNTY, TEXAS

WHEREAS, the Federal Aviation Administration (FAA) Office of Commercial Space Transportation plans to evaluate applications from Space Exploration Technologies Corp. (SpaceX) for launch licenses and/or experimental permits (as described in Attachment A) to conduct launches of the Falcon Program launch vehicles (Falcon 9 and Falcon Heavy) and a variety of reusable suborbital launch vehicles from a private launch site on privately owned property in Cameron County, Texas (the Project); and

WHEREAS, the Project would involve SpaceX constructing a vertical launch area and a launch control center on private property to launch vehicles from their private, exclusive space launch site in Cameron County, Texas, as described in Attachment A; and

WHEREAS, Project launch operations would involve the closure of the area approximately fourteen (14) to sixteen (16) miles west of the State Highway (SH) 4 terminus at Boca Chica Beach and Boca Chica State Park, as described in Attachment A and shown in Attachment A, Exhibit A-1, up to twelve (12) times a year for a period of up to fifteen (15) hours each time for the safety and security of the general public; and

WHEREAS, the FAA has determined the Project is a federal undertaking (Undertaking) subject to review under Section 106 of the National Historic Preservation Act (NHPA), 16 U.S.C. § 470f, and its implementing regulations, 36 Code of Federal Regulations (CFR) § 800; and

WHEREAS, this Programmatic Agreement (PA or Agreement) has been developed, pursuant to 36 CFR § 800.14(b), to govern the implementation of a program for the continued assessment of effects on historic properties and the resolution of adverse effects on historic properties, and this PA will govern completion of FAA's Section 106 compliance responsibilities; and

WHEREAS, the FAA, in consultation with the Texas State Historic Preservation Officer (SHPO) considered the potential direct, indirect, and cumulative effects of the Undertaking as provided in 36 CFR §§ 800.4(a) and 800.16(d) and established and inventoried an Area of Potential Effects (APE) for archaeological resources that encompasses the entire 50-acre vertical launch area as well as the three parcels (approximately 21 acres) that comprise the control center, and an APE for architectural resources, cultural landscapes, and viewsheds that encompasses a 5-mile radius centered on the vertical launch area (see Attachment B); and

WHEREAS, the FAA conducted archaeological and architectural investigations within the APEs to identify properties that are listed in or eligible for listing in the National Register of Historic Places (National Register) in consultation with the Texas SHPO and identified eleven (11) historic properties within the APEs; a complete listing of these historic properties is included as Attachment C in this Agreement; and

WHEREAS, the FAA has prepared the following reports in its evaluation of the effects of the proposed Project on historic properties: (1) *Environmental Impact Statement, SpaceX Texas Launch Site*; (2) *Final Archaeological Resources Investigation for the Proposed SpaceX Texas Launch Site, Cameron County, Texas*; and (3) *Final Architectural Survey for the Proposed SpaceX Texas Launch Site, Cameron County, Texas,* and these reports provide supporting information to this PA; and

WHEREAS, the FAA has determined that the Undertaking will have an adverse effect on properties listed in or eligible for listing in the National Register as discussed below, and has consulted with the Texas SHPO pursuant to 36 CFR § 800; and

WHEREAS, the FAA, in consultation with the Texas SHPO, determined the Undertaking will cause adverse effects to the Palmito Ranch Battlefield, a National Historic Landmark (NHL), due to the construction of the vertical launch and control center facilities and secondary (induced) impacts (described below) that could diminish the NHL's integrity of setting and feeling; and

WHEREAS, Section 110(f) of the NHPA specifies that for a Federal undertaking affecting an NHL, the Federal agency will "to the maximum extent possible, undertake such planning and actions as may be necessary to minimize harm" to the NHL; and

WHEREAS, one of the affected properties is the 1936 Centennial Marker for the Palmetto Pilings, which the FAA, in consultation with the Texas SHPO, determined is eligible for listing on the National Register and may be adversely affected by the Undertaking due to vibration from launch events and secondary (induced) impacts (described below); and

WHEREAS, two of the affected properties are the 1846 Cypress Pilings (41CF117.1) and the 1865 Palmetto Pilings (no number), which the FAA, in consultation with the Texas SHPO, determined are eligible for listing in the National Register; and

WHEREAS, one of the affected properties is the Pilings Camp Site (41CF117.2), which the FAA, in consultation with the Texas SHPO, determined would be treated as a National Register-eligible property; and

WHEREAS, the FAA, in consultation with the Texas SHPO, determined the Undertaking will cause adverse effects to the Palmito Ranch Battlefield, the 1936 Centennial Marker for the Palmetto Pilings, the 1846 Cypress Pilings (41CF117.1), the 1865 Palmetto Pilings (no number), and the Pilings Camp Site (41CF117.2) from secondary (induced) impacts as a result of increased vehicular traffic (i.e., fuel and water trucks) associated with the construction and

operation of the facility, as well as increased foot traffic and vehicular traffic from an anticipated influx in visitors to the area; and

WHEREAS, pursuant to this PA, SpaceX will prepare additional plans as outlined in Attachment D, in order to provide information for FAA to further assess effects and resolve adverse effects; and

WHEREAS, the FAA identified the Apache Tribe of Oklahoma, the Comanche Nation of Oklahoma, the Kiowa Tribe of Oklahoma, the Mescalero Apache Tribe of New Mexico, and the Tonkawa Tribe of Oklahoma as having religious or cultural affiliation with the Project area, and invited the tribes to participate in the Section 106 process and will continue to be consulted regarding assessments of effects and resolution of adverse effects resulting from actions taken as part of this Undertaking (see Attachment E for a summary of Tribal consultation); and

WHEREAS, the public has been provided opportunities to comment on the Project and participate in the Section 106 process, first in FAA's publication of the Notice of Intent in the *Federal Register* on 10 April 2012 (77 *FR* 21619), through a public scoping meeting on 15 May 2012 and a public hearing on 7 May 2013 as part of the National Environmental Policy Act process, and through a sixty (60) day review and comment period for the *Draft Environmental Impact Statement, SpaceX Texas Launch Site*, and the FAA has considered the public's comments in development of this Agreement; and

WHEREAS, the FAA received a number of comments from the public regarding cultural resources, and the public comments identified cultural and historic sites in the area and expressed concern for minimizing impacts to these sites; and

WHEREAS, the FAA invited the National Park Service (NPS), which administers the NHL Program, to participate in the consultation process as a consulting party pursuant to 36 CFR § 800.2(c)(5) by letter dated 18 June 2012, and has invited them as a Signatory to this Agreement; and

WHEREAS, the FAA did not identify other consulting parties pursuant to 36 CFR § 800.2(c)(5), and no individuals or organizations requested to the FAA to be a consulting party; and

WHEREAS, on 8 April 2014, the NPS transmitted a written request to the FAA for a written justification of the Section 106 Undertaking and APE for the Project, and the FAA provided a written response to the NPS on 21 April 2014; and

WHEREAS, the Palmito Ranch Battlefield NHL is located within land owned by the U.S. Fish and Wildlife Service (USFWS); therefore, the agency may need to grant access, permissions, or issue permits for measures outlined in this Agreement; and

WHEREAS, the FAA invited the USFWS to participate in consultation for this Undertaking by letter dated 10 May 2013, and USFWS is an Invited Signatory to this Agreement; and

WHEREAS, the 1936 Centennial Marker for the Palmetto Pilings, the 1846 Cypress Pilings (41CF117.1), the Pilings Camp Site (41CF117.2), and the 1865 Palmetto Pilings (no number), are located within Boca Chica State Park on land owned by the Texas Parks and Wildlife Department (TPWD) and leased to the USFWS; therefore, the TPWD may need to grant access, permissions, or issue permits to implement the procedures set forth in this Agreement; and

WHEREAS, the FAA invited the TPWD to participate in consultation for this Undertaking by letter dated 10 May 2013, and TPWD is an Invited Signatory to this Agreement; and

WHEREAS, in accordance with 36 CFR § 800.6(a)(1), the FAA has notified the Advisory Council on Historic Preservation (ACHP) of its adverse effect determination providing the specified documentation on 14 June 2012; and

WHEREAS, the FAA invited the ACHP to participate in consultation for this Undertaking pursuant to 36 CFR § 800.6(a)(1)(iii) by letter dated 28 June 2012, and ACHP decided to participate in consultation by letter dated 23 July 2012, and is a Signatory to this Agreement; and

NOW, THEREFORE, the FAA, Texas SHPO, NPS, ACHP, SpaceX, USFWS, and TPWD agree that the Undertaking will be implemented in accordance with the following Stipulations in order to take into account the effects of the Undertaking on historic properties:

STIPULATIONS

The FAA will ensure the following measures are carried out:

I. PROFESSIONAL QUALIFICATIONS

a. All work conducted under this Agreement will be conducted by or under the direct supervision of professionals meeting the federal qualification standards in the discipline appropriate to the properties being treated (Archaeology for treatments of archaeological sites; History, Architectural History, and/or Historic Architecture for aboveground resources), as established by the Secretary of the Interior and published in 36 CFR Part 61, Appendix A.

b. All engineering related work conducted under this Agreement will be conducted by a qualified professional engineer appropriate to the type of work specified.

c. Standards, guidelines, and statutes. All cultural resource work conducted under this Agreement will be consistent with NHPA (16 U.S.C. § 470) and Texas Administrative Code Title 13, Part 2, Chapter 26 and conducted in accordance with the following standards, guidelines, and statutes as applicable:

   i. The Secretary of the Interior: *Standards and Guidelines for Archeology and Historic Preservation* (1983) (48 *FR* 44716-44742), including the Standards for the Treatment of Historic Properties (1995);

ii. Advisory Council on Historic Preservation: *Treatment of Archeological Properties: A Handbook* (1980), and the *ACHP Policy Statement Regarding Treatment of Burial Sites, Human Remains and Funerary Objects*, dated 23 February 2007; and

iii. Texas Historical Commission: *Archeological Survey Standards for Texas* and Council of Texas Archeologists: *Guidelines for Cultural Resource Management Reports.*

II. TRIBAL CONSULTATION PROTOCOLS

a. The FAA will afford the Apache Tribe of Oklahoma, the Comanche Nation of Oklahoma, the Kiowa Tribe of Oklahoma, the Mescalero Apache Tribe of New Mexico, and the Tonkawa Tribe of Oklahoma the opportunity to review and comment on any draft plan or report associated with this Undertaking, including determinations of effects and the development of Memoranda of Agreement (MOAs) consistent with Stipulation V.

b. The FAA will include in the Unanticipated Discoveries Plan described in Stipulation VI the protocols for notifying and consulting with tribes in the event of a discovery of human remains and/or funerary objects.

III. DEVELOPMENT, REVIEW, AND APPROVAL OF DOCUMENTS

a. Development, review, and approval of any draft plan or report associated with this Undertaking, including Launch Site Plans (listed in Attachment D) and the Unanticipated Discoveries Plan (described in Stipulation VI) will follow these procedures:

i. SpaceX has primary responsibility for developing and revising all plans identified in the Stipulations of this PA.

ii. The FAA will review all plans developed by SpaceX, and upon approval, the FAA will distribute drafts of all plans to the Signatories and Invited Signatories to this Agreement for review and comment. Signatories and Invited Signatories will have thirty (30) calendar days from the date of receipt to review and comment.

iii. Within the 30-day review period, the FAA will coordinate a meeting with the Signatories and Invited Signatories to this Agreement to facilitate comments on the plans. The FAA and SpaceX will take all comments into consideration when updating the plans. The FAA will share with all Signatories and Invited Signatories the comments of the others. Signatories and Invited Signatories may request the preparation of additional plans if the plans submitted fail to address specific potential effects to the identified historic properties.

iv. The FAA will distribute the revised plans to the Signatories and Invited Signatories to this Agreement for review and comment. Signatories and Invited Signatories will have fifteen (15) calendar days from the date of receipt to review and comment.

v. The FAA and SpaceX will take all comments into consideration when updating the revised plans. The FAA will coordinate a meeting with the Signatories and the Invited Signatories to resolve comments and review the updated plans. The FAA will share with all Signatories and Invited Signatories the comments of the others. If the FAA cannot resolve the comments, the FAA will follow the procedures under Stipulation X.b-d.

vi. The FAA will submit a final draft version of each plan to the Signatories and Invited Signatories to this Agreement for a five (5) business day review and written concurrence. If no written concurrence is received from the Signatories or Invited Signatories by the end of the 5-day review period, the FAA will proceed on the final draft version.

vii. The FAA will notify the Signatories and Invited Signatories of approval of any plans, and will provide copies of the final versions to Signatories and Invited Signatories.

viii. SpaceX has primary responsibility for implementation of approved plans, and the FAA has responsibility for the oversight of these actions.

ix. SpaceX is responsible for any additional permits and compliance (Federal, State, and local) beyond the authority of the PA.

IV. ASSESSMENT OF EFFECTS

a. The FAA will assess the effects on historic properties in the APE from implementing the actions specified in any plan associated with this Undertaking. The effects assessment will apply the Criteria of Adverse Effect, as described at 36 CFR § 800.5(a)(1).

Review process:

i. The FAA will present the determination of effects for each plan in a cover letter and distribute it with the associated plan to all Signatories and Invited Signatories to this Agreement for review and comment. The cover letter will include documentation that evidences how the FAA considered avoidance and minimization alternatives prior to making a final effect determination. Signatories and Invited Signatories will have thirty (30) calendar days from the date of receipt to review and comment.

ii. Within the 30-day review period, the FAA will coordinate a meeting with the Signatories and Invited Signatories to this Agreement to facilitate comments on the determinations of effects. The FAA will share with all Signatories and Invited Signatories the comments of the others.

iii. The FAA and SpaceX will take all comments into consideration. The FAA will coordinate a meeting with the Signatories and the Invited Signatories to resolve an objection to an effects determination. If the FAA cannot resolve the objection, the FAA will follow the procedures under Stipulation X.b–d.

iv. For each plan, the FAA will submit a final determination of effects in a cover letter with the final draft version of the associated plan to the Signatories and Invited Signatories to this Agreement for a five (5) business day review and written concurrence. If no written concurrence is received from the Signatories or Invited Signatories by the end of the 5-day review period, the FAA will proceed on the determination of effects.

v. If any Signatories and Invited Signatories provide the FAA with a written objection regarding a No Adverse Effect determination within the 5-day review period, the FAA will consult with the Signatories to resolve the objection. If the FAA cannot resolve the objection, the FAA will follow the procedures under Stipulation X.b–d.

b. If the FAA determines, through consultation, that an effect will be adverse, the FAA will resolve adverse effects to historic properties in accordance with the procedures under Stipulation V.

V. RESOLUTION OF ADVERSE EFFECTS

a. Adverse effects would be resolved through the consultation process outlined in 36 CFR § 800.6.

i. The FAA will consult with the Signatories, Invited Signatories and other consulting parties recognized by the FAA to seek ways to avoid or minimize adverse effects.

ii. After avoidance and minimization measures are agreed to by the Signatories and Invited Signatories, if an adverse effect remains, the FAA will execute an MOA(s) with the Signatories and Invited Signatories to document mitigation measures.

iii. The FAA will submit a copy of any executed MOA to the ACHP.

iv. The FAA will ensure that the Undertaking is carried out in accordance with the MOA(s).

VI. POST-REVIEW DISCOVERIES

a. Prior to the start of construction activities, SpaceX will develop an Unanticipated Discoveries Plan that will specify the exact procedures to be followed in the event that previously unidentified properties are discovered or unanticipated effects on historic properties are identified during implementation of the Project. The Unanticipated Discoveries Plan will be developed in consultation as described under Stipulation III.

VII. COORDINATION WITH OTHER FEDERAL REVIEWS

a. In the event that SpaceX applies for federal funding or approvals for the Undertaking from another agency and the Undertaking remains unchanged, such funding or approving agency may comply with Section 106 by agreeing in writing to the terms of this Agreement and notifying and consulting with Texas SHPO and ACHP. Any necessary modifications will be considered in accordance with Stipulation XI.

VIII. PROJECT CHANGES

a. The FAA will not change the Undertaking without first affording the parties (refer to Attachment F) to this Agreement the opportunity to review the proposed change and determine whether it will require revisions be made to this Agreement. If revisions are needed, the FAA will consult in accordance with Stipulation XI to make such revisions.

IX. MONITORING AND REPORTING

a. Each year following the execution of this Agreement, the FAA will provide the Signatories and Invited Signatories an annual report detailing work undertaken pursuant to its terms. The FAA will distribute the report to all parties (refer to Attachment F) to this Agreement at least fifteen (15) calendar days prior to the Annual Meeting (described below).

    i. The annual report will include scheduling changes proposed, any problems encountered, and any disputes and objections received in FAA's efforts to carry out the terms of this Agreement.

    ii. The annual report will include a section to be prepared by SpaceX of activities as they relate to compliance with the stipulations of this Agreement. The annual report will include the following:
        1) A description of the past year's efforts and anticipated upcoming efforts for identification, evaluation, mitigation, and protection of historic properties.
        2) An evaluation of the progress of mitigation activities.
        3) A description of any known or expected changes to the Undertaking.

b. Annual Meeting: For the life of this Agreement, the FAA will coordinate a meeting of the Signatories and Invited Signatories to be held each year in February or March, or another mutually agreed upon date, to discuss activities carried out pursuant to this Agreement during the preceding year and activities scheduled for the upcoming year.

   i. The FAA will evaluate the effectiveness of this Agreement and whether any amendments or changes are needed based on SpaceX's progress reports or project modifications and provide its evaluation to Signatories and Invited Signatories prior to the Annual Meeting.

   ii. The meeting will be held in a location agreed upon by consensus of the Signatories and Invited Signatories, and parties may participate by telephone if they so desire. The FAA will distribute minutes of the meeting to all Signatories and Invited Signatories within two weeks of the meeting.

X. DISPUTE RESOLUTION

a. Should any Signatory or Invited Signatory object to any plans or actions pursuant to this Agreement or the manner in which the terms of this Agreement are implemented, the objecting party will provide written notice to the FAA. The FAA will take the objection into account and consult, as needed, within ten (10) business days with the Signatories and Invited Signatories to resolve the objection. Copies of written objections will be submitted simultaneously to all Signatories.

b. If the FAA determines that the objection cannot be resolved, the FAA will forward all documentation relevant to the dispute to the ACHP and request that the ACHP provide its advice on the resolution of the objection. The ACHP will provide the FAA with its advice on the resolution of the objection within thirty (30) calendar days of receiving adequate documentation.

c. The FAA will prepare a written response that takes into account any timely advice or comments regarding the dispute from the ACHP, Signatories, and Invited Signatories and provide them with a copy of this written response. The FAA will then proceed according to its final decision.

d. Any ACHP comment provided in response to such a request will be taken into account by the FAA, in accordance with 36 CFR § 800.6(c)(2), with reference only to the subject of the dispute. All responsibilities to carry out actions under this Agreement that are not subject to the dispute will remain unchanged.

XI. DURATION, AMENDMENT, AND TERMINATION

a. This Agreement will become effective upon execution by the FAA, Texas SHPO, NPS, ACHP, SpaceX, USFWS, and TPWD, and will remain in effect for a term of

ten (10) years from its date of execution, at which time the FAA or SpaceX may seek to extend this Agreement for an additional period of time.

b. Any Signatory or Invited Signatory to this Agreement may request the other Signatories and Invited Signatories consider amending it, in which case the parties will consult to consider the proposed amendment(s). The amendment will be effective on the date a copy is signed by all of the Signatories and Invited Signatories.

c. If any Signatory or Invited Signatory to this Agreement determines that its terms will not or cannot be carried out, that party will immediately consult with the other parties to attempt to develop an amendment per Stipulation XI.b. If within thirty (30) calendar days (or another time period agreed to by all Signatories) an amendment cannot be reached, any Signatory or Invited Signatory may terminate the Agreement upon written notification to the other Signatories and Invited Signatories.

d. A year prior to the expiration of the Agreement, the Signatories and Invited Signatories will consult to determine whether the Agreement should be extended for a period to be determined. If the term of the Agreement is not extended through an amendment, then the Agreement will expire at the end of the duration period set forth in Stipulation XI.a.

e. Once the Agreement is terminated, and prior to work continuing on the Undertaking, the FAA must either execute a new Agreement pursuant to 36 CFR § 800.6, or request, take into account, and respond to the comments of the ACHP under 36 CFR § 800.7. The FAA will notify the Signatories and Invited Signatories as to the course of action it will pursue.

Execution of this Agreement by the FAA, Texas SHPO, NPS, ACHP, SpaceX, USFWS, and TPWD, and implementation of its terms by the Signatories and Invited Signatories, is evidence the FAA has taken into account the effects of the Undertaking on historic properties.

SIGNATORIES

FEDERAL AVIATION ADMINISTRATION

By: _____

Dr. George C Nield

Associate Administrator for Commercial Space Transportation

Date: 5/13/2014

TEXAS STATE HISTORIC PRESERVATION OFFICER

By: Mark Wolfe

Mark Wolfe

Date: 5/12/14

NATIONAL PARK SERVICE

By: Laura C. Joss

Acting for Sue E. Masica, Director, Intermountain Region

Date: May 22, 2014

ADVISORY COUNCIL ON HISTORIC PRESERVATION

By: John M. Fowler

John M. Fowler
Executive Director

Date: 5/16/14

INVITED SIGNATORIES

SPACE EXPLORATION TECHNOLOGIES CORP.



By: _____

Steven Davis
Director of Advanced Projects, Space Exploration Technologies

Date: May 15, 2014

UNITED STATES FISH AND WILDLIFE SERVICE

By: _____

Date: _____

TEXAS PARKS AND WILDLIFE DEPARTMENT

By: _____

Ross Melinchuk, Deputy Executive Director- Natural Resources

Date: May 20, 2014

ATTACHMENT A. PROJECT DESCRIPTION

As part of FAA's Proposed Action of issuing launch licenses and/or experimental permits to SpaceX, SpaceX would construct a vertical launch area and a control center area to support up to 12 commercial launch operations per year. The vehicles that would be launched include the Falcon 9, Falcon Heavy (up to two launches per year), and a variety of smaller reusable suborbital launch vehicles. Launch operations include not only launches, but also pre-flight activities such as mission rehearsals and static fire engine tests. SpaceX would be required to apply for the appropriate launch licenses and/or experimental permits to be issued by the FAA. SpaceX would be the exclusive user of the site.

The proposed vertical launch area is currently undeveloped and is located directly adjacent to the eastern terminus of SH 4 (Boca Chica Boulevard) and to Boca Chica State Park and Lower Rio Grande Valley National Wildlife Refuge lands. It is located approximately 3 miles north of the U.S/Mexico border on the Gulf Coast and approximately 5 miles south of Port Isabel and South Padre Island. Access to the area is from SH 4. Proposed facility and infrastructure construction at the vertical launch area would include an integration and processing hangar; a launch pad and stand with its associated flame duct; a water tower; lightning protection towers (four total); a retention basin for deluge water; propellant storage and handling areas; a workshop and office area; a warehouse for parts storage; and roads, parking areas, fencing, security, lighting, and utilities. The parcel where the vertical launch area would be located is 56.5 acres; however, development of the vertical launch area would only comprise approximately 20 acres.

The proposed control center would be located immediately adjacent to Boca Chica State Park and Boca Chica Village, approximately 2 miles west of the proposed vertical launch area and north of SH 4. Proposed facility and infrastructure construction at the control center area would include two launch control center buildings; two payload processing facilities; a launch vehicle processing hangar; two radio frequency transmitter/receivers; generators and diesel storage facilities; roads, parking areas, fencing, security, lighting, utilities; and a satellite fuels storage facility. In addition, new power lines would be installed underground in the SH 4 road right-of-way from the control center area to the vertical launch area.

The Falcon 9 is a medium-lift class launch vehicle with a gross lift-off weight of approximately 1,100,000 pounds (lbs) with an approximate length of 224 feet (ft). The Falcon 9 uses liquid oxygen (LOX) and highly refined kerosene, also known as rocket propellant-1 or refined petroleum-1 (RP-1), as propellants to carry payloads into orbit. The Falcon Heavy is a heavy-lift class launch vehicle with a gross lift-off weight of approximately 3,400,000 lbs. It has a width of 36 ft and an overall length of approximately 224 ft.

All Falcon 9 and Falcon Heavy launches would be expected to have payloads, including satellites or experimental payloads. In addition to standard payloads, the Falcon 9 and Falcon Heavy may also carry a capsule, such as the SpaceX Dragon capsule. Most payloads would be commercial; however, some could be Department of Defense payloads, National Aeronautics and Space Administration (or NASA) payloads, or a Federal contribution to a commercial payload. All launch trajectories would be to the east over the Gulf of Mexico.

During launch operations, access to the Boca Chica area, including SH 4 and Boca Chica State Park, would be closed to the general public for safety and security reasons (refer to Exhibit A-1). The closures would occur up to 12 times a year for a period of up to 15 hours each time, with 6 hours being the closure time for a nominal launch. The 15-hour closure period allows for potential aborts and contingencies. A closure for a wet dress rehearsal or static fire engine test would be shorter than a closure for a launch. Closures for a wet dress rehearsal or static fire engine test would typically be 3 hours or less. The total number of closures and closure hours for wet dress rehearsals, static fire engine tests, and actual launches would fall within SpaceX's proposed 12 launch operations per year or annual maximum of 180 hours of closure per year.

FAA LICENSES, PERMITS, REGULATIONS, AND APPROVALS

The FAA statutory and regulatory requirements pertaining to commercial launches and individual launch operators are described in 14 CFR Chapter III, Parts 400-450. Under the Proposed Action, SpaceX would be the exclusive user of the site. Therefore, SpaceX is not required to apply for and obtain a Launch Site Operator License (14 CFR Part 420). SpaceX could apply for and obtain the following types of licenses and/or experimental permits:

- Launch-Specific License — "authorizes a licensee to conduct one or more launches, having the same launch parameters, of one type of launch vehicle from one launch site" (14 CFR §Part 415.3[a]). A licensee's authorization to launch terminates upon completion of all launches authorized by the license or the expiration date stated in the license, whichever occurs first.
- Launch Operator License — "authorizes a licensee to conduct launches from one launch site, within a range of launch parameters, of launch vehicles from the same family of vehicles transporting specified classes of payloads" (14 CFR §Part 415.3[b]). A launch operator license remains in effect for five years from the date of issuance.
- Experimental Permit — "authorizes launch and reentry of a reusable suborbital rocket" (14 CFR §Part 437.7). An experimental permit lasts for one year from the date it is issued.

Only those activities and operations under the Proposed Action would be authorized and governed by the FAA through the above licenses and permit. These activities and operations include: construction of a vertical launch area and a control center area; operations to support up to 12 launches per year, including the temporary closure of designated offshore and onshore areas; and the underground installation of a new power line in the right-of-way of SH 4 between the vertical launch and control center areas.

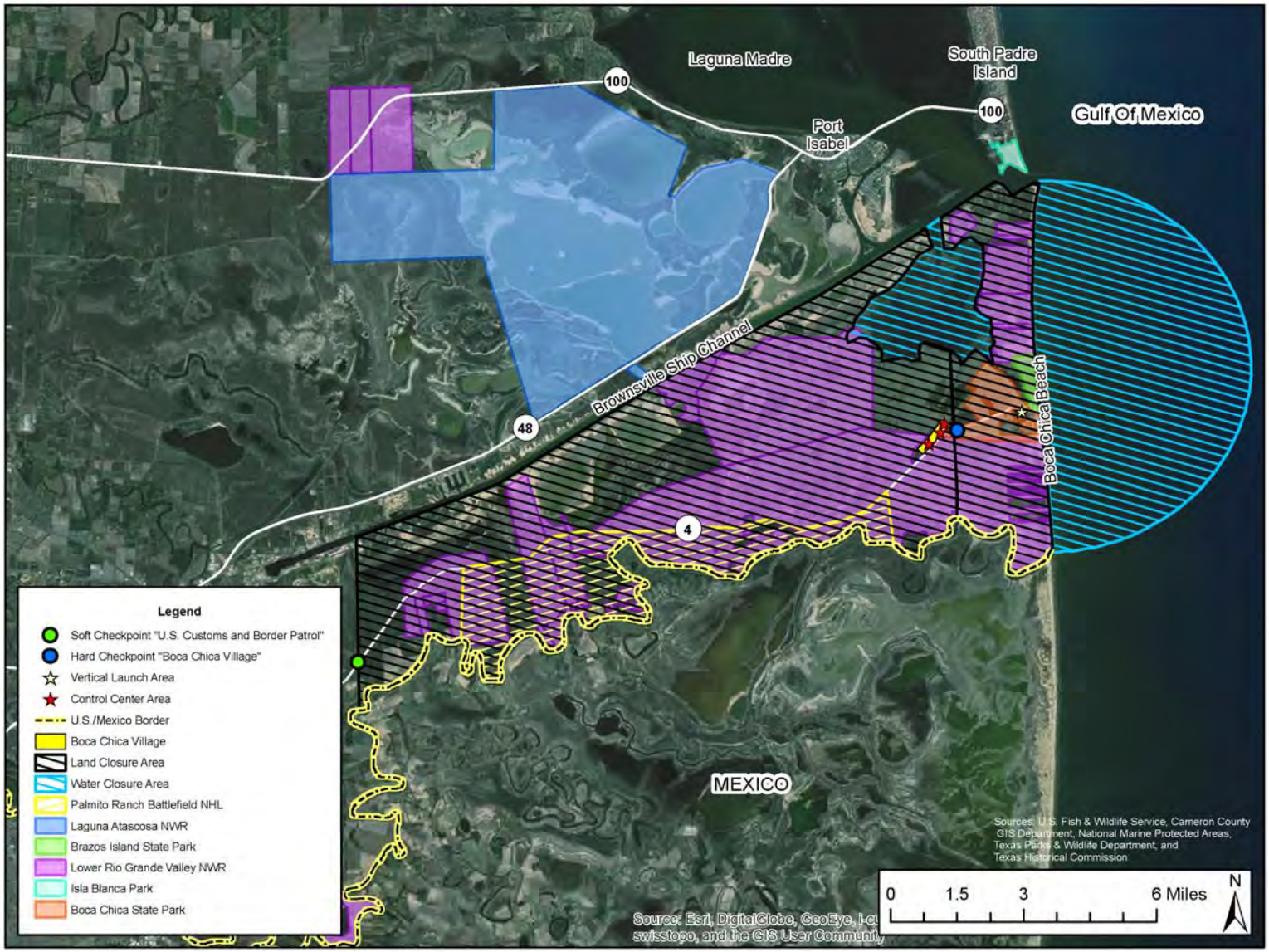

Exhibit A-1. Proposed Launch Operations Closure Areas

ATTACHMENT B. AREA OF POTENTIAL EFFECTS

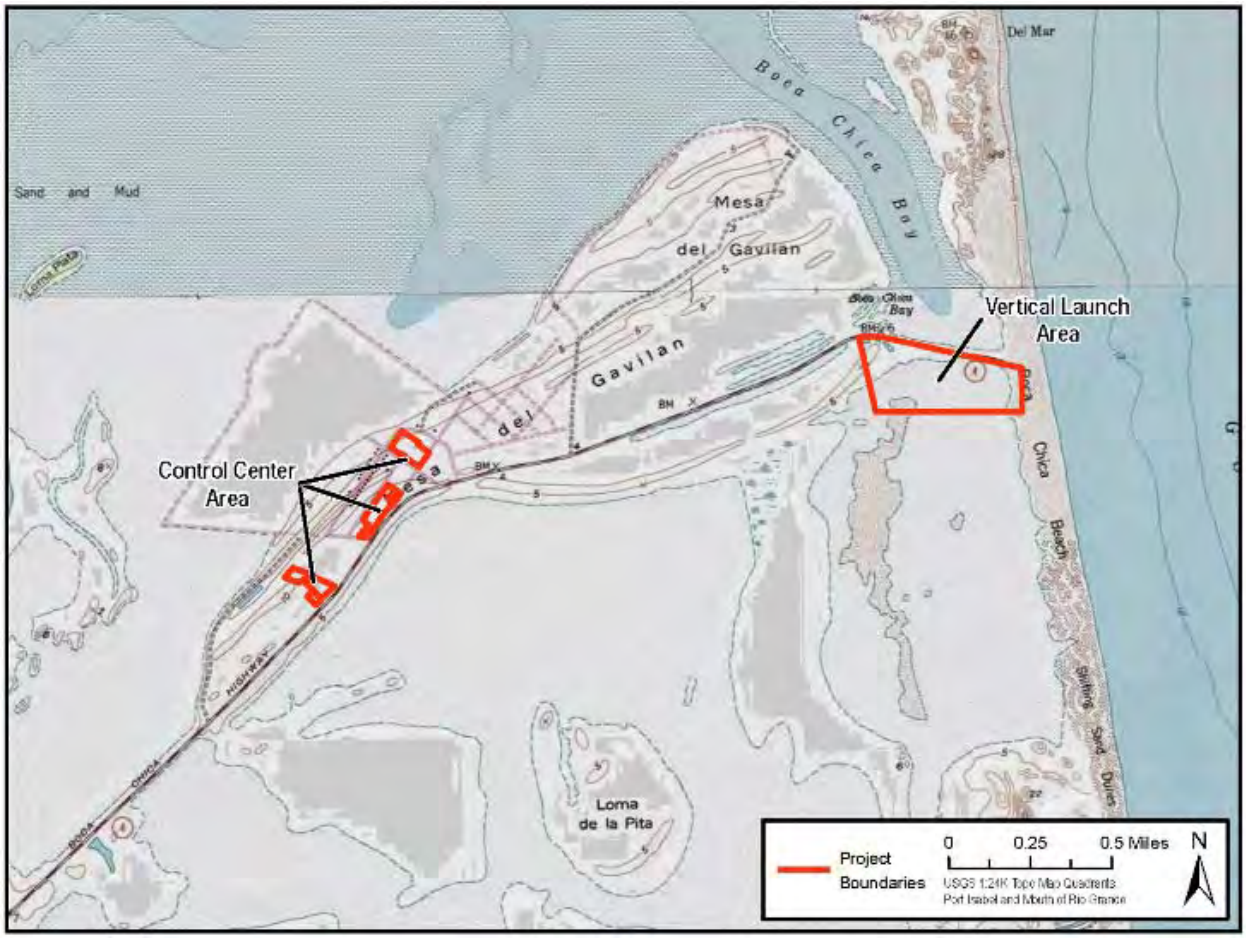

Exhibit B-1. Area of Potential Effects for Direct Effects

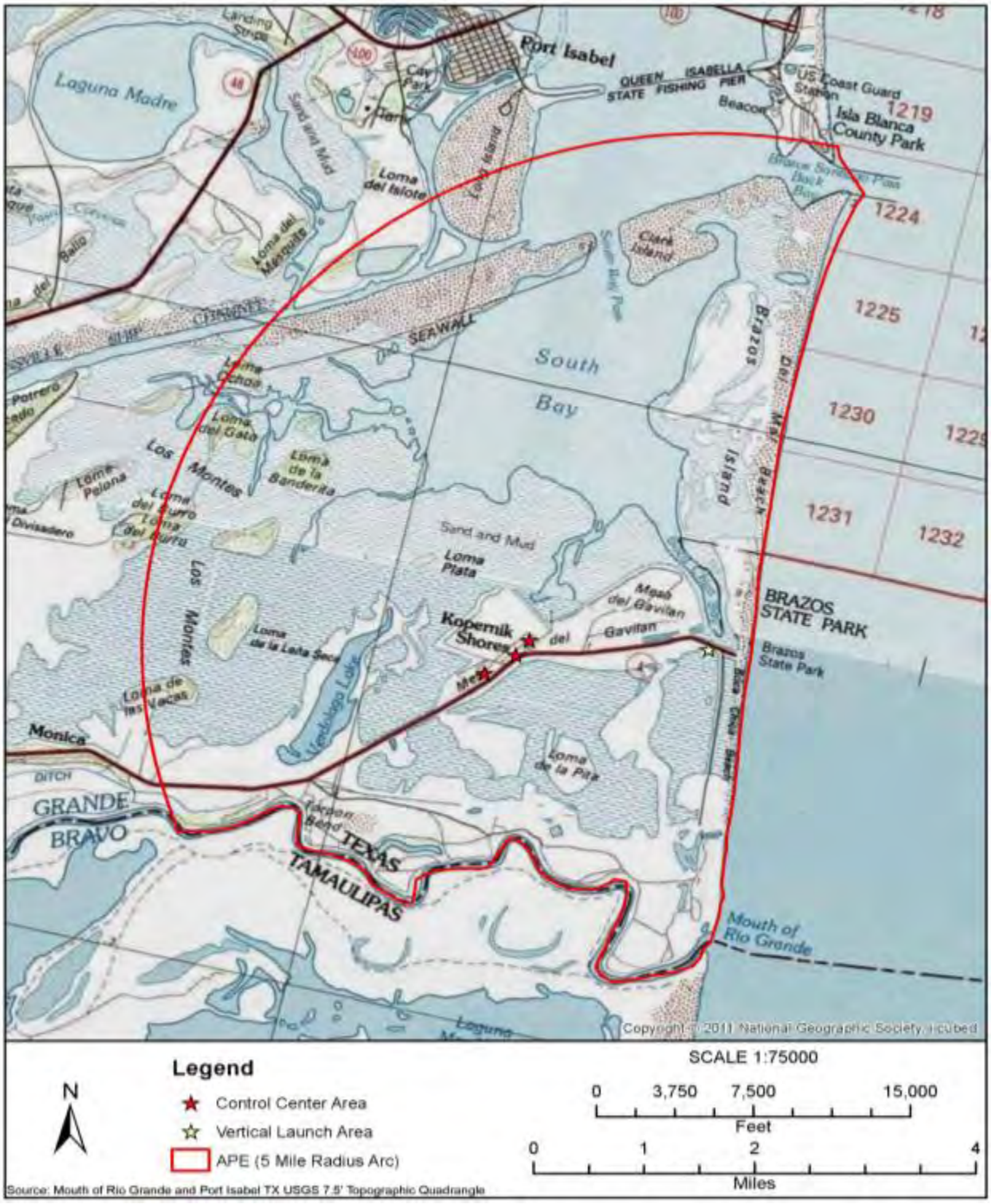

Exhibit B-2. Area of Potential Effects for Indirect Effects

ATTACHMENT C. HISTORIC PROPERTIES IDENTIFIED IN THE DIRECT AND INDIRECT APEs

Summary Table of Historic Properties Identified in the APEs for the SpaceX Texas Launch Site.							
Resource #	**Resource Name**	**Site Type**	**National Register Eligibility**	**Historic Value**	**FAA Determination of Effect[1]**		
					Direct	**Indirect**	**Secondary (Induced)**
41CF93	Palmito Ranch Battlefield NHL	Civil War Battlefield	Listed; Designated an NHL	Landscape, setting, and feeling that contribute to the integrity and interpretation of the site; intact physical remains (e.g., features, artifacts, datable materials), including potential subsurface remains	No effect	Adverse effect from visual intrusions to setting and feeling associated with construction	Adverse effect from increased vehicular traffic (i.e., fuel and water trucks) associated with the construction and operation of the facility, as well as from increased foot and vehicular traffic associated with anticipated influx in visitors to the area
41CF4	Brazos Santiago Depot	1840-1870 Military depot and camp	Listed	Intact physical remains (e.g., features, artifacts, datable materials), including potential subsurface remains	No effect	No effect	No effect
41CF6	White's Ranch	Civil War camp	Eligible	Intact physical remains (e.g., features, artifacts, datable materials), including potential subsurface remains	No effect	No effect	No effect

Summary Table of Historic Properties Identified in the APEs for the SpaceX Texas Launch Site.							
Resource #	**Resource Name**	**Site Type**	**National Register Eligibility**	**Historic Value**	**FAA Determination of Effect[1]**		
					Direct	**Indirect**	**Secondary (Induced)**
41CF7	Clarksville	1847-1874 Townsite	Eligible	Intact physical remains (e.g., features, artifacts, datable materials), including potential subsurface remains	No effect	No effect	No effect
41CF19	--	Prehistoric camp	Potentially Eligible	Intact physical remains (e.g., features, artifacts, datable materials), including potential subsurface remains	No effect	No effect	No effect
41CF117.1	Cypress Pilings	1846 Floating bridge pilings	Eligible	Intact physical remains (e.g., features, artifacts, datable materials)	Potential adverse effect from vibration associated with launch operations	No effect	Adverse effect from increased foot and vehicular traffic associated with anticipated influx in visitors to the area
41CF117.2	Pilings Site	Historic campsite	Treated as Eligible	Intact physical remains (e.g., features, artifacts, datable materials)	No effect	No effect	Adverse effect from increased foot and vehicular traffic associated with anticipated influx in visitors to the area
41CF125	Boca Chica Beach Wreck	Shipwreck	Potentially Eligible	Intact physical remains (e.g., features, artifacts, datable materials), including potential subsurface remains	No adverse effect	No effect	No effect

Summary Table of Historic Properties Identified in the APEs for the SpaceX Texas Launch Site.							
Resource #	**Resource Name**	**Site Type**	**National Register Eligibility**	**Historic Value**	**FAA Determination of Effect[1]**		
					Direct	**Indirect**	**Secondary (Induced)**
41CF184	Boca Chica #2	Shipwreck	Potentially Eligible	Intact physical remains (e.g., features, artifacts, datable materials), including potential subsurface remains	No adverse effect	No effect	No effect
No number	Palmetto Pilings	1865 Railroad Pilings	Eligible	Intact physical remains (e.g., features, artifacts, datable materials)	Potential adverse effect from vibration associated with launch operations	No effect	Adverse effect from increased foot and vehicular traffic associated with anticipated influx in visitors to the area
No number	Palmetto Pilings Historical Marker	1936 Granite Marker	Eligible	Associated with the long-standing tradition and one of the largest formal programs of commemoration in the state of Texas	Potential adverse effect from vibration associated with launch operations	No adverse effect	Adverse effect from increased foot and vehicular traffic associated with anticipated influx in visitors to the area

Note: 1 Direct Effect = impacts that would have an immediate effect on the physical character of a property, and are primarily associated with construction activities; Indirect Effect = impacts such as visual or auditory that affect more aesthetic aspects of a historic property (e.g., setting); Secondary (Induced) Effect = impacts that are caused by the Undertaking, but occur later in time and/or farther removed in distance, but are foreseeable.

ATTACHMENT D. SPACEX TEXAS LAUNCH SITE PLANS

1. In collaboration with the FAA, SpaceX is developing the following plans:
    a. Lighting Management Plan
    b. Facility Design Plan
    c. Vibration Monitoring Plan
    d. Unanticipated Discoveries Plan
    e. Hurricane Plan
    f. Construction Stormwater Pollution Prevention Plan
    g. Operation Stormwater Pollution Prevention Plan
    h. Spill Pollution and Prevention Plan
    i. Hazardous Materials Emergency Response Plan
    j. Emergency Action Plan
    k. Security Plan

ATTACHMENT E. SUMMARY OF TRIBAL CONSULTATION AND INVOLVEMENT DURING ENVIRONMENTAL IMPACT STATEMENT DEVELOPMENT AND SECTION 106 PROCESSES FOR THE PROPOSED SPACEX TEXAS LAUNCH SITE

The FAA identified the following five tribes as having religious or cultural affiliation with the Project area: Apache Tribe of Oklahoma, Comanche Nation of Oklahoma, Kiowa Tribe of Oklahoma, Mescalero Apache Tribe of New Mexico, and Tonkawa Tribe of Oklahoma. The FAA provided each of them with the following information and opportunities to participate in the Section 106 process:

- The FAA sent consultation letters (dated 2 May 2012) describing the Undertaking and inviting tribes to participate in consultation. The FAA received no response from any of the tribes.

- The FAA sent the *Draft Environmental Impact Statement, SpaceX Texas Launch Site* inviting tribes to comment on the findings of effects on cultural resources. The FAA received no response from any of the tribes.

ATTACHMENT F: CONSULTING PARTY CONTACTS

For the life of this Agreement, each party will provide updates to the list of contacts below, as needed, to the FAA. The FAA will distribute the updated list of contacts to all parties within five (5) business days of receipt of the update.

Signatories

Stacey Zee
Environmental Protection Specialist
Federal Aviation Administration
Office of Commercial Space Transportation
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Washington, DC 20591
(202) 267-9305

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Space Exploration Technologies Corp.
(SpaceX)
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Theresa A. de la Garza
Project Reviewer – South Texas Region
Division of Architecture
Texas Historical Commission
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Rob Jess
Project Leader
U.S. Fish and Wildlife Service
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Environmental Protection Specialist/Regional
S106 Coordinator
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Intermountain Region
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Ross Melinchuk
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Najah Duvall-Gabriel
Historic Preservation Specialist
Advisory Council on Historic Preservation
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Washington, DC 20004
(202) 606-8585

U.S. Department
of Transportation
Federal Aviation Administration

Office of the Associate Administrator for
Commercial Space Transportation

800 Independence Ave., SW.
Washington, DC 20591

MAR 21 2013

Mark Wolfe
Executive Director
State Historic Preservation Officer
Texas Historic Commission
108 W 16th Street
Austin, Texas 78701

Dear Mr. Wolfe:

As you are aware, the Federal Aviation Administration Office of Commercial Space Transportation (FAA/AST) is preparing an Environmental Impact Statement (EIS) in accordance with the National Environmental Policy Act to assess the potential environmental impacts of the proposed issuance of launch licenses and/or experimental permits to Space Exploration Technologies Corp. (SpaceX) for operating the Falcon 9 and Falcon Heavy vehicle launch programs from a private site located in Cameron County, Texas. The vehicles that would be launched include the Falcon 9, Falcon Heavy (up to two launches per year), and a variety of smaller reusable suborbital launch vehicles. Under this proposal, SpaceX would construct a vertical launch area and a control center area to support up to 12 commercial launches per year. The proposed vertical launch area is currently undeveloped and is located directly adjacent to the eastern terminus of Texas State Highway 4 (Boca Chica Boulevard) and approximately 5 miles south of Port Isabel and South Padre Island. The proposed control center would be located immediately adjacent to Boca Chica Village, approximately 2 miles west of the proposed vertical launch area and north of Boca Chica Boulevard. Further details of the Proposed Action are described in the Preliminary Draft EIS (PDEIS) that was provided to you on March 4, 2013.

Section 4(f) of the Department of Transportation Act provides that the Secretary of Transportation will not approve any program or project that requires the use of any publicly owned land from a public park, recreation area, or wildlife or waterfowl refuge of national, state, or local significance, or land from any publicly or privately owned historic site of national, state, or local significance, unless there is no feasible and prudent alternative to the use of such land or such program and the project includes all possible planning to minimize harm resulting from the use. For historic sites, Section 4(f) does not apply to archaeological resources that are important chiefly for data recovery. As the Texas State Historic Preservation Office, the Texas Historical Commission has jurisdiction over Section 4(f) properties that are publicly or privately owned historic sites of national, state, or local significance. Therefore, the purposes of this letter are to: notify you of the FAA/AST's determination on the applicability of Section 4(f) to historic archaeological sites located near the proposed launch facility; notify you of our Section

4(f) determination for the properties in which Section 4(f) applies; and to request your concurrence on both determinations.

Eleven historic sites are located near the proposed launch site and control center and are being considered under Section 106 of the National Historic Preservation Act (NHPA). Of these, the FAA/AST has concluded that seven are archaeological sites that are important chiefly for data recovery, and as such, are not applicable to Section 4(f). These seven sites include a prehistoric site, four historic sites, and two historic shipwreck sites that have been evaluated as eligible for the National Register of Historic Places because they have the potential to answer important research questions. None of the sites contain intact structural remains that would warrant them being considered eligible for the National Register under any other criteria. They are important chiefly because of the information they could provide, and not because they contain any structural remains that would be worthy of preservation in place. Therefore, of the 11 historic sites being considered under Section 106, the FAA/AST has determined that the following four historic sites are protected under Section 4(f):

- Palmito Ranch Battlefield National Historic Landmark (41CF93)
- 1846 Cypress Pilings (41CF117.1)
- 1865 Palmetto Pilings (no site number)
- Palmetto Pilings Texas Centennial Historical Marker (no site number)

The FAA/AST evaluated the potential impacts on these four properties to determine if the properties would be "used" by the Proposed Action's operational or construction activities. "Use" in the Section 4(f) context has a very specific meaning and could fall into one of three categories: physical use, temporary occupancy, or constructive use. With respect to physical use of a Section 4(f) property, a *de minimis* impact determination may be made if, after taking into account any measures to minimize harm, the result is a determination that a project would not adversely affect the activities, features, or attributes qualifying the property for protection under Section 4(f). A *de minimis* impact determination does not require an analysis and finding that there are no feasible and prudent alternatives or a finding that all possible planning has been done to minimize harm. When there is no physical use and no temporary occupancy, but there is the possibility of constructive use, the FAA must determine if the potential impacts would substantially impair the 4(f) property. Substantial impairment occurs when the protected activities, features, or attributes of the Section 4(f) property are substantially diminished.

Construction

Construction of the proposed facilities would not involve the physical use (i.e., actual taking of lands) or temporary occupancy of any of the properties listed above; all land where construction activities would occur is privately owned and would be purchased or leased by SpaceX. Construction would occur over a 24-month period. Construction activities would result in some noise, but it would be short-term and temporary. The noise would not substantially limit the use or diminish the quality of any of the properties, such that their value is impaired. Therefore, construction activities would not constitute a constructive use of the four properties listed above.

Construction of the vertical launch and control center areas would result in indirect visual effects on the setting of one of the four historic sites: the Palmito Ranch Battlefield National Historic Landmark (NHL). The setting, an open, gently rolling plain of dunes and tidal flats with lomas, is one of the

primary attributes that contributes to the significance of the NHL. Little development has occurred in this area, and what has been developed largely comprises one-story residences. The 250-foot tall water tower and the up to 200-foot tall lightning protection towers would be visible from much of the NHL (refer to Exhibit 4.4-1 in the PDEIS). However, these facilities would have a small profile on the horizon due to the relative distance of the vertical launch area from the NHL (approximately 3 miles from its eastern end). To minimize the visibility of the facilities in the landscape, SpaceX would paint the water tower, lightning towers, and other launch facilities as necessary a non-reflective, light tan color. Additional measures to minimize harm may be developed in consultation with your office and consulting parties in accordance with the Section 106 process. Taking this into account, the FAA/AST concluded that construction of the launch facilities is unlikely to cause a substantial diminishment of setting to the level of severity that would cause the Palmito Ranch Battlefield to no longer qualify as an NHL. Therefore, the FAA/AST determined that construction activities would not constitute a constructive use of the NHL.

The FAA/AST also considered potential reasonably foreseeable future effects from the Proposed Action on the four properties. The proposed launch campaigns would be expected to attract tourists to the area to view a launch event. The presence of increased numbers of people would bring greater attention to the historic sites listed above. The launches may result in increased traffic and parking along State Highway 4. During launches, however, public access to State Highway 4 would be closed for safety and security reasons at a pre-defined checkpoint and SpaceX would monitor the area to the east of the checkpoint, which encompasses the eastern third of the NHL and the locations of the pilings and historical marker, to ensure that the area is clear (refer to Exhibit 2-1 in the PDEIS). SpaceX would educate the public on safe and lawful areas where they could watch launches. The presence of the launch facility may attract visitors to the area between launch campaigns. Concerning entry and use of the Palmito Ranch Battlefield, all visitors would be subject to the same rules and regulations year-round. Increased foot or vehicular traffic, particularly from off-road vehicles, could impact both pilings sites. The FAA/AST will be developing measures to minimize harm to the pilings in consultation with your office and consulting parties in accordance with the Section 106 process. The FAA/AST has determined that increased visitation to the area to view launches or the launch facility would not result in induced impacts that would substantially impair the activities, features, or attributes of the four properties listed above, and thus, would not result in a constructive use under Section 4(f).

Operation

The FAA/AST reviewed modeled noise levels from the vertical launch of the Falcon 9 and Falcon Heavy vehicles to determine whether there would be significant noise increases such that the value of the four above-listed Section 4(f) properties in terms of their respective significance and quality would be substantially impaired, thus constituting a constructive use of the Section 4(f) properties. The noise modeling demonstrates that both sets of pilings and the Palmetto Pilings Historical Marker, but not the Palmito Ranch Battlefield NHL, would be within the DNL 65 dBA noise contour, the standard used by the FAA to measure a significant noise impact, for the three launch event scenarios that were modeled based on the number of daytime and nighttime launch events (refer to Exhibit 4.1-1 in the PDEIS). The proposed launches would produce short-term high levels of noise that would last approximately 3 to 5 minutes for each launch, and there would be no more than 12 launches per year. When launches are not occurring (i.e., approximately 97 percent of the year), the normal quiet setting of the properties would persist. Because of the short-term and intermittent nature of the noise generated from launches, the

FAA/AST determined the Proposed Action would not substantially diminish any of the attributes that contribute to the significance of the properties. Therefore, the FAA/AST determined that the noise generated by the launches would not constitute a constructive use of the four Section 4(f) properties listed above.

In addition to noise, the FAA/AST reviewed modeled noise levels from the vertical launch of the Falcon 9 and Falcon Heavy vehicles to assess the potential for vibrations caused by launch operations under the Proposed Action. According to the noise modeling, the probability of noise-induced structural vibration damage to structures is 1 in 100 within areas exposed to unweighted noise levels of 119 dB or greater, which for the Falcon 9 is within 3.4 miles of the vertical launch area and 6.4 miles for the Falcon Heavy. Of the four Section 4(f) properties listed above, both sets of pilings and the Palmetto Pilings Historical Marker would be susceptible to noise-induced vibrations from launches. The three sites are northwest of the east end of the vertical launch area, within 2,000 feet of where the launch pad and associated flame duct would be positioned. In fact, all three sites are within the 135 dB contour, increasing the chance of damage to the resources. Potential damage could include displacement or breakage of the structural features of the pilings, and cracking of the marker's foundation or the marker toppling over. The FAA/AST will develop mitigation measures to mitigate and minimize potential harm in consultation with your office and consulting parties in accordance with the Section 106 process. As such, the FAA/AST concluded that operations of the launch facility are unlikely to cause a substantial impairment to the historical integrity of the Cypress Pilings, Palmetto Pilings, or Palmetto Pilings Historical Marker, and thus, would not constitute a constructive use of any of these properties.

If your office has no objection to the Section 4(f) property determinations stated above, please provide written concurrence by April 21, 2013 to Ms. Stacey M. Zee, Environmental Specialist, 800 Independence Ave., SW, Suite 325, Washington, DC 20591. If you have any questions or concerns, please contact Ms. Zee at 202-267-9305 or via e-mail at Stacey.Zee@faa.gov.

Sincerely,

Michael J. McElligott
Manager, Space Systems Development Division

cc Kim Barker
Najah Duvall-Gabriel, Advisory Council on Historic Preservation

U.S. Department
of Transportation
**Federal Aviation
Administration**

Office of the Associate Administrator for
Commercial Space Transportation

800 Independence Ave., SW.
Washington, DC 20591

MAR 2 1 2013

RECEIVED
APR 01 2013
Texas Historical Commission

Mark Wolfe
Executive Director
State Historic Preservation Officer
Texas Historic Commission
108 W 16th Street
Austin, Texas 78701

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4(f) determination for the properties in which Section 4(f) applies; and to request your concurrence on both determinations.

Eleven historic sites are located near the proposed launch site and control center and are being considered under Section 106 of the National Historic Preservation Act (NHPA). Of these, the FAA/AST has concluded that seven are archaeological sites that are important chiefly for data recovery, and as such, are not applicable to Section 4(f). These seven sites include a prehistoric site, four historic sites, and two historic shipwreck sites that have been evaluated as eligible for the National Register of Historic Places because they have the potential to answer important research questions. None of the sites contain intact structural remains that would warrant them being considered eligible for the National Register under any other criteria. They are important chiefly because of the information they could provide, and not because they contain any structural remains that would be worthy of preservation in place. Therefore, of the 11 historic sites being considered under Section 106, the FAA/AST has determined that the following four historic sites are protected under Section 4(f):

- Palmito Ranch Battlefield National Historic Landmark (41CF93)
- 1846 Cypress Pilings (41CF117.1)
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Construction of the vertical launch and control center areas would result in indirect visual effects on the setting of one of the four historic sites: the Palmito Ranch Battlefield National Historic Landmark (NHL). The setting, an open, gently rolling plain of dunes and tidal flats with lomas, is one of the

primary attributes that contributes to the significance of the NHL. Little development has occurred in this area, and what has been developed largely comprises one-story residences. The 250-foot tall water tower and the up to 200-foot tall lightning protection towers would be visible from much of the NHL (refer to Exhibit 4.4-1 in the PDEIS). However, these facilities would have a small profile on the horizon due to the relative distance of the vertical launch area from the NHL (approximately 3 miles from its eastern end). To minimize the visibility of the facilities in the landscape, SpaceX would paint the water tower, lightning towers, and other launch facilities as necessary a non-reflective, light tan color. Additional measures to minimize harm may be developed in consultation with your office and consulting parties in accordance with the Section 106 process. Taking this into account, the FAA/AST concluded that construction of the launch facilities is unlikely to cause a substantial diminishment of setting to the level of severity that would cause the Palmito Ranch Battlefield to no longer qualify as an NHL. Therefore, the FAA/AST determined that construction activities would not constitute a constructive use of the NHL.

The FAA/AST also considered potential reasonably foreseeable future effects from the Proposed Action on the four properties. The proposed launch campaigns would be expected to attract tourists to the area to view a launch event. The presence of increased numbers of people would bring greater attention to the historic sites listed above. The launches may result in increased traffic and parking along State Highway 4. During launches, however, public access to State Highway 4 would be closed for safety and security reasons at a pre-defined checkpoint and SpaceX would monitor the area to the east of the checkpoint, which encompasses the eastern third of the NHL and the locations of the pilings and historical marker, to ensure that the area is clear (refer to Exhibit 2-1 in the PDEIS). SpaceX would educate the public on safe and lawful areas where they could watch launches. The presence of the launch facility may attract visitors to the area between launch campaigns. Concerning entry and use of the Palmito Ranch Battlefield, all visitors would be subject to the same rules and regulations year-round. Increased foot or vehicular traffic, particularly from off-road vehicles, could impact both pilings sites. The FAA/AST will be developing measures to minimize harm to the pilings in consultation with your office and consulting parties in accordance with the Section 106 process. The FAA/AST has determined that increased visitation to the area to view launches or the launch facility would not result in induced impacts that would substantially impair the activities, features, or attributes of the four properties listed above, and thus, would not result in a constructive use under Section 4(f).

Operation

The FAA/AST reviewed modeled noise levels from the vertical launch of the Falcon 9 and Falcon Heavy vehicles to determine whether there would be significant noise increases such that the value of the four above-listed Section 4(f) properties in terms of their respective significance and quality would be substantially impaired, thus constituting a constructive use of the Section 4(f) properties. The noise modeling demonstrates that both sets of pilings and the Palmetto Pilings Historical Marker, but not the Palmito Ranch Battlefield NHL, would be within the DNL 65 dBA noise contour, the standard used by the FAA to measure a significant noise impact, for the three launch event scenarios that were modeled based on the number of daytime and nighttime launch events (refer to Exhibit 4.1-1 in the PDEIS). The proposed launches would produce short-term high levels of noise that would last approximately 3 to 5 minutes for each launch, and there would be no more than 12 launches per year. When launches are not occurring (i.e., approximately 97 percent of the year), the normal quiet setting of the properties would persist. Because of the short-term and intermittent nature of the noise generated from launches, the

FAA/AST determined the Proposed Action would not substantially diminish any of the attributes that contribute to the significance of the properties. Therefore, the FAA/AST determined that the noise generated by the launches would not constitute a constructive use of the four Section 4(f) properties listed above.

In addition to noise, the FAA/AST reviewed modeled noise levels from the vertical launch of the Falcon 9 and Falcon Heavy vehicles to assess the potential for vibrations caused by launch operations under the Proposed Action. According to the noise modeling, the probability of noise-induced structural vibration damage to structures is 1 in 100 within areas exposed to unweighted noise levels of 119 dB or greater, which for the Falcon 9 is within 3.4 miles of the vertical launch area and 6.4 miles for the Falcon Heavy. Of the four Section 4(f) properties listed above, both sets of pilings and the Palmetto Pilings Historical Marker would be susceptible to noise-induced vibrations from launches. The three sites are northwest of the east end of the vertical launch area, within 2,000 feet of where the launch pad and associated flame duct would be positioned. In fact, all three sites are within the 135 dB contour, increasing the chance of damage to the resources. Potential damage could include displacement or breakage of the structural features of the pilings, and cracking of the marker's foundation or the marker toppling over. The FAA/AST will develop mitigation measures to mitigate and minimize potential harm in consultation with your office and consulting parties in accordance with the Section 106 process. As such, the FAA/AST concluded that operations of the launch facility are unlikely to cause a substantial impairment to the historical integrity of the Cypress Pilings, Palmetto Pilings, or Palmetto Pilings Historical Marker, and thus, would not constitute a constructive use of any of these properties.

If your office has no objection to the Section 4(f) property determinations stated above, please provide written concurrence by April 21, 2013 to Ms. Stacey M. Zee, Environmental Specialist, 800 Independence Ave., SW, Suite 325, Washington, DC 20591. If you have any questions or concerns, please contact Ms. Zee at 202-267-9305 or via e-mail at Stacey.Zee@faa.gov.

Sincerely,

Michael J. McElligott
Manager, Space Systems Development Division

CONCUR
by _____
for Mark Wolfe
State Historic Preservation Officer
Date 4/22/2013
THC Track # 201300678

cc Kim Barker
Najah Duvall-Gabriel, Advisory Council on Historic Preservation

U.S. Department
of Transportation
**Federal Aviation
Administration**

Office of the Associate Administrator for
Commercial Space Transportation

800 Independence Ave., SW.
Washington, DC 20591

MAR 21 2013

Cheryl Eckhardt
Environmental Compliance Specialist
National Park Service
Intermountain Regional Office
12795 W. Alameda Parkway
Denver, Colorado 80225-0287

Dear Ms. Eckhardt:

As you are aware, the Federal Aviation Administration Office of Commercial Space Transportation (FAA/AST) is preparing an Environmental Impact Statement (EIS) in accordance with the National Environmental Policy Act to assess the potential environmental impacts of the proposed issuance of launch licenses and/or experimental permits to Space Exploration Technologies Corp. (SpaceX) for operating the Falcon 9 and Falcon Heavy vehicle launch programs from a private site located in Cameron County, Texas. The vehicles that would be launched include the Falcon 9, Falcon Heavy (up to two launches per year), and a variety of smaller reusable suborbital launch vehicles. Under this proposal, SpaceX would construct a vertical launch area and a control center area to support up to 12 commercial launches per year. The proposed vertical launch area is currently undeveloped and is located directly adjacent to the eastern terminus of Texas State Highway 4 (Boca Chica Boulevard) and approximately 5 miles south of Port Isabel and South Padre Island. The proposed control center would be located immediately adjacent to Boca Chica Village, approximately 2 miles west of the proposed vertical launch area and north of Boca Chica Boulevard. Further details of the Proposed Action are described in the Preliminary Draft EIS (PDEIS) that was provided to you on January 4, 2013.

Section 4(f) of the Department of Transportation Act provides that the Secretary of Transportation will not approve any program or project that requires the use of any publicly owned land from a public park, recreation area, or wildlife or waterfowl refuge of national, state, or local significance, or land from any publicly or privately owned historic site of national, state, or local significance, unless there is no feasible and prudent alternative to the use of such land or such program and the project includes all possible planning to minimize harm resulting from the use. Section 4(f) properties that are administered by the National Park Service and are located near the proposed vertical launch area and control center area include the Palmito Ranch Battlefield National Historic Landmark (NHL) (refer to Exhibit 3.1-1 in the PDEIS for the locations of the vertical launch and control center areas relative to the NHL). The purpose of this letter is to notify you of the FAA/AST's Section 4(f) determination for the NHL and to request your concurrence.

The FAA/AST evaluated the potential impacts on the NHL to determine if it would be "used" by the Proposed Action's construction or operational activities. "Use" in the Section 4(f) context has a very

specific meaning and could fall into one of three categories: physical use, temporary occupancy, or constructive use. With respect to physical use of a Section 4(f) property, a *de minimis* impact determination may be made if, after taking into account any measures to minimize harm, the result is a determination that a project would not adversely affect the activities, features, or attributes qualifying the property for protection under Section 4(f). A *de minimis* impact determination does not require an analysis and finding that there are no feasible and prudent alternatives or a finding that all possible planning has been done to minimize harm. When there is no physical use and no temporary occupancy, but there is the possibility of constructive use, the FAA must determine if the potential impacts would substantially impair the Section 4(f) property. Substantial impairment occurs when the protected activities, features, or attributes of the Section 4(f) property are substantially diminished.

Construction

Construction of the proposed facilities would not involve the physical use (i.e., actual taking of lands) or temporary occupancy of the NHL; all land where construction activities would occur is privately owned and would be purchased or leased by SpaceX. Construction would occur over a 24-month period. During this time, vehicular access to the NHL would not be restricted, and there would be no permanent, long-term access restrictions to the property. Construction activities would result in some noise from passing construction/delivery vehicles, but it would be short-term and temporary. The noise would not substantially limit the use or diminish the quality of the NHL, such that the value is impaired.

Construction of the vertical launch and control center areas would introduce new elements within the view shed of the NHL. The setting of the NHL is one of the primary attributes that contribute to its significance. Little development has occurred in this area, and what has been developed largely comprises one-story residences. The 250-foot tall water tower and the up to 200-foot tall lightning protection towers would be visible from much of the NHL (refer to Exhibit 4.4-1 in the PDEIS). However, these facilities would have a small profile on the horizon due to the relative distance of the vertical launch area from the NHL (approximately 3 miles from its eastern end). In addition, SpaceX would paint the water tower, lightning towers, and other launch facilities as necessary a non-reflective, light tan color to minimize the visibility of the facilities in the landscape. In consideration of this minimization measure and the relative distance of the facilities from the NHL, construction of the facilities is unlikely to result in a substantial diminishment of setting to the level of severity that would cause the Palmito Ranch Battlefield to no longer qualify as an NHL. Therefore, the FAA/AST determined that construction activities would not constitute a constructive use of the NHL.

Operation

During launches, public access to the eastern third of the NHL would be closed for safety and security reasons (refer to Exhibit 2-1 in the PDEIS). The closures would occur on an intermittent basis, up to 12 times per year, and would be temporary (up to 15 hours for each launch). SpaceX would notify the National Park Service in advance of launches so your agency could plan for the closures and avoid conflicts for special events or programs. The western two-thirds of the NHL, which comprises the core area of the battlefield, would be accessible to and open for use by the public during launches. Therefore, the closures would not substantially reduce the use or enjoyment of the NHL because impacts from closures during launches would be intermittent and temporary.

In addition to closures, the FAA/AST reviewed modeled noise levels from the vertical launch of the Falcon 9 and Falcon Heavy vehicles to determine whether there would be significant noise increases such that the value of the NHL in terms of its significance and quality would be substantially impaired, thus constituting a constructive use of the NHL. The Palmito Ranch Battlefield NHL is outside of the DNL 65 dBA noise contour, the standard used by the FAA to measure a significant noise impact, for the three launch event scenarios that were modeled based on the number of daytime and nighttime launch events (refer to Exhibit 4.1-1 in the PDEIS). The FAA/AST used additional noise metrics to consider the significance of noise impacts on a noise sensitive area such as the NHL. The sound levels from a single launch event of the Falcon 9 and Falcon Heavy were modeled at the east and west borders of the NHL (approximately 3.5 and 12.1 miles, respectively, from the vertical launch area). The results indicate that the 115 dBA OSHA hearing conservation guideline for single noise events would not be exceeded at either location of the NHL. Specifically, for a Falcon 9 launch, the model predicted maximum overall sound pressure levels of 105 dBA and 94 dBA at the eastern and western borders of the NHL, respectively. For a Falcon Heavy launch, the predicted overall sound pressure levels are 110 dBA and 99 dBA at the eastern and western borders of the NHL, respectively.

Another supplemental metric modeled the potential speech interference of a launch event using time above an overall sound pressure of 66 dBA. Outdoor speech interference can be expressed as a percentage of sentence intelligibility between two people standing at approximately 3.28 feet (1 meter) apart and speaking in a normal voice, with 95 percent speech intelligibility as the threshold for reliable communication. The model results indicate that speech intelligibility at the east and west borders of the NHL would drop below 95 percent for a period of less than 3 to 5 minutes per launch. To account for outdoor interpretive programs where the communication distance may be greater than 3.28 feet, time above an overall sound pressure of 52 dBA was used to estimate potential speech interference between two people standing 16.4 feet (5 meters) apart with normal voice levels, or 32.8 feet (10 meters) apart with raised voice levels. The results of this model indicate that speech intelligibility at either location in the NHL would drop below 95 percent for a period of up to 6 to 8 minutes per launch.

Operations of the vertical launch area and the control center areas under the Proposed Action would not substantially impair the use or significant attributes of the NHL because impacts from closures and noise during launches would be short-term and intermittent. Therefore, the FAA/AST determined that operational activities would not constitute a constructive use of the NHL.

If your office has no objection to the Section 4(f) property determinations stated above, please provide written concurrence by April 21, 2013 to Ms. Stacey M. Zee, Environmental Specialist, 800 Independence Ave., SW, Suite 325, Washington, DC 20591. If you have any questions or concerns, please contact Ms. Zee at 202-267-9305 or via e-mail at Stacey.Zee@faa.gov.

Sincerely,

Michael J. McElligott
Manager, Space Systems Development Division

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United States Department of the Interior

NATIONAL PARK SERVICE
INTERMOUNTAIN REGION
12795 West Alameda Parkway
PO Box 25287
Denver, Colorado 80225-0287

IN REPLY REFER TO:
ER-12/0245

APR 18 2013

VIA ELECTRONIC COPY ONLY - NO HARD COPY TO FOLLOW

Michael J. McElligott
Federal Aviation Administration
800 Independence Ave., SW
Washington, DC 20591

We received your letter dated March 21, 2013, regarding the Section 4(f) property determinations. At this time, we do not concur with the Section 4(f) determinations as presented. The proposed project will adversely affect the activities, features, and attributes of the Palmito Ranch Battlefield National Historic Landmark (NHL) for which we believe there has been insufficient exploration of measures to minimize harm to the NHL and analysis of feasible and prudent alternatives.

Impacts to NHL Features and Attributes

The historic setting (location, viewshed) of the NHL is a significant feature with a high degree of integrity. The permanent facilities (tower) will adversely impact this setting; however, the use of an appropriate paint color/coating should minimize the visibility of the facilities. A light tan paint color may be the most appropriate, but the National Park Service (NPS) requests the opportunity to review, suggest alternatives, and approve the final selection of color and/or coating.

The soundscape is also a significant feature of the NHL. The character and intensity of the noise resulting from the launches is in contradiction to the current setting. In addition, there will likely be increased noise from additional visitors to this area and their vehicles.

The artifacts and physical features of the NHL are also significant. The launches will greatly increase visitation into the area to witness the launches, resulting in higher potential for looting and damage to the site. Off-road driving, parking, temporary or established viewing areas, event "overflows," camping, human caused fires, cutting or loss of vegetation, security, human waste/sanitation, and trash are all areas of concern that should be addressed, in perhaps some sort of closure plan.

Impacts to Activities at the NHL

The NHL is open to visitors and day use is encouraged. We understand that portions of the NHL will be closed during launches which will deny public access to federal lands. While we may support these temporary closures to protect the features and attributes of the NHL during launches, we are also concerned about restricting access to public lands. In addition, we would like to have a better understanding about what effects a partial closure has on the NHL rather than a full closure. If only a portion of the NHL is closed, a foreseeable effect will be that visitors will seek areas that are open and possibly damage the open portions of the NHL.

We appreciate that Space X would notify the U.S. Fish and Wildlife Service (FWS) in advance of launches so that they could plan for the closures and avoid conflicts for special events or programs. Ideally, this measure would also extend to the NPS with regards to the NHL.

In conclusion, it appears that there may be a need for a closure plan to more specifically address these and other issues that may affect the NHL as well as other areas, such as the wildlife refuge, as a result of closures during the launches. We are aware that FWS is preparing comments in response to this letter as well, and we support their comments.

We request that all feasible and prudent alternatives be analyzed, and all possible measures to minimize harm to the NHL be considered. After further consultation with you on this matter specifically to address these concerns, we would be amenable to revisiting the Section 4(f) property determination. We appreciate the opportunity to respond to this letter. You may contact Cheryl Eckhardt at 303-969-2851 with any questions.

Sincerely,

John Wessels
Regional Director

cc:
Stephen Spencer, DOI
Thomas Flanagan, NPS, WASO-EQD
Patrick Walsh, NPS, WASO-EQD
Tammy Whittington, NPS-IMRO
Michael B. Edwards, NPS-IMRO
Cheryl Eckhardt, NPS-IMRO
Christine Whitacre, NPS-IMRO
Mark Spier, NPS-PAAL
Pat Clements, FWS

U.S. Department
of Transportation
**Federal Aviation
Administration**

Office of Commercial Space Transportation

800 Independence Ave., SW.
Washington, DC 20591

AUG 16 2013

Ms. Cheryl Eckhardt
Environmental Compliance Specialist
National Park Service
Intermountain Regional Office
12795 W. Alameda Parkway
Denver, Colorado 80225-0287

Dear Ms. Eckhardt:

Thank you for your comments provided in your letter of April 18, 2013 on our Section 4(f) determinations. This letter is in response to those comments based on discussions with the applicant and other stakeholders.

Impacts to NHL Features and Attributes

Per the National Historic Preservation Act (NHPA) Section 106, in consultation with the Texas State Historic Preservation Officer (SHPO) and the National Park Service (NPS), the FAA determined that the proposed construction of the SpaceX launch site would result in an adverse effect to the Palmito Ranch Battlefield National Historic Landmark (NHL) due to the introduction of new elements within its setting. To minimize and/or mitigate the adverse effects, the FAA is developing a Section 106 Memorandum of Agreement (MOA) in consultation with the SHPO, the Advisory Council on Historic Preservation, the NPS, and SpaceX. In addition, the FAA has invited the U.S. Fish and Wildlife Service and Texas Parks and Wildlife Department to be Invited Signatories to the MOA. The mitigation measures identified in the draft MOA include development of a preliminary Facility Design Plan, which would include proposed paint colors, schemes, or treatments for facilities visible from the NHL; an explanation of facility siting, including the launch pad and flame duct; and a Lighting Management Plan. As a Signatory to the MOA, the NPS would be provided the opportunity to review and comment on the Facility Design Plan and the final selection of the exterior color and/or treatment of the facilities.

As outlined in our Section 4(f) determination letter of March 21, 2013, and detailed in Sections 4.3.1.1 and 4.3.1.2 of the Draft Environmental Impact Statement (EIS), the FAA performed noise analyses using several different metrics to take in consideration the potential impacts of noise on the NHL. The FAA determined that the noise impact to the NHL's setting would not be significant. Despite the intensity of the noise, its impact would be short-term (a few minutes for each launch) and intermittent (up to 12 launches per year). In other words, the noise would not be constant and would not permanently increase the ambient noise level of the NHL. These reasons support the FAA's determination that operational activities under the Proposed Action would not constitute a constructive use under Section 4(f).

As documented in Section 4.12.1.2 of the Draft EIS, implementation of the Proposed Action could raise the potential for secondary (induced) impacts from increased visitation in the area at the scheduled times for the launches. Measures to minimize harm to the NHL, the 1936 Centennial Marker for the Palmetto Pilings, the 1846 Cypress Pilings (41CF117.1), the Pilings Camp Site (41CF117.2), and the 1865 Palmetto Pilings (no number) from increased pedestrian and vehicular traffic in the area are included in the Section 106 MOA. In addition, SpaceX is developing a Security Plan (includes pedestrian and vehicular traffic management), which describes the procedures for land closure and water closure areas. A current draft was sent to your office on July 29, 2013. SpaceX has agreed to the suggestion presented at the May 7, 2013 agency meeting to move the soft checkpoint to a location west of the U.S. Customs and Border Protection checkpoint (approximately 14–16 miles west of the State Highway 4 terminus at Boca Chica Beach; see Figure 1). This location would therefore result in full closure of the NHL for launches, thus reducing the potential for secondary (induced) impacts on the NHL from the viewing public during a launch. This would alleviate some of the concerns regarding the potential impacts from the viewing public harming or visiting the NHL during a launch.

Impacts to Activities at the NHL

As stated above, SpaceX has agreed to move the soft checkpoint to a location west of the U.S. Customs and Border Protection checkpoint (Figure 1). This location would therefore result in full closure of the NHL for launches. We believe this would address your concerns regarding potential impacts caused by increased visitors accessing the NHL to view the launches, as well as alleviate noise impacts to NHL visitors during launches. As indicated in our Section 4(f) determination letter of March 21, 2013, SpaceX will notify the NPS in advance of launches so your agency can plan for closures and avoid any conflicts for special events or programs. In addition, as stated above, SpaceX is developing a Security Plan which addresses access control during launch activities.

In conclusion, the FAA believes that NPS involvement in the MOA and the identification of measures to minimize harm, the new soft checkpoint location, as well as input into the Security Plan, will allow the NPS to support the FAA determination that construction and operational impacts under the Proposed Action would not constitute a constructive use of the NHL under Section 4(f).

We respectfully request that you provide written concurrence by September 20, 2013 to Ms. Stacey M. Zee, Environmental Specialist, Federal Aviation Administration, 800 Independence Ave., SW, Suite 325, Washington, DC 20591. If you have any questions or concerns, please contact Ms. Zee at 202-267-9305 or via e-mail at Stacey.Zee@faa.gov.

Sincerely,

Daniel Murray
Acting Manager, Space Systems Development Division

Enclosure: Figure 1– Proposed Launch Day Closure Areas

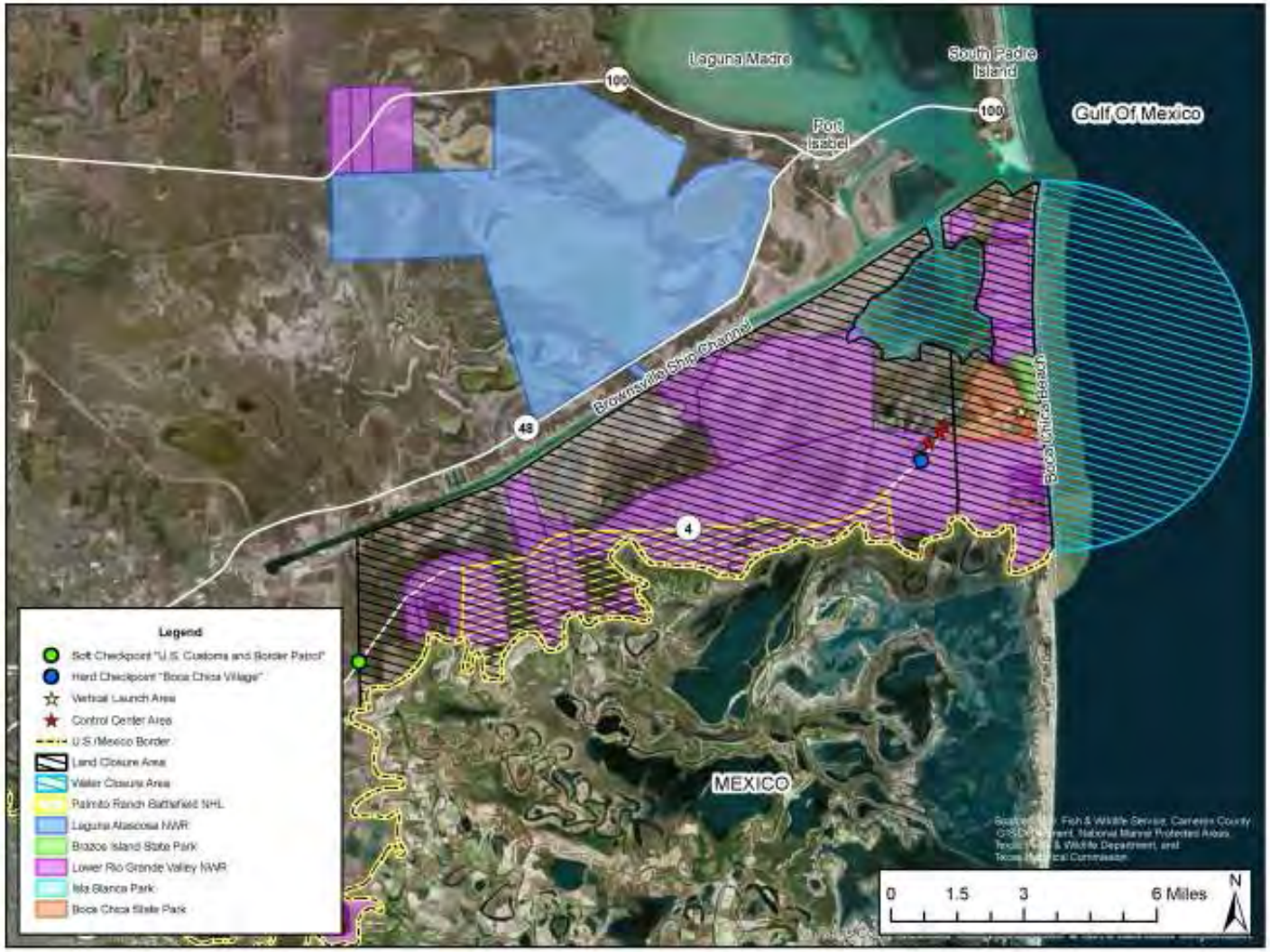

Figure 1. Proposed Launch Day Closure Areas

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U.S. Department
of Transportation
**Federal Aviation
Administration**

Office of the Associate Administrator for
Commercial Space Transportation

800 Independence Ave., SW.
Washington, DC 20591

MAR 21 2013

Allan Strand
Field Supervisor
US Fish and Wildlife Service
Ecological Services
c/o TAMU-CC, Campus Box 338
6300 Ocean Drive
Corpus Christi, Texas 78412

Dear Mr. Strand:

As you are aware, the Federal Aviation Administration Office of Commercial Space Transportation (FAA/AST) is preparing an Environmental Impact Statement (EIS) in accordance with the National Environmental Policy Act to assess the potential environmental impacts of the proposed issuance of launch licenses and/or experimental permits to Space Exploration Technologies Corp. (SpaceX) for operating the Falcon 9 and Falcon Heavy vehicle launch programs from a private site located in Cameron County, Texas. The vehicles that would be launched include the Falcon 9, Falcon Heavy (up to two launches per year), and a variety of smaller reusable suborbital launch vehicles. Under this proposal, SpaceX would construct a vertical launch area and a control center area to support up to 12 commercial launches per year. The proposed vertical launch area is currently undeveloped and is located directly adjacent to the eastern terminus of Texas State Highway 4 (Boca Chica Boulevard) and approximately 5 miles south of Port Isabel and South Padre Island. The proposed control center would be located immediately adjacent to Boca Chica Village, approximately 2 miles west of the proposed vertical launch area and north of Boca Chica Boulevard. Further details of the Proposed Action are described in the Preliminary Draft EIS (PDEIS) that was provided to you on January 4, 2013.

Section 4(f) of the Department of Transportation Act provides that the Secretary of Transportation will not approve any program or project that requires the use of any publicly owned land from a public park, recreation area, or wildlife or waterfowl refuge of national, state, or local significance, or land from any publicly or privately owned historic site of national, state, or local significance, unless there is no feasible and prudent alternative to the use of such land or such program and the project includes all possible planning to minimize harm resulting from the use. Section 4(f) properties that are managed by the U.S. Fish and Wildlife Service (USFWS) and are located near the proposed launch vertical launch area and control center area include the Lower Rio Grande Valley National Wildlife Refuge (NWR) and the Palmito Ranch Battlefield National Historic Landmark (NHL), which is largely contained within the NWR (refer to Exhibit 3.1-1 in the PDEIS for the locations of the vertical launch and control center areas relative to the NWR and NHL). The purpose of this letter is to notify you of the FAA/AST's Section 4(f) determination for the NWR and NHL and to request your concurrence.

The FAA/AST evaluated the potential impacts on the NWR and NHL to determine if the properties would be "used" by the Proposed Action's operational or construction activities. "Use" in the Section 4(f) context has a very specific meaning and could fall into one of three categories: physical use, temporary occupancy, or constructive use. With respect to physical use of a Section 4(f) property, a *de minimis* impact determination may be made if, after taking into account any measures to minimize harm, the result is a determination that a project would not adversely affect the activities, features, or attributes qualifying the property for protection under Section 4(f). A *de minimis* impact determination does not require an analysis and finding that there are no feasible and prudent alternatives or a finding that all possible planning has been done to minimize harm. When there is no physical use and no temporary occupancy, but there is the possibility of constructive use, the FAA must determine if the potential impacts would substantially impair the 4(f) property. Substantial impairment occurs when the protected activities, features, or attributes of the Section 4(f) property are substantially diminished.

Construction

Construction of the proposed facilities would not involve the physical use (i.e., actual taking of lands) or temporary occupancy of the NWR or NHL; all land where construction activities would occur is privately owned and would be purchased or leased by SpaceX. Construction would occur over a 24-month period. During this time, vehicular access to the NWR and NHL would not be restricted, and there would be no permanent, long-term access restrictions to either property. Construction activities would result in some noise, but it would be short-term and temporary. The noise would not substantially limit the use or diminish the quality of the NWR or the NHL, such that their respective value is impaired. Therefore, the FAA/AST determined construction activities would not constitute a constructive use of the NWR or the NHL.

Construction of the vertical launch and control center areas would introduce new elements within the view shed of the Palmito Ranch Battlefield NHL. The setting of the NHL is one of the primary attributes that contribute to its significance. Little development has occurred in this area, and what has been developed largely comprises one-story residences. The 250-foot tall water tower and the up to 200-foot tall lightning protection towers would be visible from much of the NHL (refer to Exhibit 4.4-1 in the PDEIS). However, these facilities would have a small profile on the horizon due to the relative distance of the vertical launch area from the NHL (approximately 3 miles from its eastern end). In addition, SpaceX would paint the water tower, lightning towers, and other launch facilities as necessary a non-reflective, light tan color to minimize the visibility of the facilities in the landscape. In consideration of this minimization measure and the relative distance of the facilities from the NHL, construction of the commercial launch facilities is unlikely to result in a substantial diminishment of setting to the level of severity that would cause the Palmito Ranch Battlefield to no longer qualify as an NHL. Therefore, the FAA/AST determined construction activities would not constitute a constructive use of the NHL.

Operation

During launches, public access to portions of the NWR and the NHL would be closed for safety and security reasons (refer to Exhibit 2-1 in the PDEIS). The closures would occur on an intermittent basis, up to 12 times per year, and would be temporary (up to 15 hours for each launch). SpaceX would notify the USFWS in advance of launches so your agency could plan for the closures and avoid conflicts for

special events or programs. All portions of the NWR and the NHL outside of the closure area would be accessible to and open for use by the public during launches. Therefore, the closures would not substantially reduce the use or enjoyment of the NWR or the NHL because impacts from closures during launches would be intermittent and temporary.

In addition to closures, the FAA/AST reviewed modeled noise levels from the vertical launch of the Falcon 9 and Falcon Heavy vehicles to determine whether there would be significant noise increases such that the respective values of the NWR and NHL in terms of their purpose and quality would be substantially impaired, thus constituting a constructive use. The noise modeling demonstrates that portions of the NWR would be within the DNL 65 dBA noise contour, the standard used by the FAA to measure a significant noise impact, for the three launch event scenarios that were modeled based on the number of daytime and nighttime launch events (refer to Exhibit 4.1-1 in the PDEIS). The NHL, however, is outside of the DNL 65 dBA noise contour for each launch scenario. The proposed launches would produce short-term, loud noise that would last approximately 3 to 5 minutes for each launch, and there would be no more than 12 launches per year. When launches are not occurring (i.e., approximately 97 percent of the year), the normal quiet setting of the NWR and NHL would persist.

The FAA/AST used additional noise metrics to consider the significance of noise impacts on a noise sensitive area such as the NHL. The sound levels from a single launch event of the Falcon 9 and Falcon Heavy were modeled at the east and west borders of the NHL (approximately 3 and 12 miles, respectively, from the vertical launch area); both locations are within the NWR. The results indicate that the 115 dBA OSHA hearing conservation guideline for single noise events would not be exceeded at either location. Specifically, for a Falcon 9 launch, the model predicted maximum overall sound pressure levels of 105 dBA and 94 dBA at the eastern and western borders of the NHL, respectively. For a Falcon Heavy launch, the predicted overall sound pressure levels are 110 dBA and 99 dBA at the eastern and western borders of the NHL, respectively.

Another supplemental metric modeled the potential speech interference of a launch event using time above an overall sound pressure of 66 dBA. Outdoor speech interference can be expressed as a percentage of sentence intelligibility between two people standing at approximately 3.28 feet (1 meter) apart and speaking in a normal voice, with 95 percent speech intelligibility as the threshold for reliable communication. The model results indicate that speech intelligibility at the east and west borders of the NHL would drop below 95 percent for a period of less than 3 to 5 minutes per launch.

Because of the short-term and intermittent nature of the noise generated from launches, the Proposed Action would not substantially diminish the attributes (i.e., quiet setting) that contribute to the enjoyment of the NWR or the significance of the NHL. Therefore, the FAA/AST determined that operational activities would not constitute a constructive use of the NHL or the NWR.

If your office has no objection to the Section 4(f) property determinations stated above, please provide written concurrence by April 21, 2013 to Ms. Stacey M. Zee, Environmental Specialist, 800 Independence Ave., SW, Suite 325, Washington, DC 20591. If you have any questions or concerns, please contact Ms. Zee at 202-267-9305 or via e-mail at Stacey.Zee@faa.gov.

Sincerely,

Michael J. McElligott
Manager, Space Systems Development Division

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
c/o TAMU-CC, Campus Box 338
6300 Ocean Drive
Corpus Christi, Texas 78412

April 19, 2013

Stacey M. Zee
Environmental Specialist
Office for Commercial Space Transportation
Federal Aviation Administration
800 Independence Ave., SW, Suite 325
Washington, DC 20591

Dear Ms. Zee:

The U.S. Fish and Wildlife Service (Service) received a Federal Aviation Administration Office of Commercial Space Transportation (FAA/AST) letter, dated March 21, 2013, requesting a no objection concurrence to Section 4(f) property determinations. The Service does not concur and has comments and concerns on our South Texas Refuges Complex properties as described below.

The letter states that construction activities for the proposed SpaceX facilities would cause no physical use (i.e., actual taking of lands) or temporary occupancy of National Wildlife Refuge (NWR) property. The Service is aware, however, that SpaceX is actively coordinating with Texas Department of Transportation (TxDOT) and Magic Valley Electric Cooperative (MVEC) for the replacement of existing buried electric service lines along State Highway (SH) 4 to the Spanish Dagger Subdivision with the intent that this electric service would be suitable for the SpaceX project. MVEC is proposing an above-ground electrical line with poles that crosses NWR property for approximately 2 miles and could harm the endangered aplomado falcon within that area along with other migratory birds. Guidance from the Service's Division of Realty is that TxDOT has a right-of-way (easement) along SH 4 atop NWR land with Service ownership of the underlying fee title and that TxDOT has the right of way for road purposes only. Therefore, the replacement of the MVEC service line would be a physical use of NWR land, so the Service cannot concur with your determination on this point.

Additionally, the FAA/AST determination that construction noise would not diminish the quality of the NWR is unsupported in the March 21st letter. The NWR properties in the vicinity of the proposed SpaceX facility are currently remote from any commercial facilities. The FAA/AST has not provided supporting evidence that 24 months of construction activity would not adversely affect wildlife residing within the refuge boundaries. Therefore, the Service cannot concur with your determination regarding the noise from construction activities proposed for the project.

With regard to proposed operations of a SpaceX facility, your letter makes note only of the closure times associated with launch events, and potential effects on NWR visitors and programs. Although visitors and programs are important and are means by which the NWR system shares its work with the public, the mission of the NWR system is the conservation of wildlife and plant resources and their habitats now and for future generations. The Service's highest concern is for the land and wildlife of the NWR, and these impacts should be addressed. No information is included regarding the security operations, i.e. helicopter, ATV's, and vehicle sweeps of the 3-mile radius closure area. We also recommend consideration of the effects of having the public going onto NWR property around closures to get a closer view of a launch, or the effects that low-flying aircraft would have on wildlife, including possibly nesting migratory birds, and nesting aplomado falcons. Flushing of animals from nesting and roosting sites could be harmful, potentially lethal to animals and their young in the limited habitat and in the intense South Texas heat. The Service cannot concur with the determination regarding the noise from construction activities proposed for the project.

With regard to the noise levels associated with a launch event, the FAA/AST concludes that because pressure levels of between 110 dBA and 94dBA depending on the vehicle being launched are short term and intermittent, they would not substantially diminish human enjoyment of NWR properties. No information is provided regarding the short and long-term effects of the noise and pressure blasts associated with a launch event on the wildlife inhabitants of the NWR. Disruptive flushing and potentially damaging the hearing of wildlife would, in the assessment of the Service constitute a constructive use, or rather destructive intrusion, of NWR property. Therefore, the Service cannot concur with your determination regarding the noise construction activities proposed for the project.

Sincerely,

E. Dawn Whitehead

for Edith Erfling
Field Supervisor

cc: B. Winton, Lower Rio Grande NWR, Alamo, TX
E. Reyes, Ecological Services Office, USFWS, Alamo, TX
A. Archibeque, Regional Chief, NWR, Region 2, Albuquerque, NM
C. Eckhardt, NPS, Denver, CO

U.S. Department
of Transportation
Federal Aviation Administration

Office of Commercial Space Transportation

800 Independence Ave., SW.
Washington, DC 20591

AUG 16 2013

Ms. Edith Erfling
Field Supervisor
Ecological Services
U.S. Fish and Wildlife Service
c/o TAMU-CC, Campus Box 338
6300 Ocean Drive
Corpus Christi, TX 78412

Dear Ms. Erfling:

Thank you for your comments provided in your letter of April 19, 2013 on our Section 4(f) determinations. This letter is in response to those comments based on discussions with the applicant and other stakeholders.

Upgrade of Electrical Service Line Along State Highway 4 to the Spanish Dagger Subdivision

Your April 19 letter stated that the Magic Valley Electric Cooperative (MVEC) replacement of existing buried electric service lines with above-ground power lines along the State Highway 4 right-of-way (ROW) that lead to the Spanish Dagger Subdivision (the proposed control center area) would be a physical use of National Wildlife Refuge (NWR) land, and therefore you do not concur with the FAA's March 21, 2013 letter expressing the agency's determination of no physical or constructive use from construction associated with the Proposed Action.

The FAA confirms that under the Proposed Action, the existing power lines along State Highway 4 that lead to the Spanish Dagger Subdivision (the proposed control center area) would need to be upgraded to a three-phase distribution system to support a maximum electrical load of 3,000 kilowatts per hour (kW/hr). The specific requirements for the power lines and substation(s) necessary to meet the demands of the vertical launch and control center areas are being finalized. However, initial communications between MVEC and SpaceX indicate that the upgraded power lines within the State Highway 4 ROW will remain buried if they are currently buried, and will remain above ground if they are currently above ground. Therefore, no existing buried power lines along State Highway 4 ROW will become above-ground power lines.

Your April 19 letter stated that the Texas Department of Transportation (TxDOT) has ROW along State Highway 4 for road purposes only. However, the FAA understands that TxDOT would be responsible for issuing utility permits in accordance with the Utility Accommodation Policy in Title 43, Chapter 21, Sub-chapter C, §21.31 to 21.56 of the Texas Administrative Code. As part of the permitting process, the utility company would have to comply with any legal, environmental, or contractual requirements. Your

April 19 letter also stated that the Service has ownership of the underlying fee title of the state Highway 4 ROW. However, in July 2012, TxDOT sent the FAA a letter, which states the State of Texas owns and operates 200 feet in fee title for State Highway 4 from the end of the road at the coast to approximately 6 miles inland. The title for this ROW was tracked to an original conveyance from Mrs. Esperson Stewart to Cameron County in 1923 and subsequently from Cameron County to the State of Texas in 1936. The conveyance of property from The Nature Conservancy of Texas to Texas Parks and Wildlife Department on May 5, 1994 did not include the roadway ROW.

The FAA has determined that the proposed upgrade of electrical lines along the State Highway 4 ROW would not substantially limit the use or diminish the quality of NWR lands such that their value is impaired. Therefore, construction activities under the Proposed Action would not constitute a physical or constructive use of NWR lands under Section 4(f).

Construction Noise

Your April 19 letter expressed that our March 21 letter lacked support for our determination that construction noise associated with the Proposed Action would not diminish the quality of the NWR.

As stated in Section 4.8 of the Draft EIS, increased vehicular traffic and human presence, as well as noise from construction, may temporarily displace wildlife species, causing them to expend additional energy. Construction activities that would temporarily increase noise levels within the project area include construction equipment operating at the sites and construction/delivery vehicles traveling to and from the sites. Construction activities, including the use of an impact pile driver, could potentially create multiple, individual noise sources.

Construction point source noise (e.g., impact pile driver) is commonly measured by maximum decibel level (L_{max}), which is the highest value of a sound pressure over a stated time interval. Construction activities could create noise levels that range from 73 to 101 A-weighted decibels (dBA) L_{max} at 50 feet (ft) from the activities (U.S. Department of Transportation [DOT] 2006) [1]. Proposed pile driving would result in temporary increases in the noise environment in the vicinity of the construction site during a portion of the 24-month construction period. Maximum peak levels generated during impact pile driving of a concrete pile are estimated to be 101 dBA at a distance of 50 ft from the pile. Other construction activities or equipment, such as cranes, heavy trucks, and generators, would also cause noise; however, this noise level would be much lower compared to noise produced by pile driving. In the absence of pile driving noise, maximum construction noise would be 94 dBA at a distance of 50 ft from the activity, computed as the summation of noise of all equipment operating simultaneously (Washington State Department of Transportation 2013).

Noise from a point source spreads spherically over distance. The standard reduction for point source noise is 6 dB per doubling of distance from the source. When ground cover or normal unpacked earth (i.e., a soft site) exists between the source and receptor, the ground becomes absorptive of noise energy. Absorptive ground results in an additional 1.5 dB reduction per doubling of distance as it spreads from the source. Added to the standard reduction rate for a point source, point source noise across a soft site attenuates at a rate of 7.5 dB per doubling of distance (Washington State Department of Transportation 2013).

[1] Full references for the parenthetical citations found in this letter can be found in the Draft EIS, Chapter 12, *References*.

The reaction of a particular wildlife species to noise impacts could range from mild annoyance to panic and escape behavior. Behavioral responses to noise impacts also vary between species and between individuals due to a variety of factors such as age, sex, prior exposure, season, hearing sensitivity, reproductive status and season, time of day, behavior during the noise event, and the individual's location relative to the noise source. Other factors that influence an animal's response to noise include noise level and frequency, distance and event duration, equipment type and condition, frequency of events over time, slope, topography, and weather conditions (Delaney and Grubb 2004). In mammalian species, startle or fright is the immediate behavioral reaction to transient, unexpected, or unpleasant noise. Other mammalian behavioral reactions to noise include altered migration patterns, changes in the home range, and disruptions in mating behaviors. Bird behavioral responses to noise include nest abandonment, egg mortality, premature fledging, predation, depressed feeding rates, and habitat avoidance.

Most of the effects of noise are mild enough that they may never be detectable as changes in population size or population growth against the background of normal variation (Bowles 1995). Many other environmental variables (e.g., predators, weather, changing prey base, ground based human disturbance) may influence reproductive success and confound the ability to tease out the ultimate factor in limiting productivity of a certain nest, area, or region (Smith et al. 1988). In contrast, the effects of other human intrusions near nests, foraging areas, dens, etc. (e.g., hiking, bird watching, timber harvesting, boating) are readily detected and substantial (U.S. Forest Service 1992).

Wildlife in the project area is currently exposed to occasional noise from vehicular traffic and human presence along State Highway 4 and on Boca Chica Beach. The temporary increase in noise levels from pile driving and other construction-related activities would cause wildlife species to avoid the area in the immediate vicinity of the proposed vertical launch and control center areas. However, there would be no long-term impacts to local or regional populations of wildlife species, including special-status species, as a result of the 24-month construction period.

The FAA has determined that the temporary change in the noise environment during proposed construction activities would not substantially limit the use or diminish the quality of NWR lands adjacent to the control center and vertical launch areas such that their value is substantially impaired. The analysis described in the Draft EIS and summarized here provides support for the FAA's determination that construction activities associated with the Proposed Action would not constitute a constructive use of NWR lands under Section 4(f).

Area Closure during Launch Operations

Your April 19 letter expressed concern over closures and its effects on visitors, security operations, and effects of public viewers accessing NWR property. As stated in Section 2.1.1.6 of the Draft EIS, SpaceX would coordinate with the USFWS, Lower Rio Grande Valley NWR; Texas Parks and Wildlife Department; National Park Service, Padre Island National Seashore; U.S. Customs and Border Protection, Cameron County; Cameron County and State of Texas law enforcement agencies; City of Brownsville; City of South Padre Island; Texas General Land Office; TxDOT; and U.S. Coast Guard on the preparation of a detailed Security Plan. SpaceX is currently developing this Security Plan, which includes pedestrian and vehicular traffic management and describes the procedures for closing land and water areas. A current draft of the Security Plan was sent to your office for review on July 29, 2013.

In addition, SpaceX has agreed to the suggestion presented at the May 7, 2013 agency meeting to move the soft checkpoint to a location west of the U.S. Customs and Border Protection checkpoint (approximately 14–16 miles west of the State Highway 4 terminus at Boca Chica Beach; see Figure 1). This location would therefore result in full closure of NWR land for launches, thus reducing the potential for impacts on NWR land from the viewing public during a launch. We believe this would address your concerns regarding potential impacts caused by increased visitors accessing the NWR to view the launches.

In conclusion, the FAA believes that USFWS input into the Security Plan, the relocation of the soft checkpoint and updated closure area, and the identification of measures to minimize potential harm will allow USFWS to support the FAA determination that operational impacts under the Proposed Action would not constitute a constructive use under Section 4(f).

Launch Noise

Your April 19 letter expressed concern about the noise levels associated with launch events. As outlined in our Section 4(f) determination letter of March 21, 2013, and detailed in Sections 4.3.1.1 and 4.3.1.2 of the Draft EIS, the FAA performed noise analyses using several different metrics to take into consideration the potential impacts of noise on NWR properties and wildlife. Despite the intensity of the noise, its impact would be short-term (a few minutes for each launch) and intermittent (up to 12 launches per year). In other words, the noise would not be constant and would not permanently increase the ambient noise level of the area. The FAA believes that the Draft EIS analysis supports our determination that operational activities under the Proposed Action would not constitute a constructive use under Section 4(f).

Conclusion

The FAA is currently undergoing formal consultation with your office per Section 7 of the Endangered Species Act to assess potential impacts on federally listed species and designated critical habitat from the Proposed Action – including potential impacts from construction noise, launch operation noise, and area closure. This consultation process will result in a Biological Opinion that identifies (1) reasonable and prudent measures, which are nondiscretionary measures that are necessary to minimize impacts to listed species (i.e., amount or extent of incidental take) and critical habitat, and (2) terms and conditions, which are non-discretionary requirements that ensure each of the reasonable and prudent measures is implemented. In addition, the BO will provide conservation recommendations, which are discretionary measures that are intended to further avoid or minimize adverse effects on listed species and critical habitat.

In conclusion, the FAA believes construction and operations associated with the Proposed Action would not result in a use (physical or constructive) of the NWR under Section 4(f). Our determination is supported by the analyses in the DEIS, forthcoming Biological Opinion, the USFWS's involvement in the development of the Security Plan, and moving the soft checkpoint as shown in Figure 1.

We look forward to further discussion with your office on these matters and resolution of your issues of concern. We respectfully request that you provide written concurrence by September 9, 2013 to Ms. Stacey M. Zee, Environmental Specialist, 800 Independence Ave., SW, Suite 325, Washington, DC 20591. If you have any questions or concerns, please contact Ms. Zee at 202-267-9305 or via e-mail at Stacey.Zee@faa.gov.

Sincerely,

Daniel Murray
Acting Manager, Space Systems Development Division

cc: B. Winton, Lower Rio Grande NWR, Alamo, TX
E. Reyes, Ecological Services Office, USFWS, Alamo, TX
A. Archibeque, Regional Chief, NWR, Region 2, Albuquerque, NM
C. Eckhardt, NPS, Denver, CO

Enclosure: Figure 1 – Proposed Launch Day Closure Areas

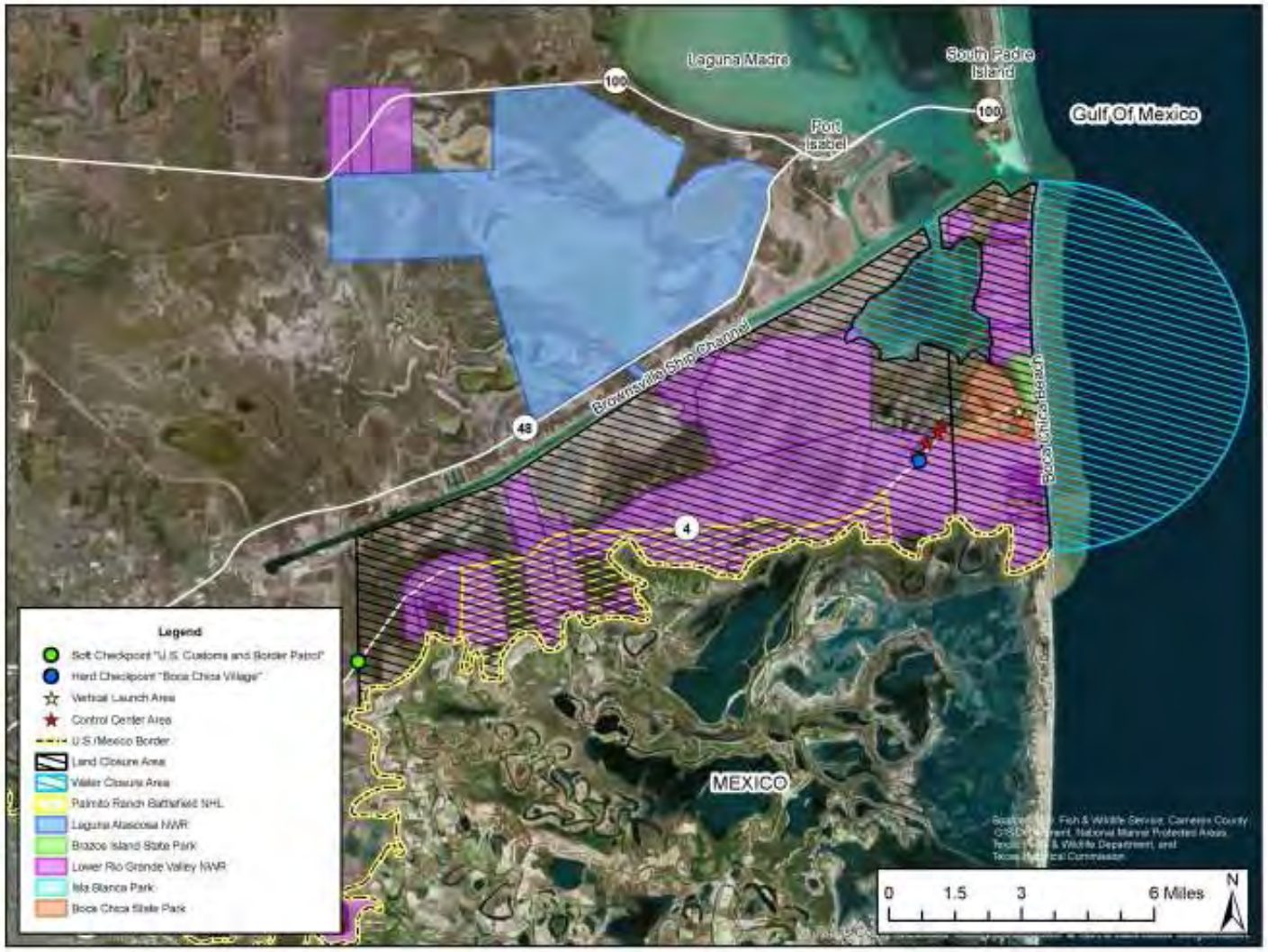


Figure 1. Proposed Launch Day Closure Areas

United States Department of the Interior

FISH AND WILDLIFE SERVICE

South Texas Refuge Complex
Lower Rio Grande Valley National Wildlife Refuge
3325 Green Jay Rd., Alamo, TX 78516
(956) 784-7500; (956) 787-8338 Fax

November 14, 2013

Stacey M. Zee
Federal Aviation Administration
800 Independence Ave., SW, Ste. 325
Washington, D.C. 20591

RE: Section 4(f) Determinations - SpaceX Proposed Launch Facility at Boca Chica Beach, Cameron County, Texas – Lower Rio Grande Valley National Wildlife Refuge (NWR)

Dear Ms. Zee:

This responds to the Federal Aviation Administration's (FAA) letter dated August 16, 2013, requesting U.S. Fish and Wildlife Service (Service) concurrence that the proposal by SpaceX to construct a commercial space launch facility at Boca Chica Beach, Cameron County, Texas would not result in a physical or constructive use of the Lower Rio Grande Valley NWR (Refuge). However, your August 16th letter contained inaccurate information and insufficient analysis for the Service to concur with your determination. This is based primarily on the following:

We disagree with Texas Department of Transportation's (TXDOT) claiming of *fee title ownership* of the State Highway 4 right-of-way (ROW), which traverses Refuge property. According to our records and surveys, and a preliminary Department of Interior Solicitor's opinion, the strip of land within the right-of-way is owned in fee title by the Service, and TXDOT has a less than fee title ROW. Therefore, any use of this ROW to facilitate the SpaceX project may be considered a constructive use of the Refuge.

The letter states that SpaceX is currently developing a Security Plan to describe the procedures for closing land and water areas (within the "Closure Area") to the public. However, a review of the draft Security Plan shows the Closure Area overlays a large area of Refuge lands, but the Plan does not specifically identify who is ultimately responsible for ensuring the public is evacuated from the Refuge. In fact, the Security Plan does not identify the legal authority SpaceX would apply to ensure removal of the public from Refuge lands. In addition, the Security Plan describes the need for a "Closure Plan", which we assume would be more detailed than the Security Plan that describes the exact procedures for land and water closures during launch events. We would like an opportunity to review the "Closure Plan" when it is available.

We believe, based on increased traffic use and infrastructure (e.g., power lines) of State Highway 4 and "public closures" during launch events, this meets the definition of a "constructive use" as defined under Section 4(f), per regulation at 23 CFR 774, ie., a "constructive use" occurs when there *"...is a temporary occupancy of land that is adverse in terms of the statute's preservation purpose..."* or when a *"...project's proximity impacts are so severe that the protected activities, features, or attributes of a property are substantially impaired."* The most significant constructive use is the temporary closure of Refuge land to facilitate SpaceX operations. The complete evacuation of all persons from Refuge lands in the proximity (~3-mile radius or more) of the SpaceX launch facility severely impacts (i..e, substantially impairs) public use and wildlife resources on these lands. It also severely impairs our ability to manage these Refuge lands for their natural resource and public use purposes. For example, the multiple aerial and land sweeps over Refuge lands, to include the potential for physical removal of the public under some circumstances by Refuge or local law enforcement, would result in a substantial impairment to sensitive tidal mudflats and native vegetation. It would also unduly disturb wildlife, especially birds, from normal breeding, feeding, and sheltering activities for periods of up to 15 hours during each of 12 or more annual launch events. In addition, the SpaceX beach closure sweeps will likely push the public from the public beaches into Refuge dunes, interdunal, mudflat, and loma areas (i.e., into sensitive areas on the Refuge where SpaceX has no legal jurisdiction to remove the public). This is likely to result in Refuge law enforcement and other staff being unavailable to protect Refuge visitors and resources on other Refuge lands since they will be supporting SpaceX operations by enforcing the public closure areas on Refuge lands near the proposed facility.

Therefore, we do not concur with the FAA's determinations that the proposed operation of the SpaceX facility at Boca Chica Beach would not result in a "constructive use" of the Lower Rio Grande Valley NWR, as defined under Section 4(f). We look forward to discussing these issues and their resolution through an alternatives evaluation or mitigation process, as outlined in Section 4(f), before any plans to approve the project are finalized. You may contact me via email at bryan_winton@fws.gov or my direct line at (956) 784-7521.

Sincerely,

Bryan R. Winton
Refuge Manager

Cc:
Robert D. Jess, Project Leader, South Texas Refuge Complex
Kelly McDowell, Refuge Supervisor, OK/TX Refuges
Dawn Whitehead, Assistant Field Supervisor, Texas Coastal ES Field Office

U.S. Department
of Transportation
**Federal Aviation
Administration**

Office of Commercial Space Transportation

800 Independence Ave., SW.
Washington, DC 20591

DEC 2 3 2013

Bryan R. Winton
Refuge Manager
U.S. Fish and Wildlife Service
South Texas Refuge Complex
Lower Rio Grande Valley National Wildlife Refuge
3325 Green Jay Road
Alamo, Texas 78516

Dear Mr. Winton:

Thank you for your comments provided in your letter of November 14, 2013 on the FAA's Section 4(f) determination for the Space Exploration Technologies Corp. (SpaceX) Texas Launch Site project. This letter is in response to those comments based on discussions with SpaceX and your agency.

In addition, during a call with your office on December 2, 2014, staff from your office raised concerns about the alternatives analysis. The revised version of Section 2.3 (Alternatives Considered But Not Carried Forward) of the Draft EIS was emailed to Mr. Rob Jess on December 16, 2013. Please note that one of the alternatives not carried forward for analysis was the Texas General Lands Office (TGLO) Parcel 608. Not only did this site not meet SpaceX's criteria for a launch site, but discussions with your office revealed that an access road leading to the proposed launch site would have to be built on refuge land, which is considered a direct use (permanent incorporation) under Section 4(f). Thus, this site was dropped from further consideration. I hope the revised version of Section 2.3 helps you understand SpaceX's site evaluation/selection process, which the FAA considers adequate. This is the rationale as to why the EIS only examines two alternatives—the Proposed Action and the No Action Alternative.

The FAA has determined that the potential impacts from construction and operations under the Proposed Action would not constitute a constructive use under Section 4(f). Also, the FAA has determined that the use of portions of the State Highway 4 right-of-way (ROW) owned by the U.S. Fish and Wildlife Service (USFWS) for installation and upgrade of electric service lines constitutes a *de minimis* impact. We understand that the USFWS disagrees with these determinations. However, the FAA stands by these determinations under Section 4(f) for the reasons explained below.

Installation and Upgrade of Electrical Service Lines along State Highway 4
Your November 14, 2013 letter stated that the State Highway 4 ROW is USFWS property and any use of this ROW to facilitate the SpaceX project may be considered a constructive use of the Lower Rio Grande Valley National Wildlife Refuge (NWR). The FAA considers the installation and upgrade of electric power lines in State Highway 4 ROW to be a *de minimis* impact, as defined in the regulations for Section 4(f) (23 Code of Federal Regulations [CFR] 774.17). That is, installation and upgrade of the utility lines would not adversely affect the activities, features, or attributes that qualify the NWR for protection under Section 4(f). The existing power lines along State Highway 4 that lead to the proposed control center area would be upgraded to a three-phase distribution system. Magic Valley Electric Cooperative, Inc. (MVEC) indicated that the upgraded power lines within the State Highway 4 ROW will remain buried if they are currently buried, and will remain aboveground if they are currently aboveground (see MVEC email forwarded to Mr. Rob Jess by Mr. Steve Davis from SpaceX on June 17, 2013). We also understand that the USFWS would have to issue a permit to MVEC to upgrade the power lines to the control center, and the action of upgrading the power lines is outside the purview of the FAA.

For the area between the proposed control center area and the vertical launch facility, a new electric service line would be installed underground within the State Highway 4 ROW, and the trench would be filled. You noted in your November 14th letter that you disagree with Texas Department of Transportation's claim of fee title ownership of the State Highway 4 ROW between the control center area and the vertical launch facility. Even if the USFWS owns the ROW in this area, the FAA believes that underground installation minimizes harm to the property resulting from its use. In all cases where the ROW would be disturbed (i.e., underground installation of utility lines), the ROW would be returned to a condition which is at least as good as that which existed prior to the installation. Therefore, we consider this power line installation to be a *de minimis* impact.

Security Plan and Review of Closure Procedures
In your November 14th, the USFWS requested the opportunity to review the "Closure Plan," which was assumed to be a separate plan from the Security Plan. To clarify, SpaceX is not developing a separate closure plan. Rather, closure procedures are incorporated into the Security Plan, the latest version of which was emailed to you on December 11, 2013. The USWFS will be provided the opportunity to review and approve the Final Security Plan in accordance with the Programmatic Agreement being developed under the Section 106 consultation process for this project.

Area Closure during Launch Operations
Your November 14th letter expressed concerns over the closure of the NWR during launch operations, and stated that the impacts to wildlife resources, public use, and personnel resources would result in a constructive use. The FAA believes the impacts from the area closure during launch operations under the Proposed Action would not constitute a constructive use under Section 4(f).

The larger closure area (location of the soft checkpoint) was requested by USFWS as a measure to avoid or minimize potential impacts on protected species and their habitat. Based on the current proposed closure area (see Figure 2 in the Draft Security Plan), all of the NWR land

south of the Brownsville Ship Channel would be closed to the general public on days of launch operations, including Boca Chica Beach. Therefore, there should be no unauthorized members of the public located on NWR property, the beach, or adjacent areas on launch days. USFWS personnel would be able to access NWR land within this closure area (discussed further below). SpaceX personnel would not conduct land sweeps on NWR property, and would conduct an aerial sweep over NWR property only if video or unmanned aerial surveillance is determined not to be sufficient (refer to the Draft Security Plan). Thus, there would be no closure-related harm to NWR dunes, interdunal, mudflat, or loma areas.

As stated in Section 2.1.1.6 of the Draft EIS, the Proposed Action would restrict access of the general public to those portions of the Boca Chica area of the NWR within the soft checkpoint area up to 12 times a year for a period of up to 15 hours each time. The maximum time of closure per year would be 180 hours (15 hours per launch for each of the 12 launches). This is the conservative estimate, as 6 hours would be the typical closure time for a launch. Therefore, impacts from closures during launches would be intermittent and temporary. Other measures that would minimize the impacts of the closure include SpaceX's agreement to notify the USFWS in advance of launches so your agency could plan for the closures and avoid conflicts for special events or programs, and the prohibition of scheduling a launch on the major summer holidays of Memorial Day, Fourth of July, and Labor Day, and/or summer weekends between Memorial Day and Labor Day, in accordance with House Bill 2623, which was signed by Governor Rick Perry on May 24, 2013. House Bill 2623 amends the Texas Natural Resources Code Chapter 61 (Sec. 61.132) to allow for the TGLO and/or the Cameron County Commissioners Court to temporarily close a public beach and beach access for space flight activities, including launches. The legislation also allows for a Memorandum of Agreement between the TGLO and Cameron County to further define specific requirements for beach and access closure requests, approvals, and related public notices.

With regards to the effects of the closures on USFWS personnel, it is important to point out that USFWS would be restricted access to only that portion of the NWR within the hazard area (beyond the hard checkpoint, as shown on Figure 2 in the Draft Security Plan). USFWS personnel would be able to access NWR lands beyond the soft checkpoint, up to the hard checkpoint. On a launch day, if SpaceX located someone of the general public within the hazard area during video/aerial surveillance or a beach sweep, they would coordinate and work directly with NWR personnel in handling the removal of the person from the hazard area. Specific closure procedures eventually will be included in the Security Plan, which the USFWS will be able to review and approve. Based on conversations with Mr. Steve Davis from SpaceX, the FAA understands that SpaceX has committed to working with the USFWS to fund additional resources/personnel necessary to enforce the closures required for launch operations, including the additional closure of land requested by the USFWS to the extended soft check point. In addition, SpaceX has committed to working with your office to establish a reasonable list of additional actions, above and beyond mitigation required under Section 7 and Section 106 consultation, to help USFWS protect the NWR.

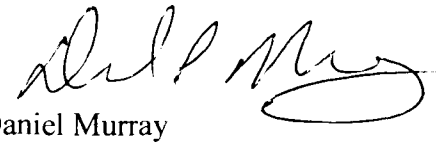
Conclusion

In conclusion, the FAA has determined that the potential impacts from construction and operations under the Proposed Action would not constitute a constructive use under Section 4(f).

Likewise, the use of portions of the State Highway 4 ROW owned by the USFWS for installation of an electric service line constitutes a *de minimis* impact. These determinations are documented in this letter and in our previous letters from March 21 and August 16, 2013, and are supported by the analysis in the Draft EIS, the USFWS's involvement in the development of the Security Plan, moving the soft checkpoint approximately 14–16 miles of the State Highway 4 terminus at Boca Chica Beach, and identification of other measures to minimize harm to NWR land and wildlife.

We respectfully request that you provide your written concurrence on our *de minimis* determination for underground installation of utility lines between the proposed control center and vertical launch site within the State Highway 4 ROW by January 23, 2014 to Ms. Stacey M. Zee, Environmental Specialist, 800 Independence Ave., SW, Suite 325, Washington, DC 20591. If you have any questions or concerns, please contact Ms. Zee at 202-267-9305 or via e-mail at .

Sincerely,



Daniel Murray
Manager, Space Transportation Development Division

cc: R. Jess, Project Leader, South Texas Refuge Complex, USFWS
E. Erfling, Field Supervisor, Ecological Services, USFWS, Corpus Christi, TX
E. Reyes, Ecological Services Office, USFWS, Alamo, TX
A. Archibeque, Regional Chief, NWR, Region 2, Albuquerque, NM
C. Eckhardt, NPS, Denver, CO

United States Department of the Interior

FISH AND WILDLIFE SERVICE

South Texas Refuge Complex
Lower Rio Grande Valley National Wildlife Refuge
3325 Green Jay Rd., Alamo, TX 78516
(956) 784-7500; (956) 787-8338 Fax

January 10, 2014

Stacey M. Zee
Federal Aviation Administration (FAA)
800 Independence Ave., SW, Ste. 325
Washington, D.C. 20591

Re: Section 4(f) Determinations - SpaceX Proposed Launch Facility at Boca Chica Beach, Cameron County, Texas – Lower Rio Grande Valley National Wildlife Refuge (NWR)

Dear Ms. Zee:

This responds to the Federal Aviation Administration's (FAA) letter dated December 23, 2013, requesting U.S. Fish and Wildlife Service concurrence that the underground installation of utility lines (electric service lines) constitutes a "*de minimus*" impact on important natural resources, as defined under Section 4(f) of the Transportation Act of 1966, as amended. The installation of the electric service line upgrade is a necessary part of the larger development of a commercial space vehicle launch facility (SpaceX), for which a Preliminary Draft Environmental Impact Statement (DEIS) has been prepared, as per the National Environmental Policy Act (NEPA).

According to the DEIS, the electric line upgrade is necessary for the larger SpaceX development. Therefore, we believe the entire SpaceX development project, including the electric line upgrade, should be incorporated in determining "*de minimus*" impacts on management, features, and natural resource values of the Lower Rio Grande Valley NWR (Refuge). The DEIS does not currently address the potential impacts of the electric service line upgrade. According to the Council on Environmental Quality (CEQ), agencies are required to examine connected actions, cumulative impacts, secondary or indirect impacts, and similar actions in their NEPA documents. Agencies are specifically prohibited from segmenting projects, also known as "*piecemealing*." "*Proposals or parts of proposals which are related to each other closely enough to be, in effect, a single course of action"* are to be evaluated in a single NEPA document (NEPA Sec. 1502.4). Just evaluating the electric line upgrade as a single element is "piecemealing" the NEPA process; thereby, compromising any *"de minimus"* assessments. Regardless, the Refuge concurs with FAA that the upgrade of the electric utility line is a *"de minimus"* use since it could be argued that the existing 30 year old utility line is in need of replacement and a utility line upgrade benefits others in the area in addition to the SpaceX project.

However, the December 23rd FAA letter states it *"... has determined that the proposed impacts from construction and operation* [of the SpaceX project] *would not constitute a constructive use*

under Section 4(f). We do not concur with FAA's determination that there is no "constructive use" of the Refuge. Based on the Section 4(f) definitions, a "constructive use" occurs when there is "*a temporary occupancy of land that is adverse in terms of the statute's preservation purpose*" or when "*a project's proximity impacts are so severe that the protected activities, features, or attributes of a property are substantially impaired.*" We strongly believe there are both "adverse" and "severe" impacts to Refuge public use, management, wildlife, and habitat from the proposed project, particularly the operational aspects of the project.

This is due primarily to the fact that for each launch, at least 28.4 square miles or about 18,000 acres of refuge lands will need to be closed to the public for visitor safety. This adversely impacts visitor access, however limited, to refuge lands to engage in wildlife-dependent recreational uses. Approximately 3,800 acres of the Refuge are east of the "Hard Closure" area, which is identified in the SpaceX security plan. Annually, tens of thousands of people visit the Boca Chica area and the Refuge currently has 22,000 acres open to the general public for wildlife observation, photography, and fishing. According to data from our last visitation report in 2012, there were an estimated 11,000 fishing visitors and 31,700 visitors for wildlife observation and photography. People also enjoy the natural, undeveloped features of Boca Chica Beach for traditional recreational uses such as picnicking, camping, beachcombing, and swimming. Based on this data, we have determined that SpaceX operations will impact public use of refuge lands before, during, and after launch events, regardless of duration.

Also, SpaceX operations will adversely affect the Refuge's ability to staff and manage refuge lands properly, especially refuge law enforcement and fire operations. Launch events will substantially impair these operations since SpaceX will need, as indicated in their security plan, these staff resources to close refuge lands to the public and others. The SpaceX security plan is fairly generic and does not contain detailed protocols for indentifying, detaining, or removing people from the hard closure area, either on the Refuge or private lands in the Boca Chica area. The major issue is the many private in-holdings in the Boca Chica beach area, on which the Refuge has no authority. Our research shows there are at least 16 large private in-holdings totaling 653 acres in the Boca Chica beach area. These private in-holdings, including refuge beach tracts, do not have marked boundaries. Closing the refuge tracts will be very difficult to accomplish with the interspersion of unmarked private lands.

In addition, the December 23rd FAA letter states the "public beach and beach access" would be closed during launch events, as authorized by recently amended State law. However, this only applies to the "public beach easement", as per the Texas Open Beaches Act. This Act generally defines the "public beach easement", which is located on private lands, as that area between the mean-higher-high tide line (MHHT) inland to the line of continuous vegetation or, where no vegetation exists, it is 200 feet inland from the MHHT line. With this in mind, the FAA letter states "*there would be no closure-related harm to NWR dunes, interdunal, mudflat, or loma areas.*" This statement is erroneous and cannot be supported, mostly due to the interspersion of refuge land, private land, and the public beach easement. For example, during a closure sweep, people may simply move from the public beach easement to private lands or to the Refuge as there are no clear marked boundaries. This mosaic of unmarked public and private lands will make it extremely difficult for refuge law enforcement to close this area efficiently and

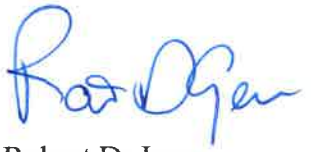
effectively during launch events, since refuge law enforcement staff do not have jurisdiction on private lands.

Also, if there should be a launch failure resulting in debris fallout, contamination, or other damage to the adjacent dunes, mudflats, or loma areas, it is reasonable to conclude there would be significant levels of "harm" to wildlife and sensitive habitats. The evaluation and subsequent cleanup would additionally impact these areas (e.g., vehicular access, clean-up crews). There are no specific protocols to address these situations in the SpaceX security plan or elsewhere.

If no "constructive use" exists as the FAA asserts, then it should be reasonable to assume that there is no need for SpaceX to coordinate with the Refuge to ensure refuge visitors are removed from the hard closure area during launch events. Yet, this is not the case. Operation of the proposed SpaceX project will involve a major shift in attention and management of the Boca Chica tracts and many refuge staff hours and diversion of our law enforcement and fire program to ensure refuge visitors are safely evacuated from the closure area. The Refuge is required to post "refuge closure notices" well in advance each time the Refuge is closed. According to our Law Enforcement Program supervisor, it would be necessary to begin closure operations at least three days in advance of a launch to close the area. Considerable time and costs associated with dedicating staff would be necessary to advertise public land closures and otherwise inform the public, and policing the area pre- and post-launch to ensure resources are not being impacted and for public safety. Therefore, the operation of the proposed SpaceX project will not only divert resources and management focus, but will substantially impair the attributes, purposes, and wildlife values of the Refuge.

Notwithstanding the above, based on the DEIS in its current form and from multiple discussions with your agency, we must assume there are no reasonable and prudent alternatives that completely avoid Section 4(f) properties. In this case, "all possible planning to minimize harm to the Section 4(f) property" should occur. Although the Refuge continues to disagree with the FAA's determination on "constructive use", we view the upgrade of the electric utility line as a *"de minimus"* use on Refuge lands. As always, we look forward to discussing these issues and their resolution including any necessary mitigation, as outlined in Section 4(f). You may contact me via email at robert_jess@fws.gov or my direct line at (956) 784-7591.

Sincerely,



Robert D. Jess
Project Leader

cc:
Bryan R. Winton, Refuge Manager, Lower Rio Grande Valley NWR
Kelly McDowell, Refuge Supervisor, OK/TX Refuges
Dawn Whitehead, Assistant Field Supervisor, Texas Coastal ES Field Office

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U.S. Department
of Transportation
**Federal Aviation
Administration**

Office of the Associate Administrator for
Commercial Space Transportation

800 Independence Ave., SW.
Washington, DC 20591

MAR 2 1 2013

Ross Melinchuk
Deputy Executive Director, Natural Resources
Texas Parks and Wildlife
4200 Smith School Rd
Austin, TX 78744

Dear Mr. Melinchuk:

The Federal Aviation Administration Office of Commercial Space Transportation (FAA/AST) is preparing an Environmental Impact Statement (EIS) to assess the potential environmental impacts of the proposed issuance of launch licenses and/or experimental permits to Space Exploration Technologies Corp. (SpaceX) for operating the Falcon 9 and Falcon Heavy vehicle launch programs from a private site located in Cameron County, Texas. Under this proposal, SpaceX would construct a vertical launch area and a control center area to support up to 12 commercial launches per year. A description of the Proposed Action is enclosed (refer to Attachment 1).

Section 4(f) of the Department of Transportation Act provides that the Secretary of Transportation will not approve any program or project that requires the use of any publicly owned land from a public park, recreation area, or wildlife or waterfowl refuge of national, state, or local significance, or land from any publicly or privately owned historic site of national, state, or local significance, unless there is no feasible and prudent alternative to the use of such land or such program and the project includes all possible planning to minimize harm resulting from the use. Section 4(f) properties that are managed by the Texas Parks and Wildlife Department (TPWD) and are located near the proposed vertical launch area and control center area include: (1) Boca Chica State Park, (2) Brazos Island State Park, and (3) South Bay Coastal Preserve (refer to Attachment 2). The purpose of this letter is to notify you of the FAA/AST's Section 4(f) determination for these properties and to request your concurrence.

The FAA/AST evaluated the potential impacts on the three properties listed above to determine if the properties would be "used" by the Proposed Action's operational or construction activities. "Use" in the Section 4(f) context has a very specific meaning and could fall into one of three categories: physical use, temporary occupancy, or constructive use. With respect to physical use of a Section 4(f) property, a *de minimis* impact determination may be made if, after taking into account any measures to minimize harm, the result is a determination that a project would not adversely affect the activities, features, or attributes qualifying the property for protection under Section 4(f). A *de minimis* impact determination does not require an analysis and finding that there are no feasible and prudent alternatives or a finding that all possible planning has been done to minimize harm. When there is no physical use and no temporary occupancy, but there is

the possibility of constructive use, the FAA must determine if the potential impacts would substantially impair the 4(f) property. Substantial impairment occurs when the protected activities, features, or attributes of the Section 4(f) property are substantially diminished.

Construction

Construction of the proposed facilities would not involve the physical use (i.e., actual taking of lands) or temporary occupancy of any of the three properties listed above; all land where construction activities would occur is privately owned and would be purchased or leased by SpaceX. Construction would occur over a 24-month period, during which time vehicular access to Boca Chica State Park, Brazos Island State Park, and South Bay Coastal Preserve may be slowed or delayed several times a day when construction vehicles are traveling to and from the proposed vertical launch area and control center area. There would be no permanent, long-term access restrictions to these Section 4(f) properties. Construction activities would result in some noise, but it would be short-term and temporary. The noise would not substantially limit the use or diminish the quality of any of the Section 4(f) properties, such that the value is impaired. Therefore, the FAA/AST determined construction activities would not constitute a constructive use of the three properties listed above.

Operation

Operation of the proposed vertical launch area and control center area would have temporary, intermittent impacts on the use of the three properties listed above. During launches, public access to Boca Chica State Park, Brazos Island State Park, and South Bay Coastal Preserve would be closed for safety and security reasons (refer to Attachment 3). The closures would occur on an intermittent basis, up to 12 times per year, and would be temporary (up to 15 hours for each launch). The FAA/AST determined the closures would not substantially reduce the use or enjoyment of the two parks or the preserve because impacts from closures during launches would be intermittent and temporary, and thus, would not constitute a constructive use of the three properties.

In addition to closures, the FAA/AST reviewed modeled noise levels from the vertical launch of the Falcon 9 and Falcon Heavy vehicles to determine whether there would be significant noise increases such that the value of the TPWD-managed properties in terms of their purpose and quality would be substantially impaired, thus constituting a constructive use of the Section 4(f) properties. The noise modeling demonstrates that all of Boca Chica State Park and Brazos Island State Park, and portions of the South Bay Coastal Preserve, would be within the DNL 65 dBA noise contour, the standard used by the FAA to measure a significant noise impact, for the three launch event scenarios that were modeled based on the number of daytime and nighttime launch events (refer to Attachment 4). The proposed launches would produce short-term high levels of noise that would last approximately 3 to 5 minutes for each launch, and there would be no more than 12 launches per year. When launches are not occurring (i.e., approximately 97 percent of the year), the normal quiet setting of the two parks and coastal preserve would persist. Because of the short-term and intermittent nature of the noise generated from launches, the FAA/AST determined the Proposed Action would not substantially diminish the attributes (i.e., quiet setting) that contribute to the enjoyment or quality of the three properties listed above. Therefore, the FAA/AST determined that the noise generated by the launches would not constitute a constructive use of the three properties.

If your office has no objection to the Section 4(f) property determinations stated above, please provide written concurrence by April 21, 2013 to Ms. Stacey M. Zee, Environmental Specialist, 800 Independence Ave., SW, Suite 325, Washington, DC 20591. If you have any questions or concerns, please contact Ms. Zee at 202-267-9305 or via e-mail at Stacey.Zee@faa.gov.

Sincerely,

Michael J. McElligott
Manager, Space Systems Development Division

Enclosure: Attachment 1. Description of the Proposed Action
Attachment 1-A. Proposed Vertical Launch Area Layout
Attachment 1-B. Proposed Control Center Area Layout, Parcels 2 and 3
Attachment 1-C. Proposed Control Center Area Layout, Parcel 1
Attachment 2. Locations of Section 4(f) Properties in Relation to Vertical Launch and Control Center Areas
Attachment 3. Proposed Launch Day Closure Areas
Attachment 4. DNL 65 dBA Noise Contours for Three Annual Operations Scenarios

Attachment 1. Description of the Proposed Action

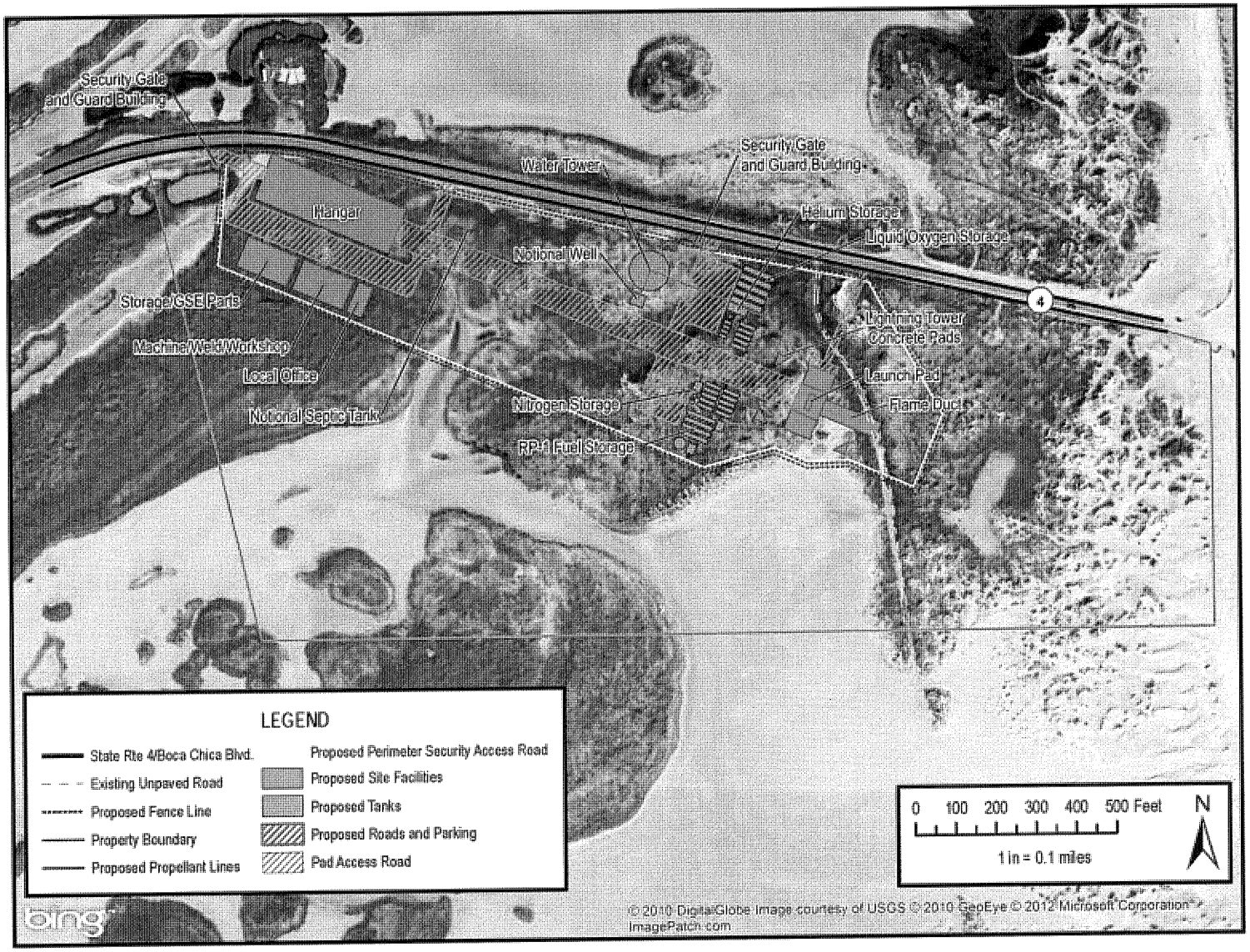
As part of FAA's Proposed Action of issuing launch licenses and/or experimental permits to SpaceX, SpaceX would construct a vertical launch area and a control center area to support up to 12 launches per year. The vehicles that would be launched include the Falcon 9, Falcon Heavy (up to two launches per year), and a variety of smaller reusable suborbital launch vehicles. SpaceX would be required to apply for the appropriate launch licenses and/or experimental permits to be issued by the FAA. SpaceX would be the exclusive user of the site.

The proposed vertical launch area is currently undeveloped and is located directly adjacent to the eastern terminus of Texas State Highway 4 (Boca Chica Boulevard) and approximately 3 miles north of the Mexican border on the Gulf Coast. It is located approximately 5 miles south of Port Isabel and South Padre Island. Access to the area is from Boca Chica Boulevard. Proposed facility and infrastructure construction at the vertical launch area would include an integration and processing hangar; a launch pad and stand with its associated flame duct; a water tower; a retention basin for deluge water (including a water tower); propellant storage and handling areas; a workshop and office area; a warehouse for parts storage; and roads, parking areas, fencing, security gates, and utilities. The parcel where the vertical launch area would be located is 56.5 acres; however, development of the vertical launch area would only comprise approximately 20 acres (see Attachment 1-A).

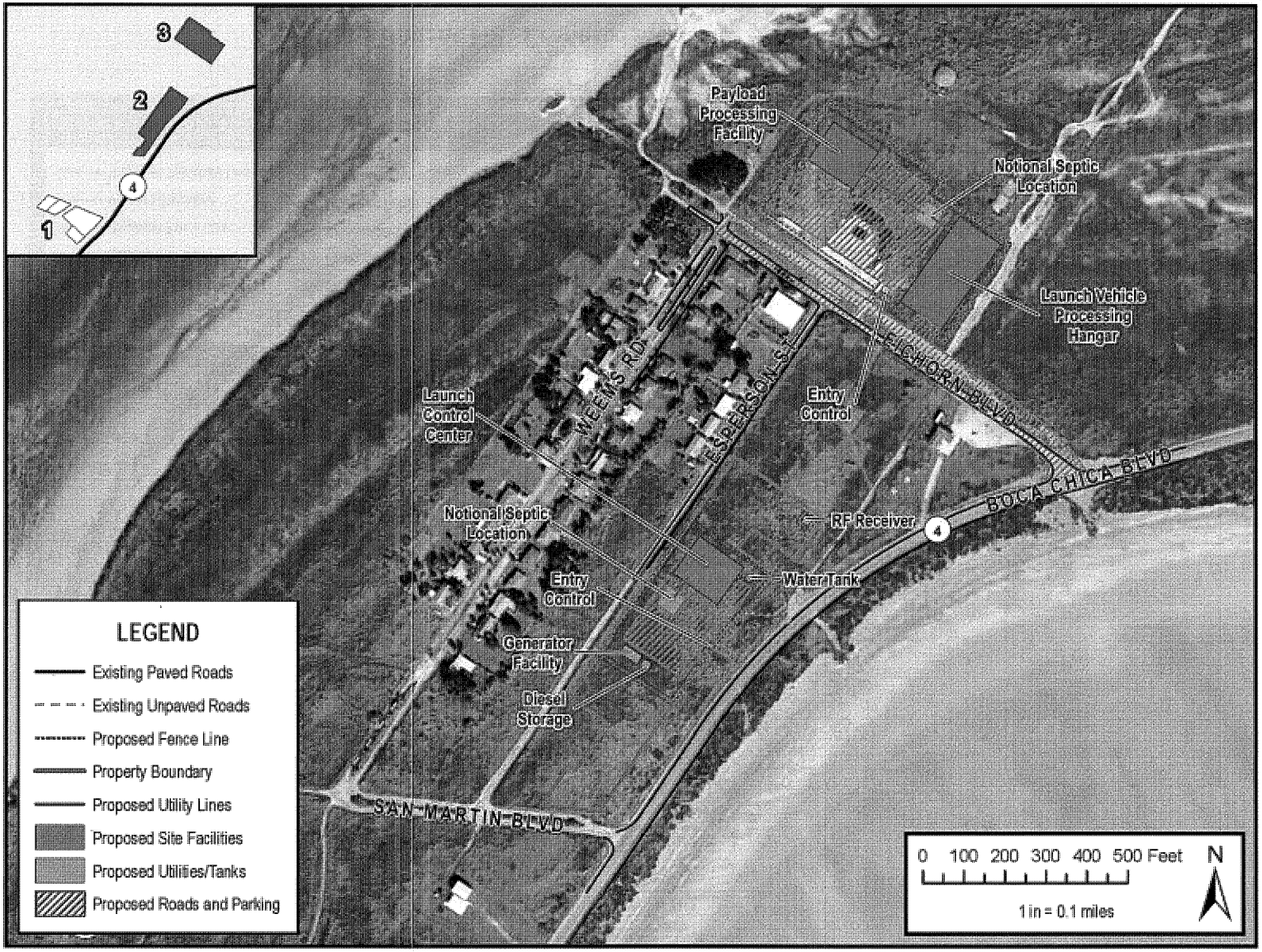
The proposed control center would be located immediately adjacent to Boca Chica Village, approximately 2 miles west of the proposed vertical launch area and north of Boca Chica Boulevard. Proposed facility and infrastructure construction at the control center area would include two launch control center buildings; two payload processing facilities; a launch vehicle processing hangar; two radio frequency transmitter/receivers; generators and diesel storage facilities; roads, parking areas, fencing, utilities; and a satellite fuels storage facility. In addition, upgraded and new power lines would be installed underground in the Boca Chica Boulevard road right-of-way from the control center area to the vertical launch area (see Attachments 1-B and 1-C).

The Falcon 9 is a medium-lift class launch vehicle with a gross lift-off weight of approximately 1,100,000 pounds (lbs.) with an approximate length of 224 feet (ft.). The Falcon 9 uses liquid oxygen (LOX) and highly refined kerosene, also known as rocket propellant-1 or refined petroleum-1 (RP-1), as propellants to carry payloads into orbit. The Falcon Heavy is a heavy-lift class launch vehicle with a gross lift-off weight of approximately 3,400,000 lbs. It has a width of 36 ft. and an overall length of approximately 224 ft.

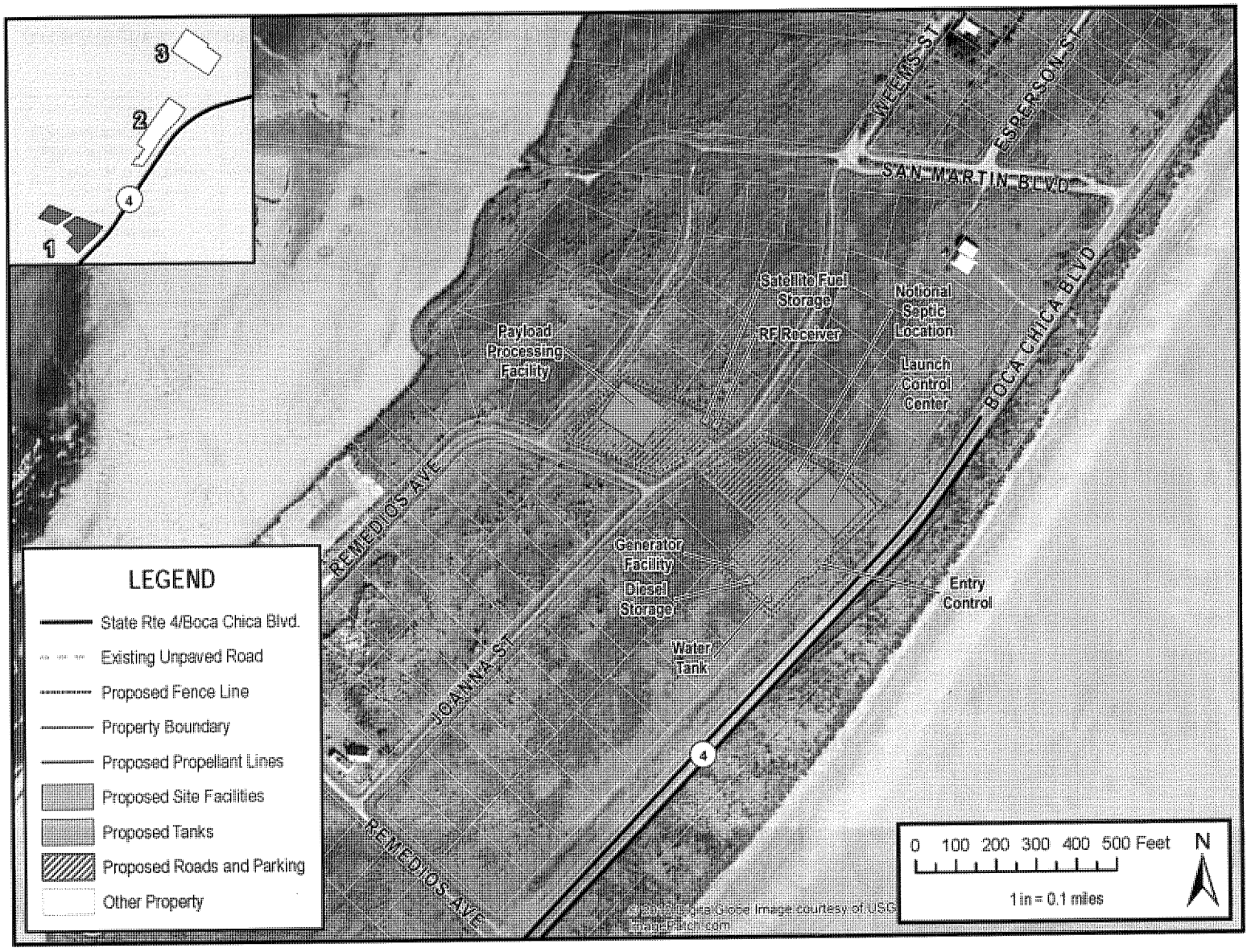
All Falcon 9 and Falcon Heavy launches would be expected to have payloads, including satellites or experimental payloads. In addition to standard payloads, the Falcon 9 and Falcon Heavy may also carry a capsule, such as the SpaceX Dragon capsule. Most payloads would be commercial; however, some could be from the National Aeronautics and Space Administration (or NASA) or the U.S. Department of Defense. All launch trajectories would be to the east over the Gulf of Mexico.



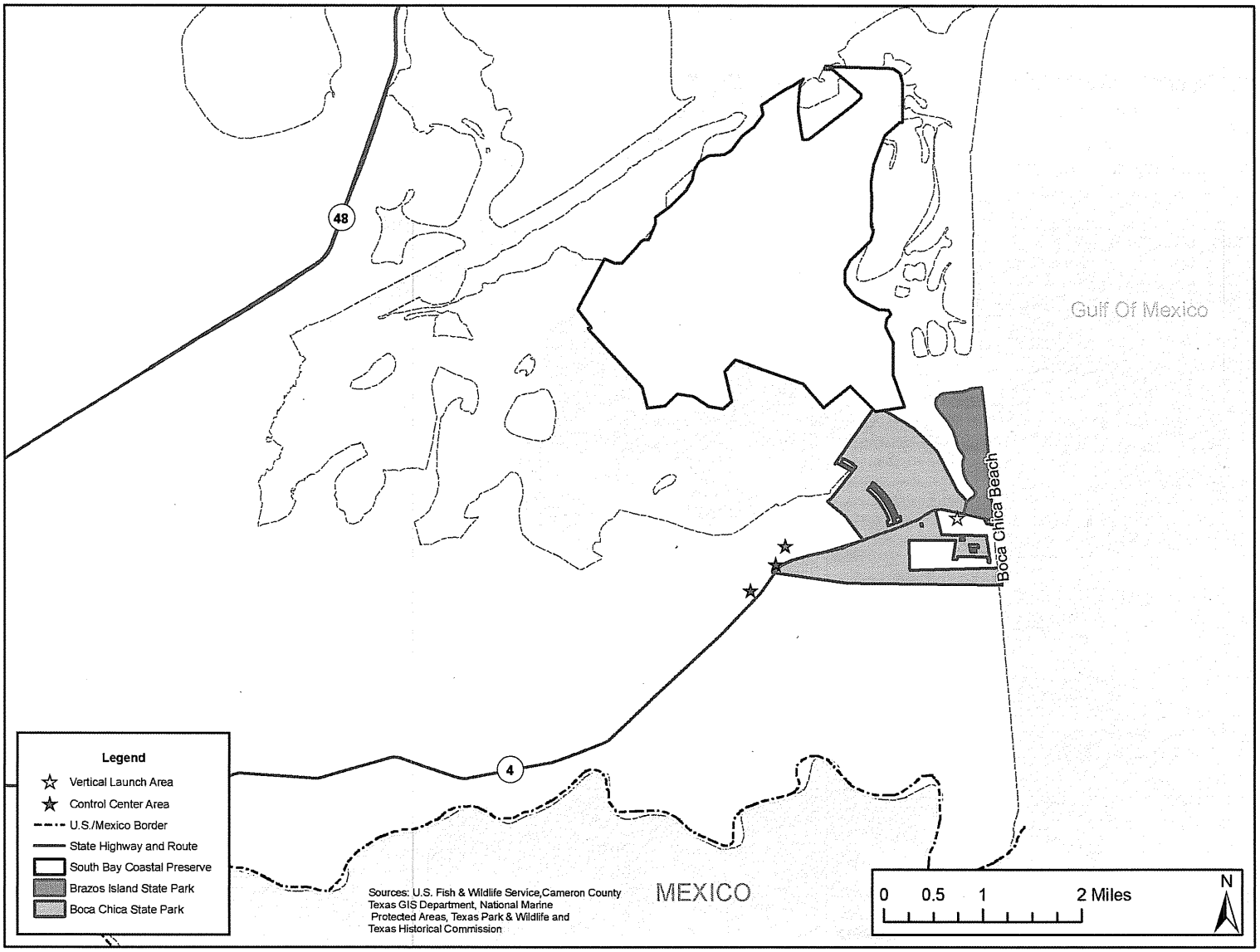
Attachment 1-A. Proposed Vertical Launch Area Layout



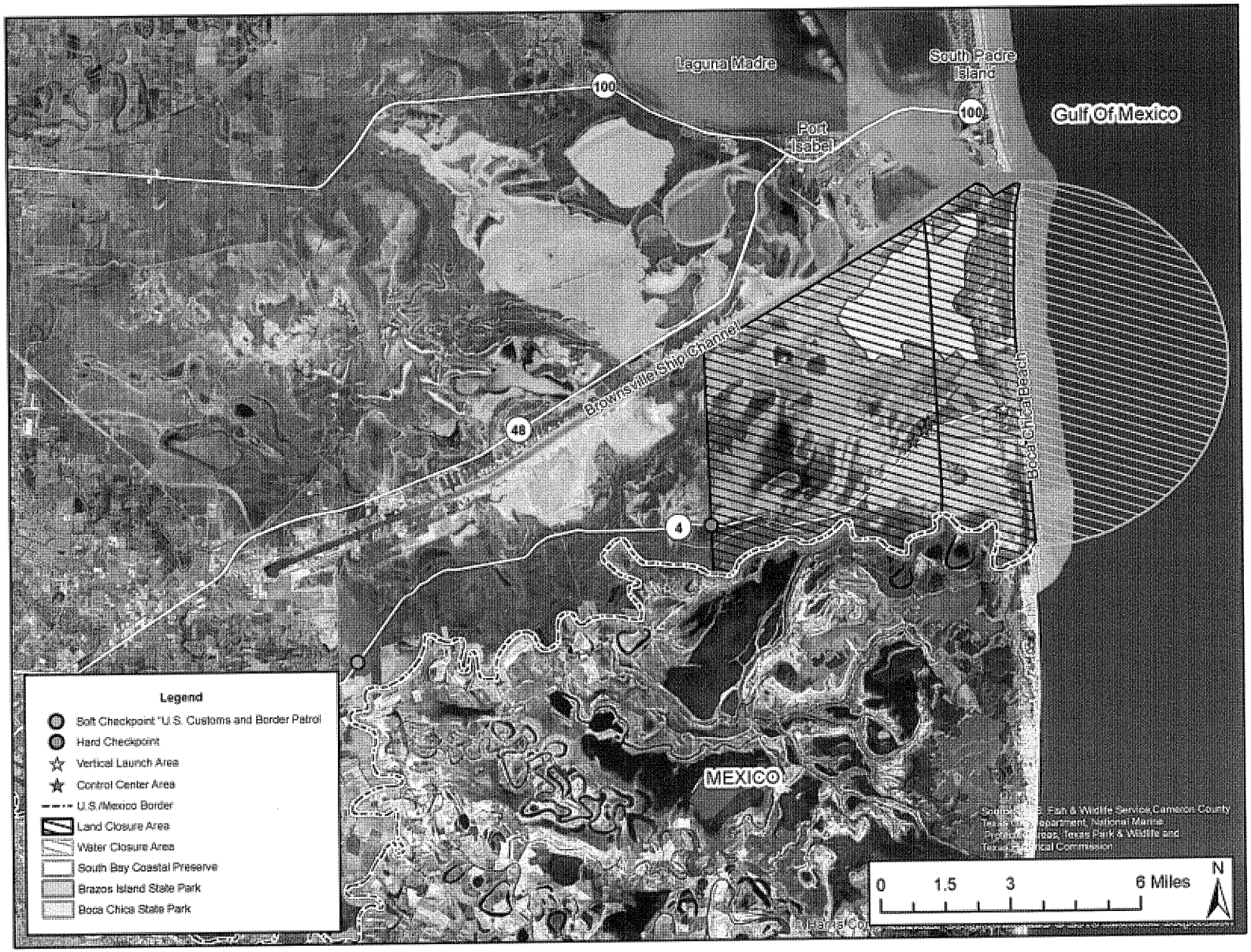
Attachment 1-B. Proposed Control Center Area Layout, Parcels 2 and 3



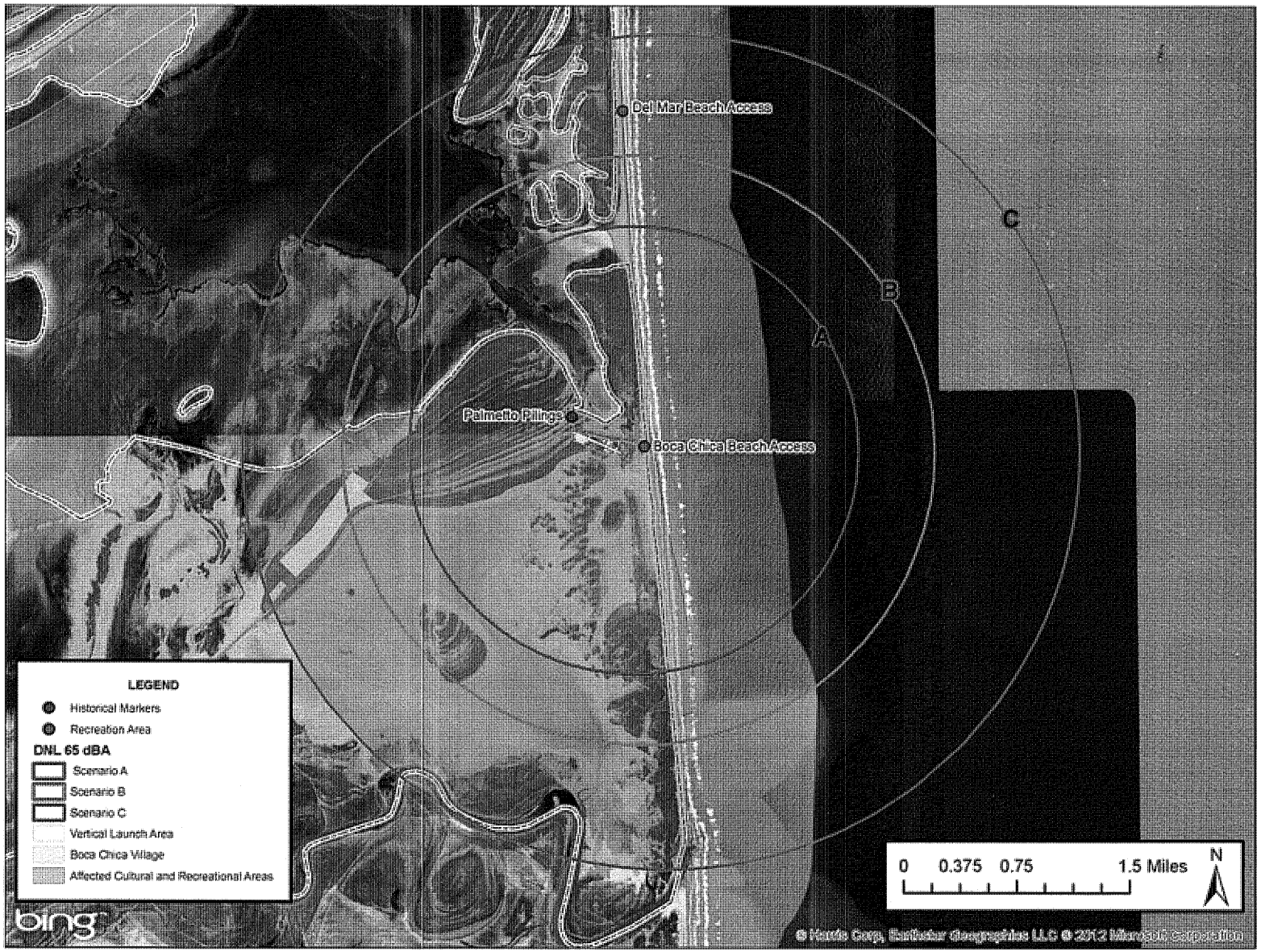
Attachment 1-C. Proposed Control Center Area Layout, Parcel 1



Attachment 2. Locations of Section 4(f) Properties in Relation to Vertical Launch and Control Center Areas



Attachment 3. Proposed Launch Day Closure Areas



Attachment 4. DNL 65 dBA Noise Contours for Three Annual Operations Scenarios

TEXAS PARKS & WILDLIFE

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April 17, 2013

Ms. Stacey M. Zee
Federal Aviation Administration
800 Independence Ave., SW, Suite 325
Washington, DC 20591

RE: Federal Aviation Administration Office of Commercial Space Transportation Section 4(f) determination regarding Texas Parks and Wildlife Department property adjacent to Space Exploration Technologies Corporation proposed vertical launch area and control center, Cameron County, Texas

Commissioners

T. Dan Friedkin
Chairman
Houston

Ralph H. Duggins
Vice-Chairman
Fort Worth

Antonio Falcon, M.D.
Rio Grande City

Karen J. Hixon
San Antonio

Dan Allen Hughes, Jr.
Beeville

Bill Jones
Austin

Margaret Martin
Boerne

S. Reed Morian
Houston

Dick Scott
Wimberley

Lee M. Bass
Chairman-Emeritus
Fort Worth

Carter P. Smith
Executive Director

Dear Ms. Zee:

This letter is in response to the Section 4(f) determination made by the Federal Aviation Administration Office of Commercial Space Transportation (FAA/AST) regarding the properties owned by Texas Parks and Wildlife Department (TPWD).

Your letter dated March 21, 2013, sought TPWD concurrence with the determination that the proposed development of Space Exploration Technologies Corporation's (SpaceX) vertical launch area and control center in Cameron County, Texas, would not constitute "use" as defined by Section 4(f) of three properties owned by TPWD in the immediate project area. Specifically, the FAA/AST determined that construction activities would not involve physical use or temporary occupancy of TPWD properties and therefore would not constitute constructive use of TPWD properties. The FAA/AST also determined that temporary closures of TPWD properties during launches and noise generated during launches would not constitute constructive use of TPWD properties.

Based on the project information that has been provided to TPWD and as we understand the project description, TPWD agrees with the FAA/AST determination as outlined in Mr. McElligott's letter of March 21, 2013.

TPWD has also recently been advised of the release of a Draft Environmental Impact Statement (DEIS) for the SpaceX launch site in Cameron County. TPWD plans to attend the agency hearing on May 7th and provide comments on the DEIS by June 3, 2013.

TPWD appreciates the opportunity to respond and continue coordination with FAA/AST on this project. Thank you.

Sincerely,

Ross Melinchuk
Deputy Executive Director, Natural Resources

RM:RH:gg

4200 SMITH SCHOOL ROAD
AUSTIN, TEXAS 78744-3291
512.389.4800
www.tpwd.state.tx.us

To manage and conserve the natural and cultural resources of Texas and to provide hunting, fishing and outdoor recreation opportunities for the use and enjoyment of present and future generations.

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Appendix D
Launch Noise Modeling Report

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Blue Ridge Research and Consulting, LLC

Final (Revised Oct 2012)

Far-Field Launch Noise During Falcon 9 and Falcon Heavy Liftoff from Texas Launch Site

October 2012

Prepared for:
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Jaclyn Johnson
275 West Street, Suite 110
Annapolis, MD 21401

Prepared by:
Michael James, M.S.
Alexandria Salton, M.S.
Micah Downing, Ph.D.

Contract Number:
9877-27417

BRRC Report Number:
BRRC 12-05 Rev 1

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1 Introduction

This noise analysis supports the Environmental Impact Statement (EIS) for the Federal Aviation Administration (FAA) Office of Commercial Space Transportation (AST) Proposed Action to issue launch licenses and/or experimental permits to Space Exploration Technologies Corp. (SpaceX) that would allow SpaceX to conduct launches of the Falcon 9 and Falcon Heavy orbital vertical launch vehicles and a variety of reusable suborbital launch vehicles from a launch site on privately owned property in Cameron County, Texas (Figure 1). The Falcon 9 is a medium-lift class launch vehicle, which is designed to provide cargo and crew to the International Space Station and other low Earth orbit (LEO) destinations. The Falcon Heavy is a heavy-lift class launch vehicle, designed to place satellites/payloads into LEO and Geostationary Transfer Orbit [1]. SpaceX has proposed to conduct up to twelve total launches per year between the Falcon 9 and Falcon heavy (up to two per year). The majority of launches would occur between the hours of 7:00 a.m. and 7:00 p.m. However, there could be up to one nighttime launch per year. All launches, including pre-flight activities, would be conducted under the control of SpaceX, FAA/AST, and the Launch Operations Area with Houston Air Route Traffic Control Center.



Figure 1. Proposed launch site location in Cameron County, Texas

In support of the EIS, advanced acoustic models were used to generate noise contours for assessing the noise levels and exposures in the area surrounding the proposed launch site. The acoustic models consider many aspects of the launch vehicle including its engine characteristics, ascent trajectory, and

the vehicle dimensions. Both vehicles are shown in Figure 2[1], and they use the SpaceX Merlin 1D liquid-propellant rocket engine, shown in the far right image of Figure 2. The first stage of the Falcon 9 utilizes one nine-engine core while the Falcon Heavy utilizes three nine-engine cores. Both vehicles use liquid oxygen (LOX) and highly refined kerosene, also known as rocket propellant-1 or refined petroleum-1 (RP-1), as propellants to carry payloads into orbit.

This noise study describes the environmental noise associated with the proposed Falcon 9 and Falcon Heavy operations. Section 2 summarizes the noise metrics discussed throughout this report. Section 3 describes the general methodology of the launch noise model and sonic boom noise model. The modeling results are presented in Section 4 and Section 5 summarizes the notable findings of this noise study.

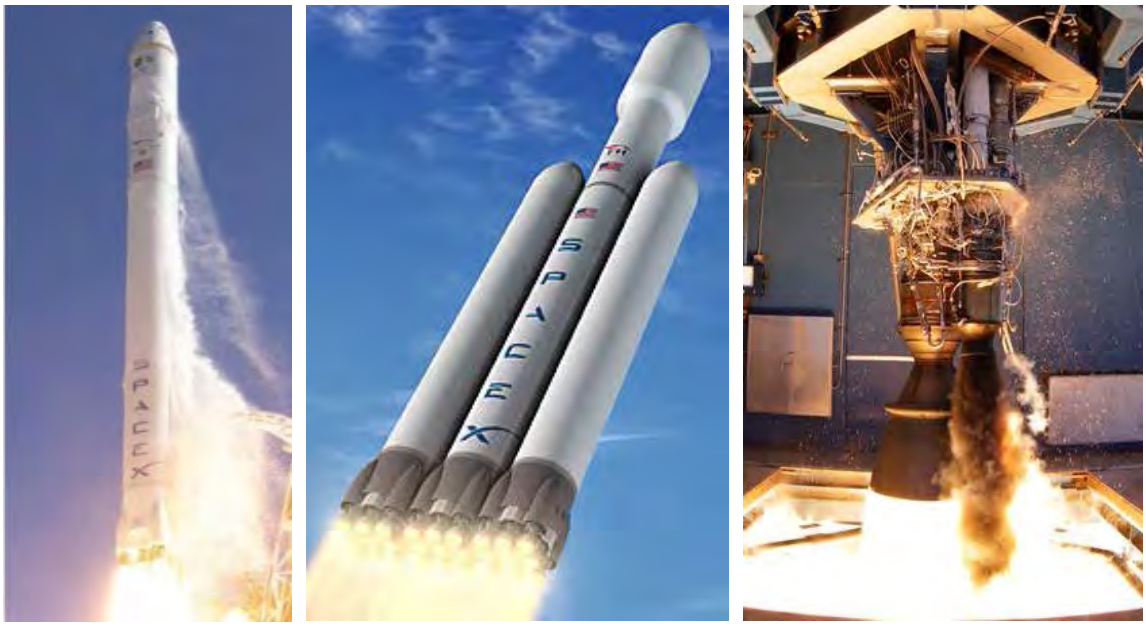

Figure 2. Falcon 9 (left), Falcon Heavy (center), SpaceX Merlin 1D Engine (right)

[1] Images courtesy of SpaceX (www.spacex.com)

2 Noise Metrics and Criteria

2.1 Noise Metrics

Any unwanted sound that interferes with normal activities or the natural environment can be defined as noise. Noise sources can be continuous (constant) or transient (short-duration) and contain a wide range of frequency (pitch) content. Determining the character and level of sound aids in predicting the way it is perceived. Both launch noise and sonic booms are classified as transient noise events.

The decibel (dB) is a ratio that compares the sound pressure of the sound source of interest (e.g. the rocket launch) to a reference pressure (the quietest sound we can hear, 20 µPa (micropascal)). Standard weighting filters help to shape the levels in reference to how they are perceived. An "A-weighting" filter approximates the frequency response of human hearing, adjusting low and high frequencies to match the sensitivity of human hearing. For this reason, the A-weighted decibel level (dBA) is commonly used to assess community noise. However, if the structural response is of importance to the analysis, a "Flat-weighted" (unweighted) level is more appropriate.

The impact of noise can be described with the use of noise metrics, which depend on the nature of the event and who or what is affected by the sound. Individual time-varying noise events have two main characteristics: a sound level that changes throughout the event and a period of time during which the event is heard. The overall sound pressure level (OASPL) provides a measure of the sound level at any given time, while the maximum OASPL (L_{max}) indicates the maximum OASPL achieved over the duration of the event. Sound Exposure Level (SEL) represents both the magnitude of a sound and its duration. SEL provides a measure of the cumulative noise exposure of the entire acoustic event, but it does not directly represent the sound level heard at any given time. Mathematically, it represents the sound level of a constant sound that would, in one second, generate the same acoustic energy as the actual time-varying acoustic event. For sound generated by rocket launches, which last more than one second, the SEL is greater than the L_{max} because an individual launch can take minutes and the L_{max} occurs instantaneously.

The Day-Night Average Sound Level (DNL) is a cumulative noise metric that accounts for the SEL of all noise events in a 24-hour period. Typically DNL values are expressed as the level over a 24-hour annual average day. In order to account for increased human sensitivity to noise at night, a 10 dB penalty is applied to nighttime events (occurring between the hours of 10:00 p.m. and 7:00 a.m.). Noise contour maps of these metrics are comprised of lines of equal noise level or exposure, and they serve as visual aids for assessing the impact of noise on a community.

2.2 Noise Criteria

Noise criteria have been developed in order to protect the public health and welfare of the surrounding community. The following noise criteria address human annoyance, hearing conservation, and structural damage.

2.2.1 Human Annoyance

FAA order 1050.1E, Change 1 [2], guidance on noise indicates that a significant noise impact would occur if analysis shows that the Proposed Action will cause noise sensitive areas to experience an increase in noise of DNL 1.5 dB or more at or above DNL 65 dBA noise exposure when compared to the no action alternative during the same time frame. DNL has been found to correlate well with adverse community impacts for regularly occurring events including aircraft, rail, and road noise [3, 4]. DNL is based on long-term consistent noise exposures. However, the Proposed Action is for up to twelve total launches per year. Thus, it is acknowledged that the suitability of DNL for infrequent noise events is uncertain with respect to current research and dose response studies. The DNL contours are provided to estimate the potential annoyance in compliance with FAA requirements.

2.2.2 Hearing Conservation

Multiple federal government agencies have provided guidelines on permissible noise exposure limits. These documented guidelines are in place to protect one's hearing from long-term continuous daily exposures to high noise levels and aid in the prevention of noise-induced hearing loss (NIHL). The National Institute for Occupational Safety and Health (NIOSH) has standardized employee noise exposure requirements based on level and duration allowed during an 8-hour workday [5]. NIOSH recommendations are designed such that over a 40-year lifetime exposure, the excess risk of developing occupational NIHL is 8%. NIOSH established a recommended exposure limit (REL) for noise at 85 dBA with a 3 dB exchange rate, which means as the level increases by 3 dB the duration is reduced by a factor of two. The Occupational Safety and Health Administration (OSHA) permissible exposure limit (PEL) for noise starts at 90 dBA for an 8-hour period [6]. However, the OSHA exchange rate is 5 dB.

For the entire American public at all times rather than the American worker during his workday, the U. S. Environmental Protection Agency (EPA) has recommended an exposure limit of 70 dBA for 24 hours which provides a margin of safety [7]. EPA recommendations are designed such that over a 40-year lifetime exposure, the excess risk of developing occupational NIHL is 4% [7]. For exchange rates the EPA recommends two separate rates for continuous and short exposure periods (less than 15 minute), 3 dB and 6 dB, respectively. In terms of upper limits on the noise levels, NIOSH set the maximum exposure at 140 dBA, and OSHA set it at 115 dBA. The EPA does not state a maximum level for non-impulsive noise. Therefore, a maximum noise level of 115 dBA will be used to identify potential locations where hearing protection should be considered for a rocket launch. This level is conservative for NIHL since rocket launches will occur at a rate of once a month. At this level the different guidelines provide a range of exposure times from 15 minutes (OSHA) to 28 seconds (NIOSH and EPA).

The Department of Defense occupational Hearing Conservation Program states that the maximum allowable exposure to steady-state noise is 130 dBA [8]. Thus, in the event the sound levels were greater

than the predicted values there would be 15 dBA margin of safety before a threat of hearing damage for a short-term continuous level of 130 dBA.

2.2.3 Structural Damage

Generally, the most sensitive components of a structure to launch noise are windows, and infrequently, the plastered walls and ceilings. A NASA technical memo written by Guest and Sloan [9] found a relationship between structural damage claims and overall sound pressure level from rocket firings. The study was based on community responses to the 45 ground tests of the first and second stages of the Saturn V rocket system conducted in Southern Mississippi over a period of five years. Guest and Sloan [9] determined that "the probability of structural damage [was] proportional to the intensity of the low frequency sound." The study concluded that one damage claim in 1,000 households exposed is expected at an average continuous level of 111 dB, and one in 100 households at 119 dB. The sound levels used to develop the criteria were mean modeled sound levels. It is important to highlight the difference between the static ground tests in which the probability of structural damage is based on and the launch events of concern for this noise analysis. The ground tests occurred for durations much greater than the exposure duration expected for the proposed launch events. Additionally, during ground tests, the engine remains in one position which results in longer exposure duration to continuous levels as opposed to the transient noise occurring from the moving vehicle during a launch event. However, the relationship between damage claims and level documented by Guest and Sloan [9] is the best available noise criteria regarding structural damage resulting from rocket noise. The distances at which the cited levels occur are presented in this noise analysis to provide a general guideline for assessing potential risk to structural damage claims. In addition, a report from the Office of Naval Research on the "Guidelines for Preparing Environmental Impact Statements on Noise" [10] states that one may conservatively consider all sound lasting more than one second with levels exceeding 130 dB (unweighted) as potentially damaging to structures. However, this report is not specific to the low-frequency noise generated by large rockets.

3 Acoustic Modeling Methodology

3.1 Launch Noise

The majority of the noise generated by a rocket launch is created by the rocket plume, or jet exhaust, interacting with the atmosphere along the entire plume, and combustion noise of the propellants. Launch noise occurs in the region surrounding the launch pad and radiates in all directions. However, it is highly directive meaning that a significant portion of the source's acoustic power is concentrated in a specific direction. Additionally, the level of noise received depends on the distance from the source. Noise decreases as the distance from the source increases, for example, there is a 6 dB decrease in OASPL per doubling of distance when described by spherical spreading.

In addition to the launch noise, a launch vehicle can create sonic booms as a result of the shock waves created from supersonic flight, when the vehicle travels faster than the speed of sound. The perception of a sonic boom depends on the distance from the vehicle to the observer as well as the physical characteristics of the vehicle and the atmospheric conditions. The noise is perceived as a deep double boom, with most of its energy concentrated in the low frequency range. Although sonic booms generally last less than one second, their potential for impact is considerable.

3.2 Far-Field Launch Noise Modeling

The acoustic model developed to predict far-field noise from launch vehicles is based on Eldred's Distributed Source Method 1 (DSM-1) reported in NASA SP-8072 [11]. The noise level observed depends on the vehicle specific sound power and the location of the observer in reference to the vehicle's noise source. Sound power is a measure of the acoustic energy per unit of time. The DSM-1 model determines the launch vehicle's total sound power based on its total thrust and exhaust-velocity. Both vehicles utilize SpaceX Merlin 1D Engines, each of which have a diameter of 33.8 in (0.85 m) and produce a thrust of 147,000 lbf (6.5×10^5 N). Both vehicles use the same rocket propellant, which produces an exhaust exit velocity of approximately 9,500 ft/s (2,900 m/s). Only the first stage of the vehicle's launch is considered in this analysis, during which time the total thrust and exhaust velocity are assumed constant.

For launch vehicles with multiple tightly clustered equivalent engines, such as the Falcon 9, the engines can be modeled as a single engine with an effective exit diameter and total thrust [11]. For the Falcon 9, this equates to an effective diameter of 101.4 in (2.6 m) and a total thrust of 1,320,000 lbf (5.8×10^6 N). The three nine-engine cores of the Falcon Heavy are handled differently, by multiplying the observed pressure for one nine-engine core by a scale factor of three, equivalent to a 4.7 dB addition. Table 1 displays the total thrust of the Falcon 9 and Falcon Heavy launch vehicles.

Table 1. Total thrust of the Falcon 9 and Falcon Heavy launch vehicles

Parameter	Falcon 9	Falcon Heavy
Number of Engines	9	27 (9 x 3 cores)
Total Thrust	1,320,000 lbf (5.8×10^6 N)	3,800,000 lbf (17.0×10^6 N)

The modeled noise source comprises a range of frequencies, each of which contains a portion of the total sound power. The portion of sound power contained in each frequency band is not equal and the distribution depends on the ratio of the nozzle exit diameter to exhaust exit velocity [11]. The modeled noise source is actually represented by a set of noise sources distributed along the vehicle exhaust plume, hence the name "Distributed Source Method." The defining feature of the DSM-1 is that each noise source corresponds to a unique frequency. The location of each source influences the distance and angle to the observer. However, for far-field observer locations, the variation in distance and angle from each source to the observer is minimal. Therefore, the set of distributed sources can be modeled as a compact source located at the nozzle exit with an equivalent total sound power and range of frequencies.

The sound pressure level observed is a function of the sound power generated by the engine and the location of the observer in reference to the noise source. The observed sound pressure level decreases as the distance from the source increases. The noise source radiates sound in all directions, however, it is highly directive meaning the acoustic power is concentrated in a specific direction and the sound pressure observed will depend on the angle from the noise source to the observer location. Section 3.2.2 describes the source directivity in more detail. The distance and angles are calculated based on the provided trajectory paths (Figure 3) courtesy of SpaceX, which include the ground location and altitude with respect to time.

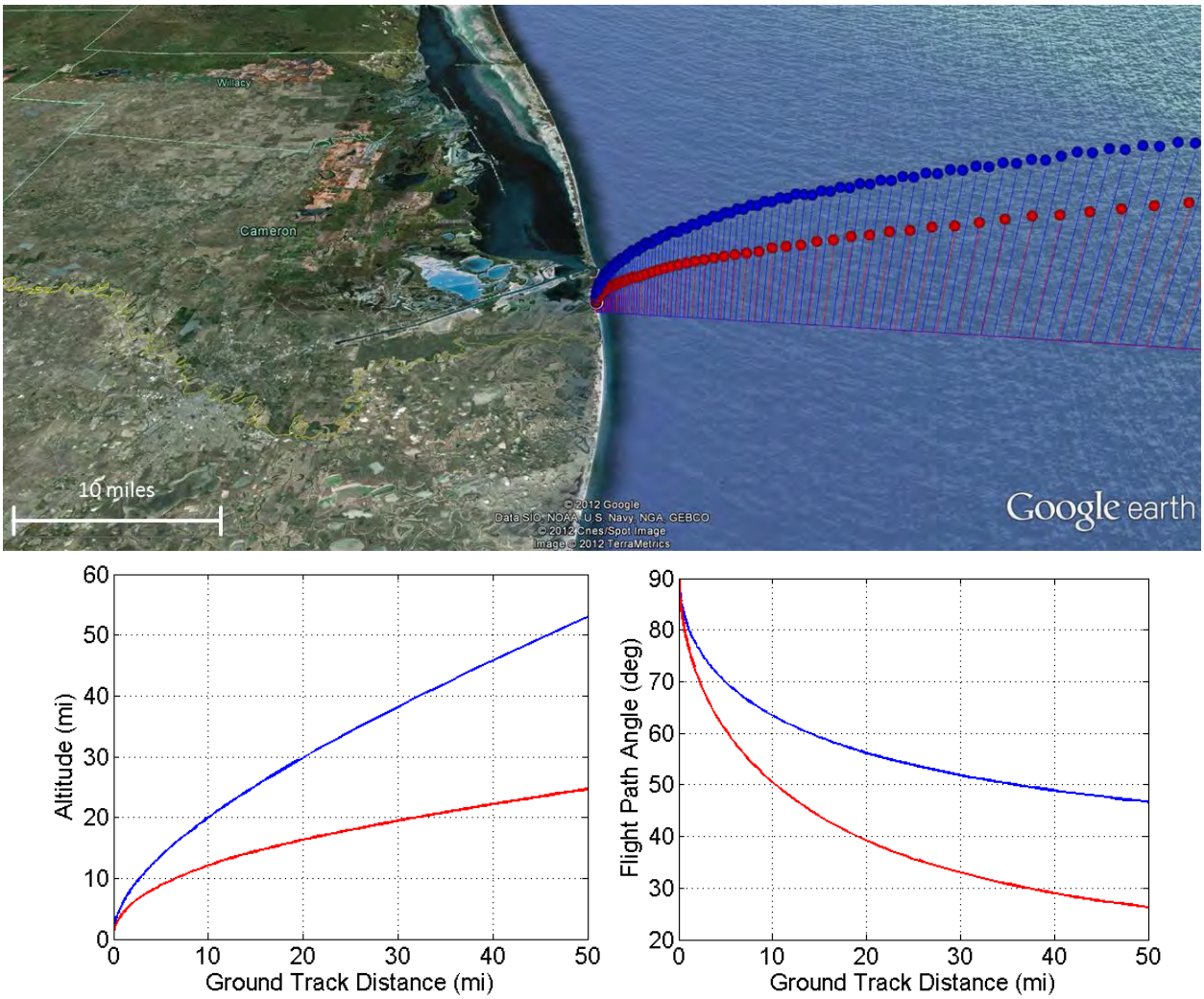

Figure 3. Trajectory (top), altitude profile (bottom left), and flight path angle (bottom right) of Falcon 9 (blue) and Falcon Heavy (red)

3.2.1 Acoustic Efficiency

The acoustic efficiency, defined as the ratio of the sound power to the exhaust mechanical power, determines the percentage of energy in the exhaust that is converted to acoustic energy. The launch vehicle's total sound power depends on the acoustic efficiency of the engine. The acoustic efficiencies of rocket engines generally range from 0.2% to 1.0%, with 1.0% considered a conservative upper bound and 0.5% the most probable [11]. The acoustic efficiency of the rocket engine was modeled using the best available methods. Guest's [12] variable acoustic efficiency model predicted an acoustic efficiency based on the total mechanical power of the engine. The predicted result, used in this study, is an acoustic efficiency of 0.4% for the SpaceX Merlin 1D Engine.

3.2.2 Source Directivity

Directivity is the measure of the focusing of the noise source's sound power and its value depends on the frequency and the angle to the observer. Eldred's report [11] includes a set of directivity indices based on the best available data at the time. NASA's Project Constellation Program has made significant

improvements in determining launch vehicle directivity, which resulted from measurements taken of the static firings of the reusable solid rocket motor (RSRM) of NASA Ares I – Crew Launch [13]. The RSRM directivity indices incorporate a larger range of frequencies and angles then previously available data. These updated directivity indices were used for this analysis.

3.2.3 Doppler Effect

Doppler effect is defined as the change in frequency of a wave for an observer moving relative to its source. It is commonly heard when a vehicle sounding a siren or horn approaches, passes, and recedes from an observer. The perceived frequency is related to the actual frequency by the speed of the source and receiver and the speed of the waves in the medium. The received frequency is higher (compared to the emitted frequency) during the approach, it is identical at the instant of passing by, and it is lower during the recession. The relative changes in frequency can be explained as follows. When the source of the waves is moving toward the observer, each successive wave crest is emitted from a position closer to the observer than the previous wave. Therefore each wave takes slightly less time to reach the observer than the previous wave. Therefore the time between the arrival of successive wave crests at the observer is reduced, causing an increase in the frequency. While they are travelling, the distance between successive wave fronts is reduced; so the waves "bunch together". Conversely, if the source of waves is moving away from the observer each wave is emitted from a position farther from the observer than the previous wave, so the arrival time between successive waves is increased, reducing the frequency. The distance between successive wave fronts is increased, so the waves "spread out". This spreading effect is illustrated in Figure 4 for an observer in a series of images, where a) the source is stationary, b) the source is moving less than the speed of sound, c) the source is moving at the speed of sound, and d) the source is moving faster than the speed of sound. During a rocket launch an observer on the ground will hear a downward shift in the frequency of the sound as the rocket increases its speed relative to the observer. In this case, the difference in observed frequency to emitted frequency increases as the distance from the source to receiver increases. As the frequency is shifted lower the A-Weighting filtering on the spectrum results in a decreased A-weighted sound level. Note there would be no change in the unweighted sound levels.

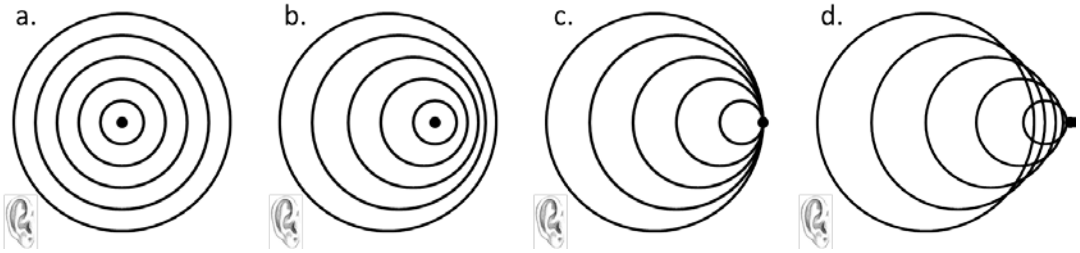

Figure 4. Effect of expanding wavefronts (decrease in frequency) that an observer would notice for higher relative speeds of the rocket relative to the observer for: a) stationary source b) source velocity < speed of sound c) source velocity = speed of sound d) source velocity > speed of sound

3.2.4 Ground Interference

Sound propagation using NASA SP-8072 [11] results in the prediction of a free-field sound level at the receiver. However, sound propagation near the ground is most accurately modeled as the combination of a direct wave (source to receiver) and a reflected wave (source to ground to receiver) shown in Figure 5. The ground will reflect sound energy back toward the receiver. Depending on the frequency of the wave and the geometry, this reflected wave may interfere with the direct wave causing constructive or destructive interference. Additionally, the ground may absorb a portion of the sound energy causing the reflected wave to propagate a smaller portion of energy to the receiver. The acoustic model accounts for the attenuation of sound by the ground [14, 15] by including the effect of the ground on a receiver when estimating the received noise. A receiver height of 5 feet is assumed along with a homogeneous semi-hard ground surface. It should be noted that noise levels directly above a water surface may see an increase of up to 3 dB because of the acoustical hardness of the water surface.

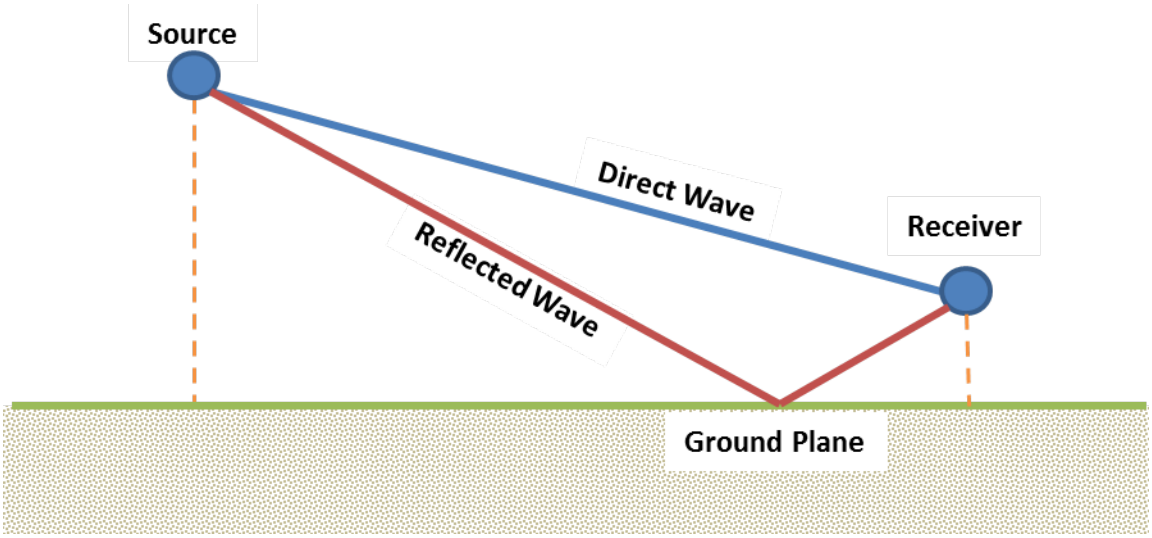

Figure 5. Sound propagation near the ground is modeled as the combination of a direct wave (blue) and a reflected wave (red) from the source to the receiver.

3.2.5 Atmospheric Absorption and Nonlinear Effects

Atmospheric absorption is a measure of the sound attenuation due to the temperature, pressure and relative humidity of the air. The attenuation of sound due to atmospheric absorption generally increases with frequency. However, due to the distortion of high-pressure sound waves as they travel through the medium, nonlinear propagation effects may counteract the effect of atmospheric absorption at certain distances.

The results of a study conducted by McInerny and Ölçmen [16] showed that rocket noise can be viewed as a distribution of nonlinear effects due to weak shocks and small-scale random noise. McInerny and Ölçmen also note that as the propagation distance increases, the importance of the shocks decreases and the noise is subjected to the linear effects of atmospheric absorption. However, McInerny and Ölçmen [16] state that even 9.3 miles (15 km) from the source, “the Titan IV sound-pressure data

retained vestiges of weak shock behavior." Additionally, in a study documented by Gee et al. [17], measurements of high-power jet aircraft appeared to have greater high-frequency energy than predicted by linear theory, indicating evidence of nonlinear propagation effects. Furthermore, nonlinear predicted spectra, which neglected atmospheric variability, showed better agreement with measured spectra than linear predictions with atmospheric absorption. Considering the results of these studies, the nonlinear effects are assumed to counteract the effects of atmospheric absorption within the region of study and therefore, both of these behaviors are neglected in the acoustic model.

3.3 Sonic Boom Noise Modeling

The single-event prediction model, PCBOOM4 [18, 19], provided by the Air Force Center for Engineering and Environment (AFCEE) is used to predict the sonic boom footprint. PCBOOM4 calculates the magnitude and location of sonic boom overpressures on the ground due to supersonic flight. Several inputs are required to calculate the sonic boom impact, including the aircraft model, the trajectory path, the atmospheric conditions and the ground surface height. Predicted sonic boom footprints are in the form of constant pressure contours.

4 Results

The following sections present the results of the acoustic models described in Section 3, with the purpose of supporting the EIS for FAA's Proposed Action to issue launch licenses and/or experimental permits to SpaceX to conduct operations of its Falcon 9 and Falcon Heavy orbital vertical launch vehicles from a launch site in Cameron County, Texas. The modeled launch noise impact is represented by four acoustic metrics, A-weighted OASPL ($L_{A,max}$), unweighted OASPL (L_{max}), SEL, and DNL, and presented in the form of noise contour maps. The launch noise model utilizes a flight trajectory profile provided by SpaceX (Figure 3), in which only the first stage is considered. The modeled noise does not include the effect of atmospheric absorption or nonlinear propagation effects as described in Section 3.2.5.

In addition to the noise contour maps, special consideration is given to the noise levels observed at the nearest house location. The time history of the OASPL is presented to assess the launch noise levels in reference to the noise criteria described in Section 2.2. Lastly, the results of the sonic boom model are presented to provide a complete assessment of the noise impact.

4.1 Maximum A-weighted OASPL Contour Maps

The OASPL provides a measure of the level at any given time. The $L_{A,max}$ represents the maximum A-weighted OASPL observed over a duration of an event. The noise levels resulting from the launch of the Falcon 9 launch vehicle are shown in the six-mile-radial and twenty-mile-radial contour maps in Figure 6 and Figure 7, respectively. The Falcon Heavy launch $L_{A,max}$ contour maps are shown in Figure 8 and Figure 9. The contour maps are centered on the launch site and the contour lines are labeled with their respective levels in 5 dBA increments. As a reference location, the site of the nearest house is marked with a black diamond. The asymmetric extension of the contours directly below the flight path is a consequence of the vehicle's trajectory, specifically the flight path angle and its altitude, which is more prevalent for the Falcon Heavy as its trajectory lies closer to the ground in comparison to the Falcon 9.

The maximum $L_{A,max}$ at any given distance from the launch pad is shown Table 2 for the Falcon 9 and Falcon Heavy.. The level presented for a given distance encompasses all headings, resulting in the collapse of the contour data to a line. It should be noted that distances less than 2,000 ft are approaching the near-field range where a more rigorous study would be required to account for a non-compact source, the deflection of the plume off the pad and the pad structure, the effect of the deluge system, and near-field propagation, among other effects. Hearing protection to reduce levels below 115 dBA is recommended at distances up to 1.2 and 2.1 miles for the Falcon 9 and Falcon Heavy, respectively.

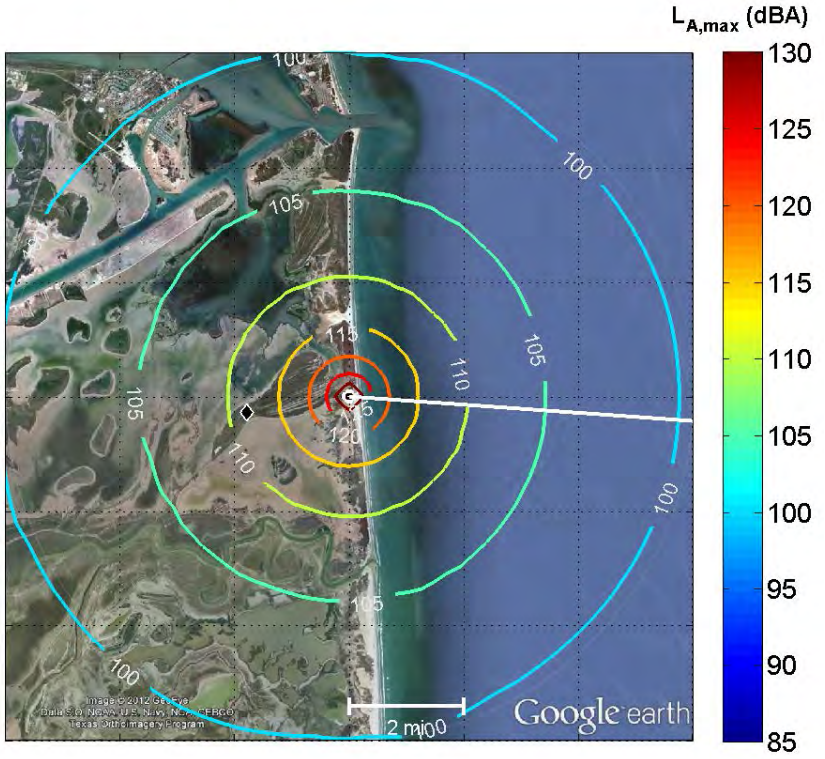

Figure 6. Falcon 9 $L_{A,max}$ within 6-mile radius from launch site

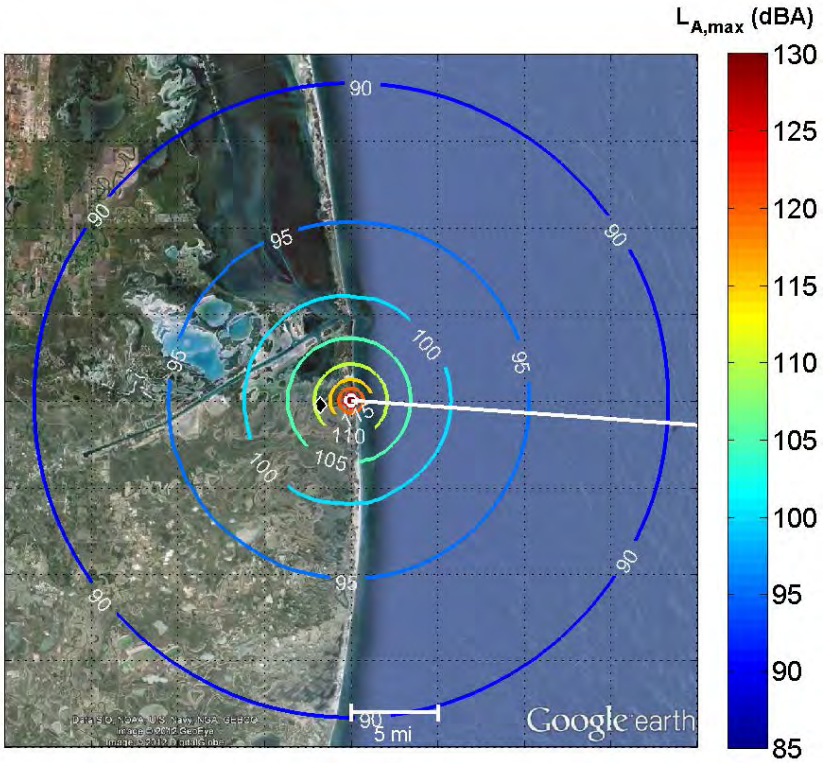

Figure 7. Falcon 9 $L_{A,max}$ within 20-mile radius from launch site

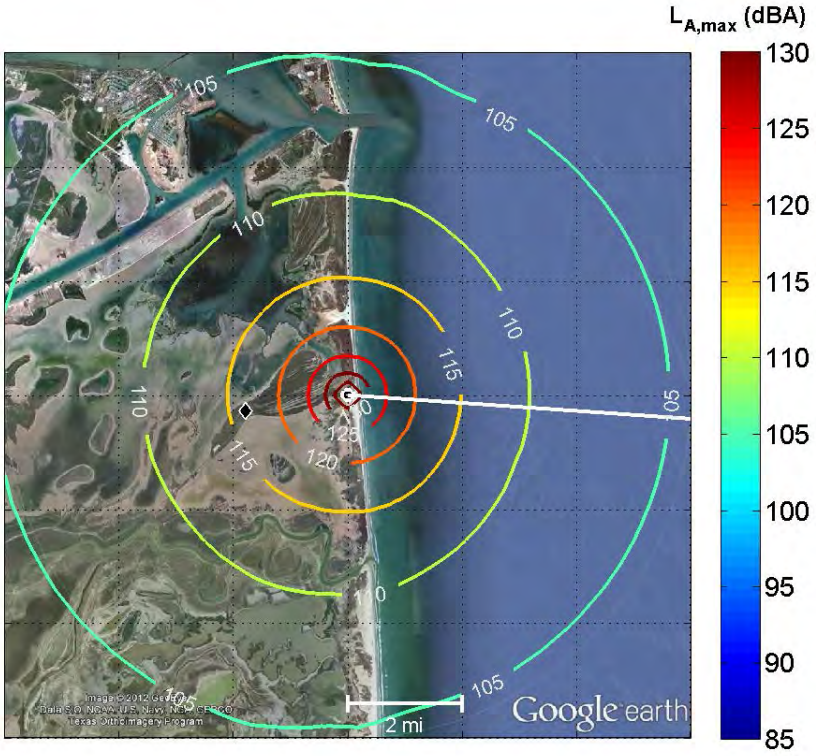

Figure 8. Falcon Heavy $L_{A,max}$ within 6-mile radius from launch site

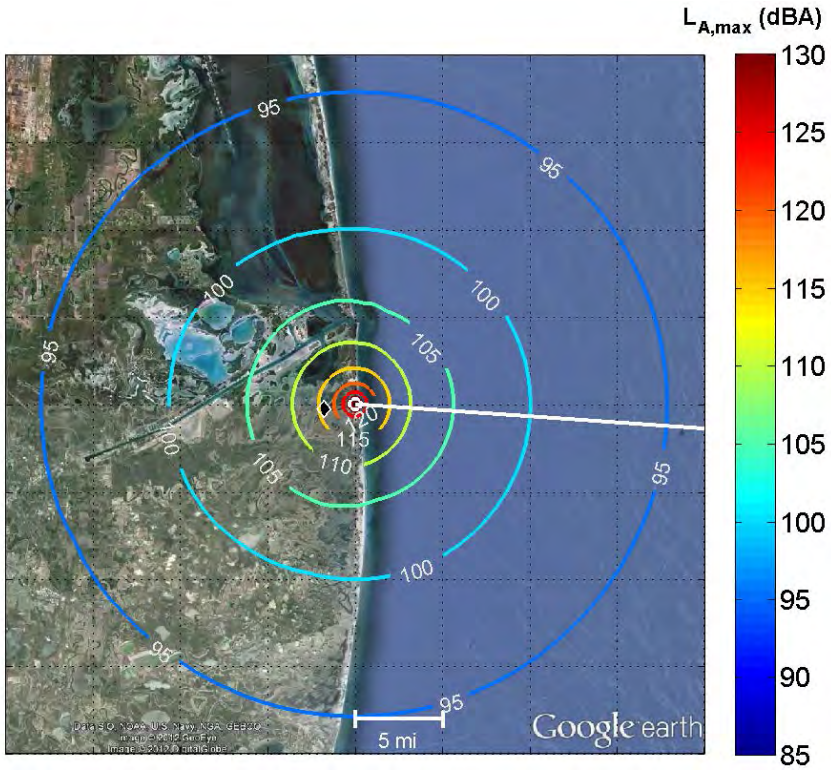

Figure 9. Falcon Heavy $L_{A,max}$ within 20-mile radius from launch site

Table 2. Maximum predicted $L_{A,max}$ versus distance

Maximum Predicted $L_{A,max}$ (dBA)		
Distance (mi)	Falcon 9	Falcon Heavy
0.2	130	135
0.3	128	133
0.4	125	130
0.5	123	128
0.6	122	126
0.7	120	125
0.8	119	123
0.9	118	123
1.0	117	122
1.5	113	118
2	111	115
3	107	112
4	104	109
5	102	107
6	100	105
7	99	104
8	98	103
9	96	101
10	95	100
12	94	99
15	92	97
17	91	95
20	89	94

4.2 Maximum Unweighted OASPL Contour Maps

A NASA technical memo written by Guest and Sloan [9] found a relationship between structural damage claims and overall sound pressure level from rocket firings, where "the probability of structural damage [was] proportional to the intensity of the low frequency sound." The study concluded that one damage claim in 1,000 households exposed is expected at an average level of 111 dB, and one in 100 households at an average level of 119 dB. These specific levels are provided as a general guideline to assess the potential risk for structural damage when reviewing the L_{max} contour maps. The noise levels resulting from the launch of the Falcon 9 launch vehicle are shown in the six-mile-radial and twenty-mile-radial contour maps in Figure 10 and Figure 11, respectively. The Falcon Heavy launch L_{max} contour maps are shown in Figure 12 and Figure 13. The contour maps are centered on the launch site and the contour lines are labeled with their respective levels in 5 dB increments. As a reference location, the site of the nearest house is marked with a black diamond. The asymmetric extension of the contours directly below the flight path, shown in Figure 13, is a consequence of the vehicle's trajectory, specifically the flight path angle and its altitude, which is more prevalent for the Falcon Heavy as its trajectory lies closer to the ground in comparison to the Falcon 9.

The maximum L_{max} at any given distance from the launch pad is shown in Table 3 for the Falcon 9 and Falcon Heavy. The level presented for a given distance encompasses all headings, resulting in the collapse of the contour data to a line. The relationship between damage claims and level documented by Guest and Sloan is the best available noise criteria regarding structural damage resulting from rocket noise. The distances at which the cited levels occur are presented in this noise analysis to provide a general guideline for assessing potential risk to structural damage claims. The area on land exposed to levels of 119 dB or greater is included within 3.4 and 6.4 miles from the launch site for the Falcon 9 and Falcon Heavy, respectively. The area on land exposed to levels of 111 dB or greater is included within 9.1 and 17.3 miles from the launch site for the Falcon 9 and Falcon Heavy, respectively.

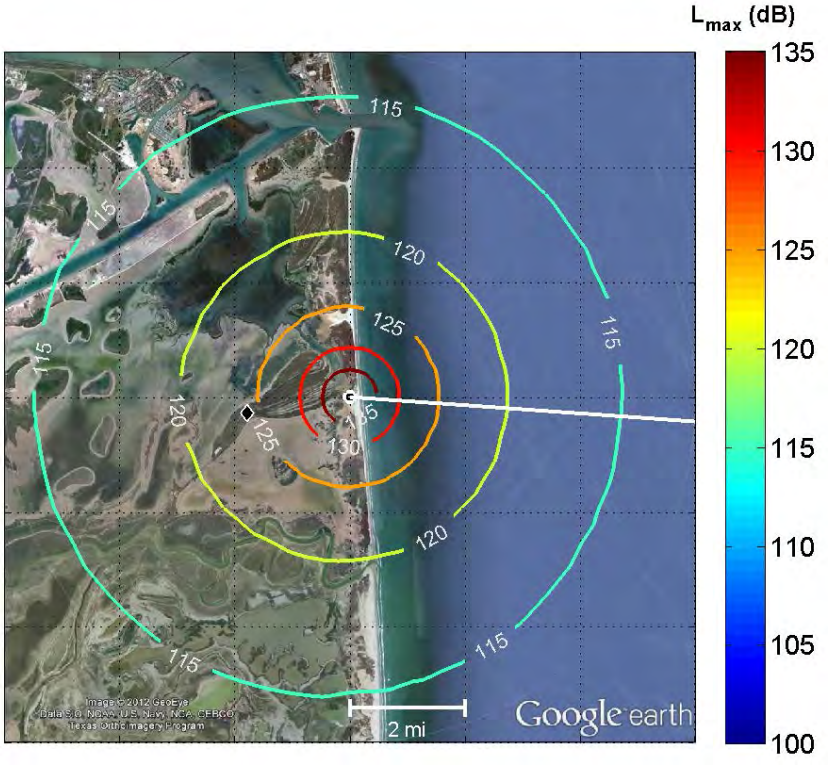

Figure 10. Falcon 9 L_{max} within 6-mile radius from launch site

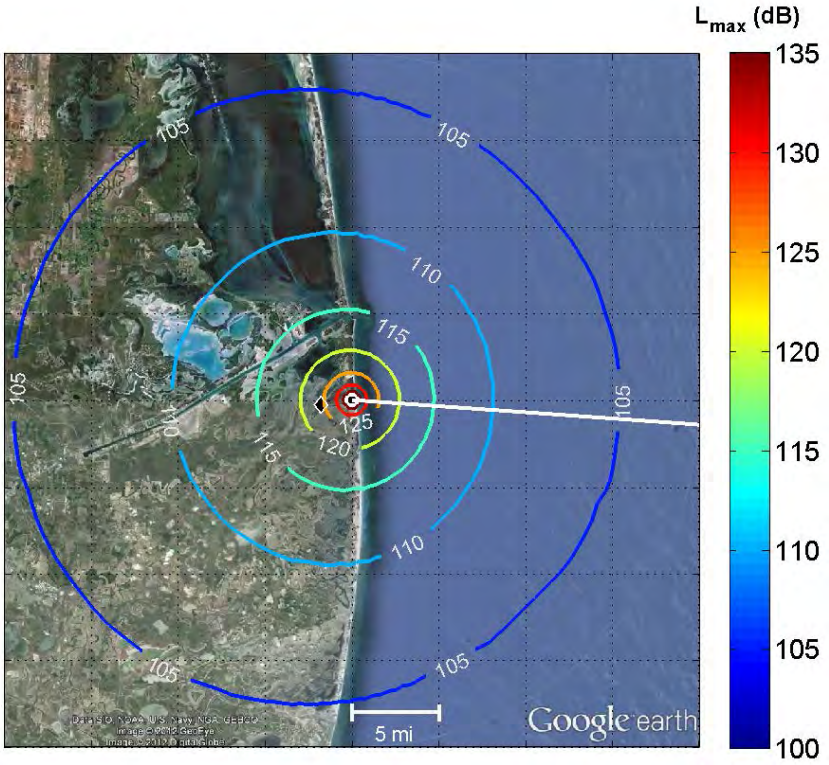

Figure 11. Falcon 9 L_{max} within 20-mile radius from launch site

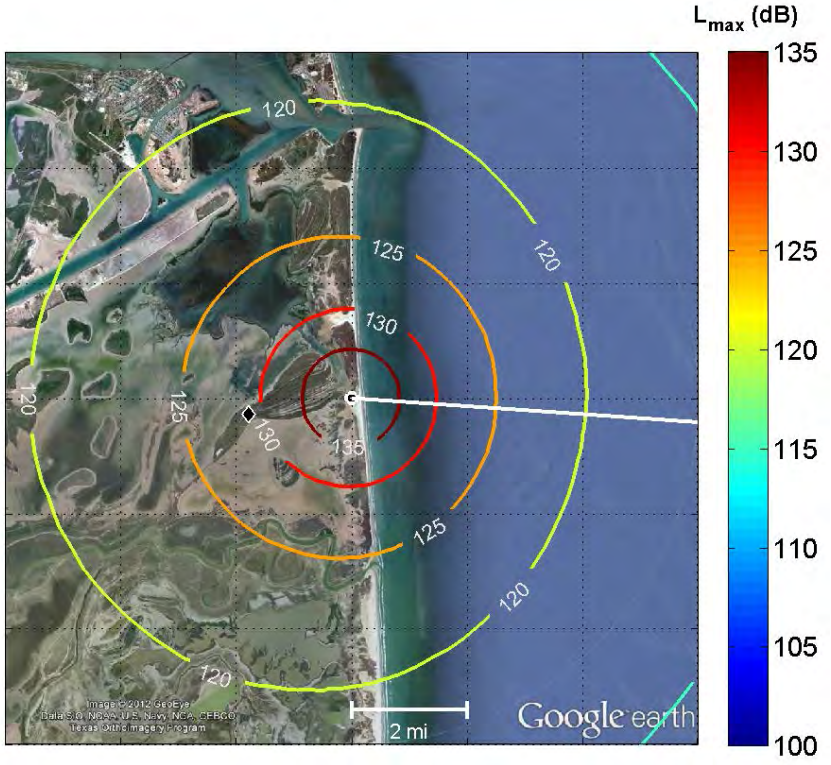

Figure 12. Falcon Heavy L_{max} within 6-mile radius from launch site

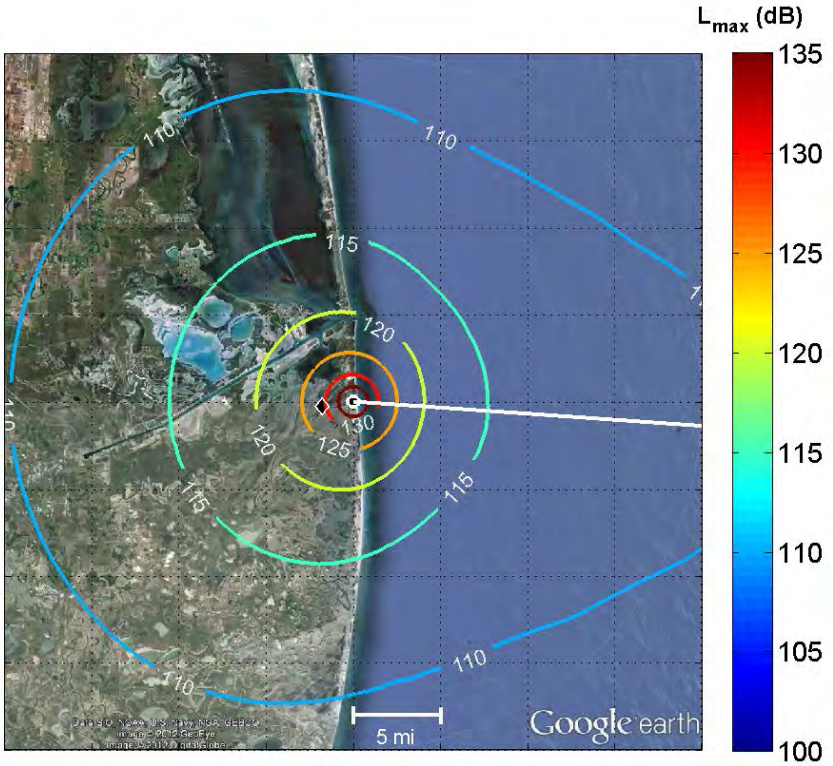

Figure 13. Falcon Heavy L_{max} within 20-mile radius from launch site

Table 3. Maximum predicted L_{max} versus distance

Maximum Predicted L_{max} (dB)		
Distance (mi)	Falcon 9	Falcon Heavy
0.2	141	146
0.3	139	144
0.4	137	142
0.5	135	140
0.6	133	138
0.7	132	137
0.8	130	135
0.9	130	135
1.0	129	134
1.5	126	130
2	123	128
3	120	125
4	117	122
5	116	121
6	114	119
7	113	118
8	112	117
9	111	116
10	110	115
12	109	114
15	107	112
17	106	111
20	105	111

4.3 A-weighted SEL Contour Maps

SEL represents both the magnitude of a sound and its duration. SEL provides a measure of the net exposure of the entire acoustic event, but it does not directly represent the sound level heard at any given time. The modeled A-weighted SEL resulting from the launch of the Falcon 9 launch vehicle are shown in the six-mile-radial and twenty-mile-radial contour maps in Figure 14 and Figure 15, respectively. The Falcon Heavy launch SEL contour maps are shown in Figure 16 and Figure 17. The contour maps are centered on the launch site and the contour lines are labeled with their respective levels in 5 dBA increments. As a reference location, the site of the nearest house is marked with a black diamond. The asymmetric extension of the contours directly below the flight path is a consequence of the vehicle's trajectory, specifically the flight path angle and its altitude, which is more prevalent for the Falcon Heavy as its trajectory lies closer to the ground in comparison to the Falcon 9. The receptor locations along the flight path are exposed to larger sound levels for a longer duration as they experience the noise from the vehicle approaching their position directly overhead in addition to the vehicle moving farther away.

The maximum SEL at any given distance from the launch pad is shown in Table 4 for the Falcon 9 and Falcon Heavy. The level presented for a given distance encompasses all headings, resulting in the collapse of the contour data to a line.

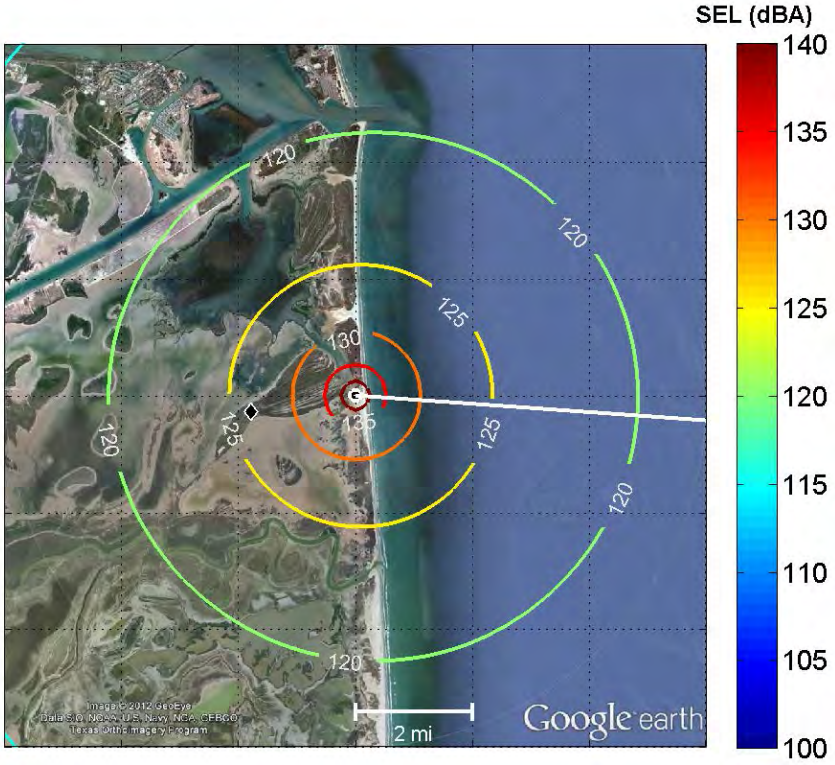

Figure 14. Falcon 9 SEL within 6-mile radius from launch site

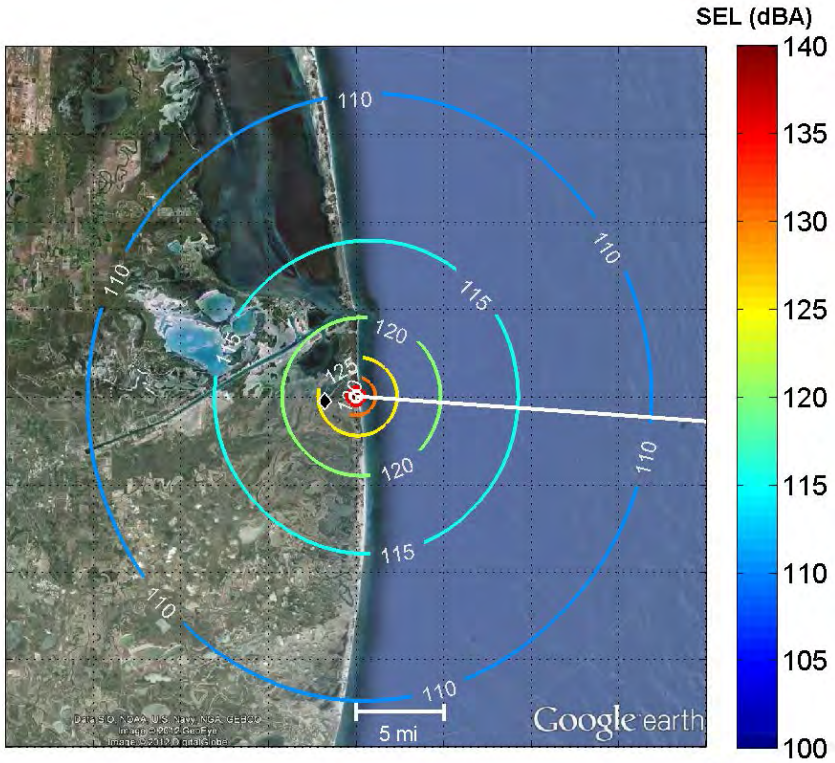

Figure 15. Falcon 9 SEL within 20-mile radius from launch site

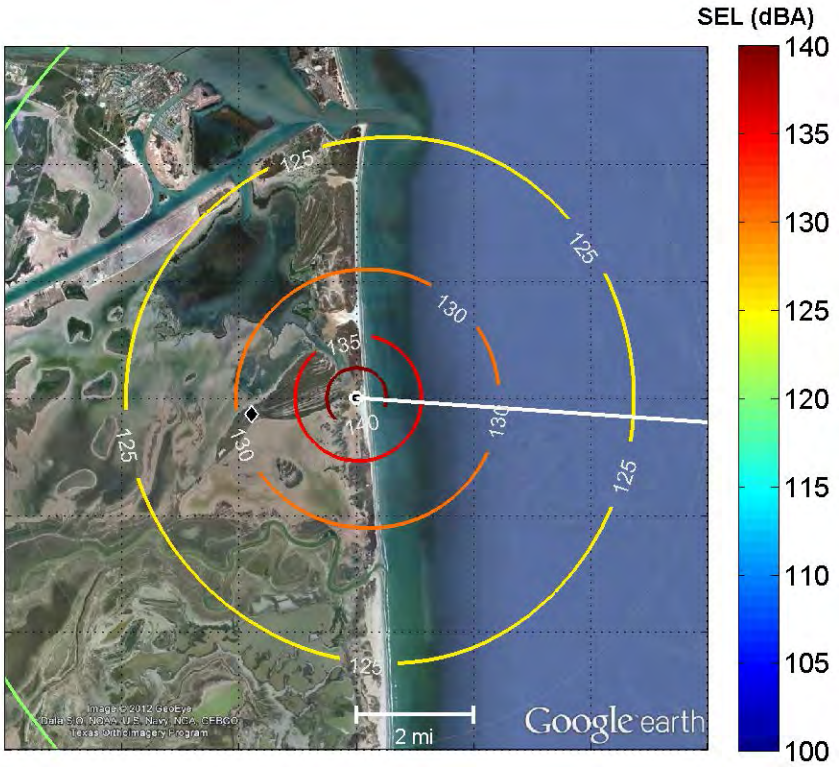

Figure 16. Falcon Heavy SEL within 6-mile radius from launch site

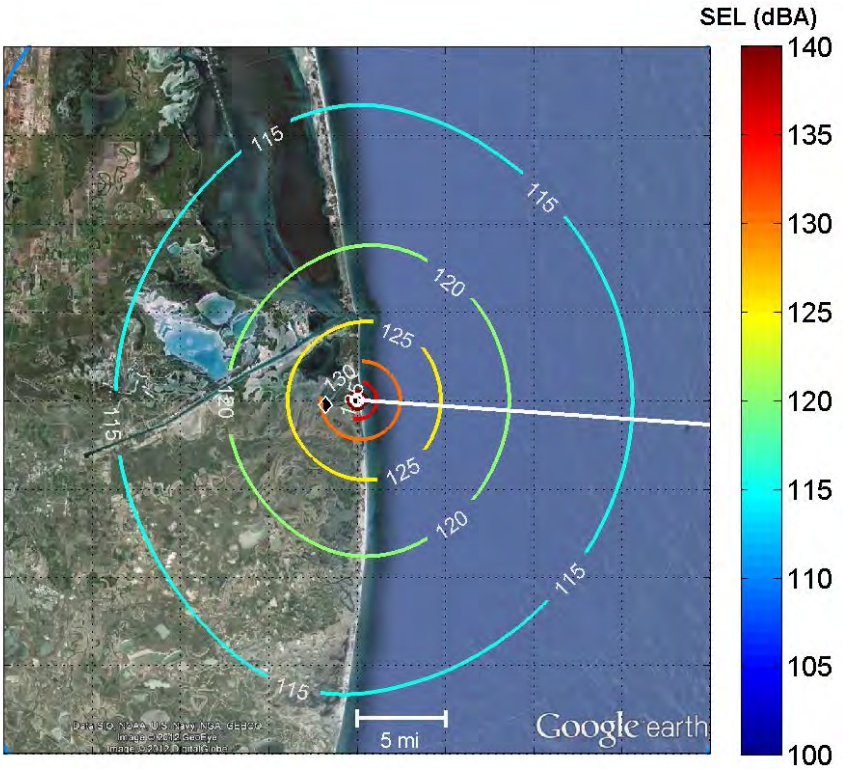

Figure 17. Falcon Heavy SEL within 20-mile radius from launch site

Table 4. Maximum predicted SEL versus distance

Maximum Predicted SEL (dBA)		
Distance (mi)	Falcon 9	Falcon Heavy
0.2	141	145
0.3	139	144
0.4	137	142
0.5	135	140
0.6	134	139
0.7	133	138
0.8	132	137
0.9	131	136
1.0	131	136
1.5	128	133
2	126	131
3	123	129
4	121	126
5	120	125
6	118	123
7	117	122
8	116	121
9	115	120
10	114	119
12	113	118
15	111	116
17	110	115
20	109	113

4.4 DNL Contour Map

Daily average sound levels are typically used for the evaluation of community annoyance. DNL is a composite metric that accounts for the SEL of all noise events in a 24-hour period. Typically DNL levels are expressed as the level over a 24-hour annual average day. In order to account for increased human sensitivity to noise at night, a 10 dB penalty is applied to nighttime events (occurring between the hours of 10:00 p.m. and 7:00 a.m.). Therefore, the DNL is dependent on the number of annual daytime and nighttime events. The Proposed Action includes up to twelve total launches per year which equates to 0.033 average daily events.

The Proposed Action includes up to one nighttime launch per year. Three scenarios are outlined in Table 5 and their respective 65 dBA noise contours are shown in Figure 18. Scenario A includes ten Falcon 9 and two Falcon Heavy daytime launch events. Scenario B includes one nighttime event for a Falcon 9 and Scenario C includes one nighttime event for a Falcon Heavy. Each scenario shows a significant increase in the DNL relative to current conditions as defined by FAA order 1050.1E, Change 1 [2] as the current background noise levels are estimated at approximately 45 dBA [20]. The area inside the DNL 65 dBA contour levels extend to distances of 1.5, 2.0, and 2.8 miles, for Scenario A, B, and C, respectively. The number of households within the DNL 65 dBA is estimated using Google Earth as 0, 13, and 39, for Scenario's A, B, and C, respectively. However, the Proposed Action is for up to twelve total launches per year. Thus, it is acknowledged that the suitability of DNL for infrequent noise events is uncertain with respect to current research and dose response studies. The DNL 65 dBA noise contours are provided in this section to comply with FAA requirements.

Table 5. Annual operations scenarios used to compute DNL noise contours

Scenario	Falcon 9 Annual Operations		Falcon Heavy Annual Operations		Total Operations
	Daytime	Nighttime	Daytime	Nighttime	
A	10	0	2	0	**12**
B	9	1	2	0	**12**
C	10	0	1	1	**12**

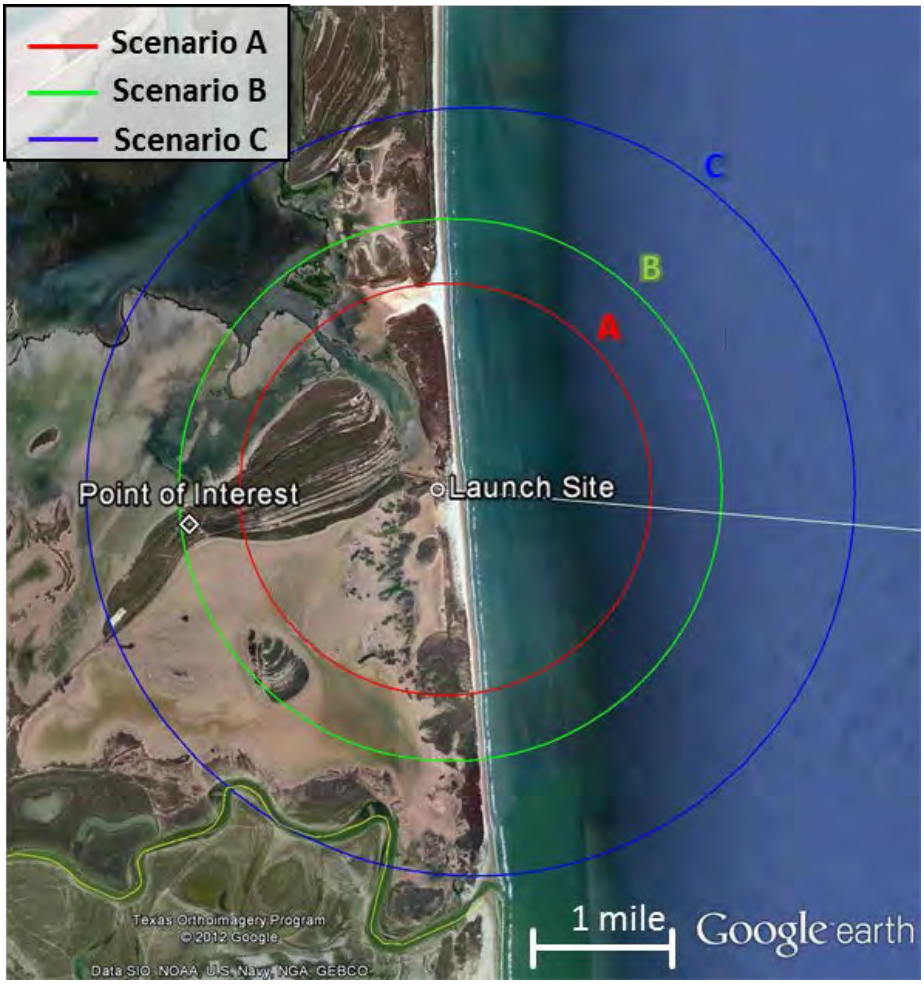

Figure 18. DNL 65 dBA noise contours for the three annual operations scenarios

4.5 Sonic Boom Noise Contours

The Falcon 9 and Falcon Heavy sonic boom footprints due to supersonic flight are presented in Figure 19 and Figure 20, respectively. The sonic boom overpressure is measured in pounds per square foot (psf) and the contours may not close due to the finite time steps of the trajectory profile. The trajectory is plotted in white for reference. The sonic booms modeled intercept the ground well off the coast of the study area in the Gulf of Mexico.

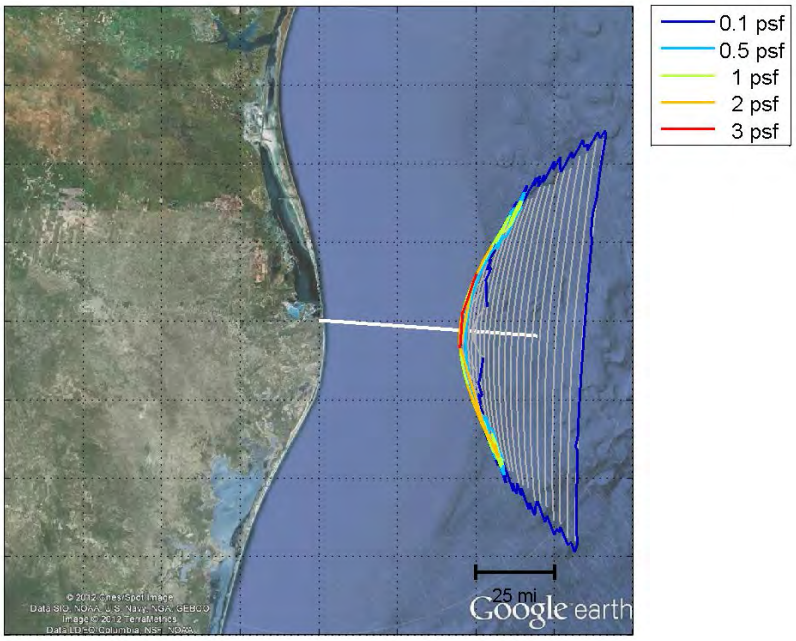

Figure 19. Falcon 9 sonic boom footprint within a 100-mile radius from launch site

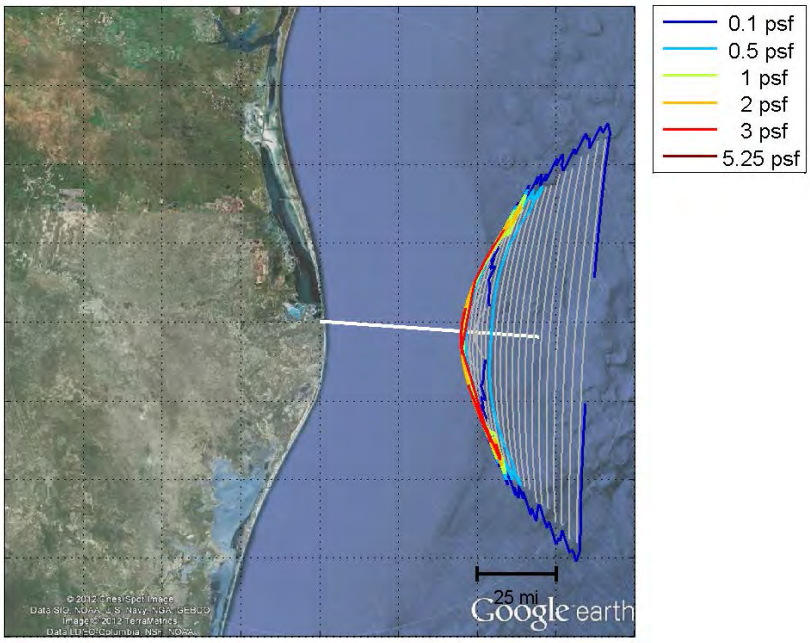

Figure 20. Falcon Heavy sonic boom footprint within a 100-mile radius from launch site

4.6 OASPL at Nearest House Location

The nearest house location was modeled as a specific point of interest to determine the sound levels due to a single launch event of the Falcon 9 and Falcon Heavy. The nearest house, shown in Figure 21, is located approximately 1.8 miles from the proposed launch site at a latitude and longitude of, 25.99279167° N and 97.18148611° W [21]. Assessment methods include a presentation of the "A-weighted" OASPL with respect to time at the nearest house location in addition to the noise contours.



Figure 21. Location of nearest house in reference to the proposed launch site

The model predicted maximum OASPL of 111 dBA and 116 dBA for the Falcon 9 and Falcon Heavy, respectively, as shown in Table 6. The OASPL time history observed at this location for the Falcon 9 and Falcon Heavy, are shown in Figure 22 and Figure 23, respectively. Near the end of the first stage, the OASPL appears to decrease at a slower rate, which is due to the nature of the trajectory. Although the vehicle is moving farther away, its orientation to the ground is shifting so that more acoustic energy is directed towards the house based on the angle from the source to receiver. In addition, as the launch vehicle moves away from the house, the time required for a doubling of distance, equating to a level decrease of 6 dB, increases, resulting in a reduced slope.

Occupants at this location should consider the use of hearing protection during a launch event based on the 115 dBA OSHA standard. For the structure, the probability of a noise induced structural vibration damage claim will be greater than one in 100 for a launch event.

Table 6. L_{max} at nearest house location

OASPL at Nearest House Location	Unweighted OASPL (dB)	A-weighted OASPL (dBA)
Falcon 9	124	111
Falcon Heavy	129	116

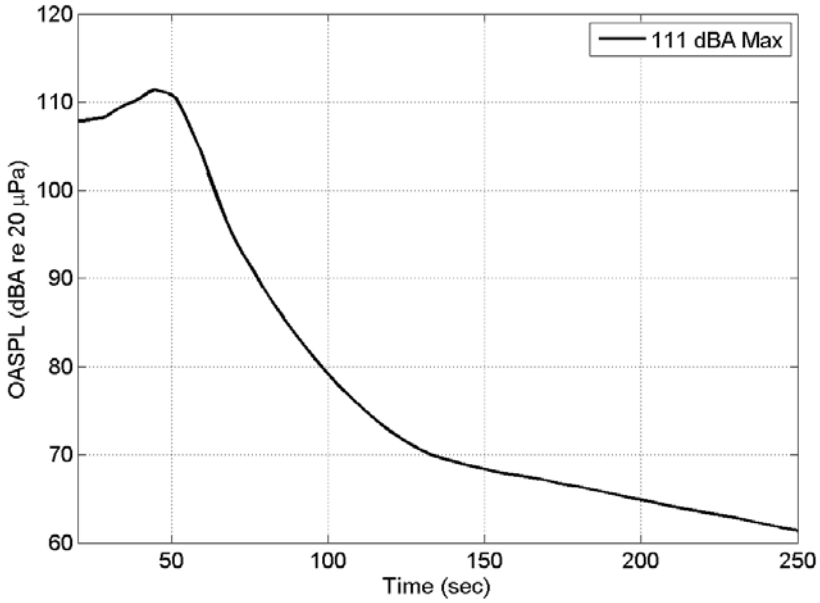

Figure 22. Falcon 9 OASPL time history at nearest house location

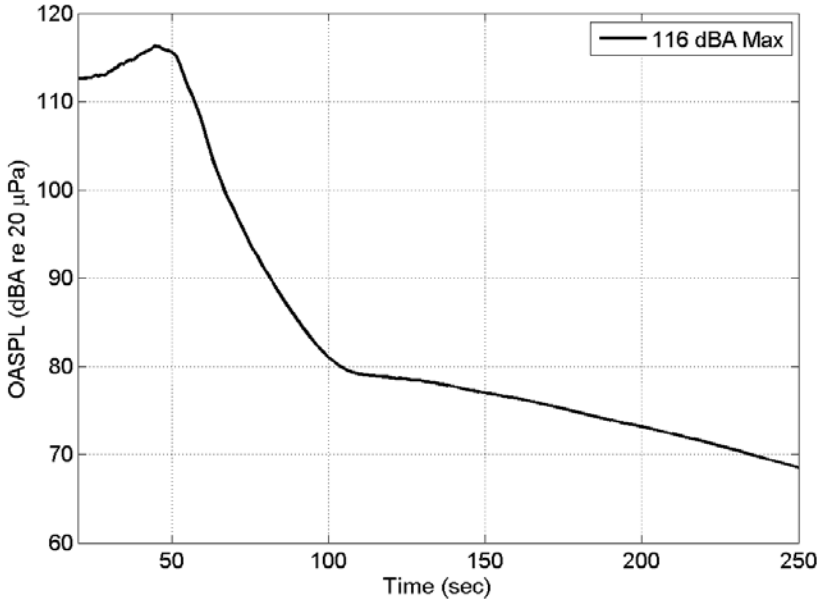

Figure 23. Falcon Heavy OASPL time history at nearest house location

5 Summary

This noise analysis supports the EIS for the FAA/AST Proposed Action to issue launch licenses and/or experimental permits to SpaceX that would allow SpaceX to conduct launches of the Falcon 9 and Falcon Heavy orbital vertical launch vehicles and a variety of reusable suborbital launch vehicles from a launch site on privately owned property in Cameron County, Texas. The launch noise impact assessment utilizes noise contour maps generated with an advanced acoustic model and should be viewed in reference to the noise criteria presented in Section 2.2.

To assess the noise impact on humans, "A-weighted" OASPL noise contours are presented in reference to the 115 dBA OSHA guidelines. The noise level is greatest nearest to the launch site and decreases as the distance from the launch site increases. Therefore, when considering the 115 dBA guideline, the 115 dBA contour line will encompass the area of concern and any location outside of the contour should experience levels less than 115 dBA. The results of this study conclude that levels may exceed the 115 dBA guideline within distances of approximately 1.2 and 2.1 miles for the Falcon 9 and Falcon Heavy, respectively. However, the public is notified in advance of launch dates, and while some observers may, under appropriate atmospheric conditions, find the noise from a launch to be an annoyance, the noise is maintained for short durations, is of low frequency, attenuates rapidly, and occurs infrequently.

Special consideration was given to the nearest house, located approximately 1.8 miles from the launch site, where the model predicted a $L_{A,max}$ of 111 dBA and 116 dBA for the Falcon 9 and Falcon Heavy. Although, the 115 dBA guideline may be a conservative limit when considering the relatively short-term increase to this level, it is recommended that persons should wear sufficient hearing protection during a launch.

To assess the potential for increases in community annoyance DNL 65 dBA contours are provided for three scenarios. Each scenario shows a significant increase in the DNL relative to current conditions as defined by FAA order 1050.1E, Change 1 [2] as the current background noise levels are estimated at approximately 45 dBA [20]. The area inside the DNL 65 dBA contour levels extend to distances of 1.5, 2.0, and 2.8 miles, for Scenario A, B, and C, respectively, as defined in Section 4.4. The number of households within the DNL 65 dBA is estimated using Google Earth as 0, 13, and 39, for Scenario's A, B, and C, respectively. However, the Proposed Action is for up to twelve total launches per year. Thus, it is acknowledged that the suitability of DNL for infrequent noise events is uncertain with respect to current research and dose response studies. The DNL contours are provided to estimate the potential annoyance in compliance with FAA requirements.

To assess the structural impact resulting from the launch noise, the unweighted levels of 111 dB and 119 dB are highlighted as a general guideline for assessing potential risk to structural damage claims based on the study by Guest and Sloan [9]. The study concluded that one damage claim in 1,000 households exposed is expected at an average level of 111 dB, and one in 100 households at an average level of 119 dB. The area on land exposed to levels of 119 dB or greater is included within 3.4

and 6.4 miles from the launch site for the Falcon 9 and Falcon Heavy, respectively. The area on land exposed to levels of 111 dB or greater is included within 9.1 and 17.3 miles from the launch site for the Falcon 9 and Falcon Heavy, respectively. The unweighted levels at the nearest house during a Falcon 9 or Falcon Heavy launch suggest that the probability of a noise induced structural vibration damage claim will be greater than one in a 100.

In addition to modeling the launch noise, the ground overpressure due to sonic booms was modeled to give a complete view of the noise impact generated by a launch event. Results of the sonic boom analysis clearly show that the ground intercept of the sonic boom is observed more than 40-miles off the coast in the Gulf of Mexico.

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U.S. Department
of Transportation
**Federal Aviation
Administration**

Office of Environment and Energy

800 Independence Ave., S.W.
Washington, D.C. 20591

March 21, 2014

Daniel Murray
Office of Commercial Space Transport
Federal Aviation Administration
800 Independence Ave. SW
Washington, DC 20591

Dear Daniel,

The Office of Environment and Energy (AEE) has reviewed the proposed non-standard noise modeling method for the launch noise associated with Space Exploration Technologies Corp. (SpaceX) Texas Launch Site. The non-standard noise modeling method will be used to support the noise analysis as part of the National Environmental Policy Act draft environmental impact statement. The proposed action is to conduct launches of the Falcon 9 and Falcon Heavy orbital vertical launch vehicles and a variety of reusable suborbital launch vehicles from a launch site on privately owned property in Cameron County, Texas.

In order to operate a commercial space launch site, SpaceX must obtain a commercial space launch licenses and/or experimental permits from the Federal Aviation Administration (FAA). A noise analysis must be completed as part of the process. In accordance with FAA Order 1050.1e, all non-standard noise analysis must be approved by AEE. This letter serves as AEE's response to the proposed noise method for the SpaceX Texas Launch Site.

The methodology is a quantitative analysis based on the latest available methods for launch noise. The sonic boom measurement was computed using the FAA approved model, PC Boom. The FAA does not currently have an approved model for vertical launch vehicles and the document includes a proposed noise modeling methodology for the launch vehicle. The proposed noise modeling method is based on the best available research and understanding.

Given the proposed launch noise method is based on the best available research on vehicle launches, this approach is appropriate for the SpaceX Texas Launch Site for the Falcon 9 and Falcon Heavy orbital vertical launch vehicles and a variety of reusable suborbital launch vehicles. AEE concurs with the launch noise methodology used for this specific Launch Site License request. Please understand that this approval is limited to this particular Launch Site License request and the Falcon 9 and Falcon Heavy orbital vertical launch vehicles and a

variety of reusable suborbital launch vehicles. Any additional projects using this or other launch noise methodologies or variations of the vehicles will require separate approval.

Sincerely,

Rebecca Cointin, Manager
AEE/Noise Division

Appendix E
Air Emissions Calculations and Assumptions

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TAB A. EMISSIONS SUMMARY

Vertical Launch Area Construction Summary

YEAR	VOC T/yr	CO T/yr	NOx T/yr	SO2 T/yr	PM10 T/yr	PM2.5 T/yr
2014	**0.44**	**5.78**	**4.50**	**0.05**	**12.40**	**1.45**
2015	**0.44**	**5.78**	**4.50**	**0.05**	**6.32**	**0.84**

Control Center Area Construction Summary

YEAR	VOC T/yr	CO T/yr	NOx T/yr	SO2 T/yr	PM10 T/yr	PM2.5 T/yr
2014	**0.43**	**5.69**	**4.24**	**0.05**	**5.67**	**0.76**
2015	**0.43**	**5.69**	**4.24**	**0.05**	**5.67**	**0.76**

TOTALS

YEAR	VOC T/yr	CO T/yr	NOx T/yr	SO2 T/yr	PM10 T/yr	PM2.5 T/yr
2014	**0.86**	**11.47**	**8.73**	**0.10**	**18.07**	**2.21**
2015	**0.86**	**11.47**	**8.73**	**0.10**	**11.99**	**1.60**

TAB B. CONSTRUCTION EMISSIONS - VERTICAL LAUNCH AREA

Basic Conversions

453.59	grams per pound
43,560	Conversion from Acre to SF
0.03704	Cubic feet to Cubic Yards
0.1111	Square Feet to Square Yards
1.4	tons/CY for Gravel
80,000	lbs/Truck Load for Delivery
1.66	CY for each CY of asphalt/concrete demo
0.333333333	asphalt thickness for demolition
0.333333333	asphalt thickness for pavement
2000	pounds per ton
145	lb/ft^3 density of Hot Mix Asphalt
0.666666667	asphalt thickness for pavement on runways

Table 1. Vertical Launch Area, All Areas - Clearing - 2014 and 2015

9.7 Acres

Off-road Equipment	Cumulative Hours of Operation[1]	Engine HP	Load Factor	VOC[2] g/hp-hr	CO[2] g/hp-hr	NOx[2] g/hp-hr	SO_2[2] g/hp-hr	PM10[2] g/hp-hr	PM2.5[2] g/hp-hr	VOC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb
Dozer	28	145	0.58	0.38	1.41	4.17	0.12	0.30	0.29	1.96	7.34	21.67	0.60	1.54	1.49
Loader w/ integral Backhoe	112	87	0.21	1.43	7.35	6.35	0.15	1.06	1.03	6.46	33.16	28.64	0.67	4.80	4.65
Small backhoe	28	55	0.21	1.43	7.35	6.35	0.15	1.06	1.03	1.02	5.24	4.53	0.11	0.76	0.74
On-road Equipment	**Cumulative Hours of Operation[1]**	**Engine HP**	**Productivity based Speed (miles/hour)**	**VOC[3]** lb/mile	**CO[3]** lb/mile	**NOx[3]** lb/mile	**SO_2[3]** lb/mile	**PM10[3]** lb/mile	**PM2.5[3]** lb/mile	**VOC** lb	**CO** lb	**NOx** lb	**SO2** lb	**PM10** lb	**PM2.5** lb
Dump Truck	13	230	16	0.00158934	8.31E-03	3.78E-02	1.79E-05	1.60E-03	1.56E-03	0.33	1.73	7.87	0.00	0.33	0.32
									Subtotal (lbs):	**10**	**47**	**63**	**1**	**7**	**7**

Table 2. Vertical Launch Area Site Prep - Excavate/Fill - Trenching - Grading 2014 and 2015

Site Prep - Excavate/Fill (CY)	81,033 CY	Assume 100% hauled in or out	81,033 CY hauled				
Trenching (LF)	2,285 LF	Assume 2 ft deep trench, 2 feet wide	339 CY		Assume 100% hauled in or out	339 CY hauled	
Grading (SY)	420,634 SF	Convert	46,732 SY		Assume compact 0.5 feet (0.166 yards)	7,789 CY compacted	

Off-road Equipment	Cumulative Hours of Operation[1]	Engine HP	Load Factor	VOC[2] g/hp-hr	CO[2] g/hp-hr	NOx[2] g/hp-hr	SO_2[2] g/hp-hr	PM10[2] g/hp-hr	PM2.5[2] g/hp-hr	VOC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb
Backhoe Excavator	270	243	0.59	0.34	1.21	4.03	0.12	0.22	0.22	29.36	103.24	344.02	9.84	19.02	18.45
Skid Steer Loader	324	160	0.23	0.38	1.47	4.34	0.12	0.31	0.30	10.08	38.65	114.09	3.03	8.03	7.79
Dozer	294	145	0.59	0.38	1.41	4.17	0.12	0.30	0.29	20.86	78.32	231.10	6.38	16.39	15.90
Scraper Hauler Excavator	294	365	0.58	0.38	1.42	4.19	0.12	0.30	0.29	51.69	194.49	573.72	15.79	40.63	39.41
Compactor	58	103	0.58	0.40	1.57	4.57	0.12	0.32	0.31	3.00	11.93	34.69	0.88	2.42	2.35
Grader	17	285	0.58	0.34	1.21	4.07	0.12	0.23	0.22	2.08	7.31	24.61	0.70	1.36	1.32
Trenching with backhoe loader	5	87	0.59	0.35	1.25	4.23	0.12	0.24	0.23	0.19	0.68	2.32	0.06	0.13	0.13
On-road Equipment	**Cumulative Hours of Operation[1]**	**Engine HP**	**Productivity based Speed (miles/hour)**	**VOC[3]** lb/mile	**CO[3]** lb/mile	**NOx[3]** lb/mile	**SO_2[3]** lb/mile	**PM10[3]** lb/mile	**PM2.5[3]** lb/mile	**VOC** lb	**CO** lb	**NOx** lb	**SO2** lb	**PM10** lb	**PM2.5** lb
Dump Truck (12 CY capacity)	4,861	230	16	0.00159	0.00831	0.03785	0.00002	0.00160	0.00156	125.28	655.42	2,983.34	1.41	126.12	122.59
Delivery Truck	6	365	45	0.00159	0.00831	0.03785	0.00002	0.00160	0.00156	0.41	2.14	9.73	0.00	0.41	0.40
									Subtotal (lbs):	**243**	**1,092**	**4,318**	**38**	**215**	**208**

Table 3. Vertical Launch Area Gravel Work - 2014 and 2015

8,760 CY

Off-road Equipment	Cumulative Hours of Operation[1]	Engine HP	Load Factor	VOC[2] g/hp-hr	CO[2] g/hp-hr	NOx[2] g/hp-hr	SO_2[2] g/hp-hr	PM10[2] g/hp-hr	PM2.5[2] g/hp-hr	VOC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb
Dozer	88	185	0.59	0.34	1.21	4.08	0.12	0.23	0.22	7.25	25.45	86.01	2.43	4.77	4.62
Wheel Loader for Spreading	109	87	0.59	0.35	1.25	4.23	0.12	0.24	0.23	4.32	15.47	52.45	1.43	2.96	2.87
Compactor	65	100	0.43	0.36	1.34	4.45	0.12	0.26	0.25	2.21	8.23	27.38	0.71	1.58	1.53
On-road Equipment	**Cumulative Hours of Operation[1]**	**Engine HP**	**Productivity based Speed (miles/hour)**	**VOC[3]** lb/mile	**CO[3]** lb/mile	**NOx[3]** lb/mile	**SO_2[3]** lb/mile	**PM10[3]** lb/mile	**PM2.5[3]** lb/mile	**VOC** lb	**CO** lb	**NOx** lb	**SO2** lb	**PM10** lb	**PM2.5** lb
Dump Truck (gravel delivery)	1,131	230	26	0.00159	0.00831	0.03785	0.00002	0.00160	0.00156	46.41	242.78	1,105.11	0.52	46.72	45.41
									Subtotal (lbs):	**60**	**292**	**1,271**	**5**	**56**	**54**

Table 4. Vertical Launch Area Concrete Work - Foundations and Sidewalks - 2014 and 2015

Total Concrete 4,756 CY

Off-road Equipment	Cumulative Hours of Operation[1]	Engine HP	Load Factor	VOC[2] g/hp-hr	CO[2] g/hp-hr	NOx[2] g/hp-hr	SO_2[2] g/hp-hr	PM10[2] g/hp-hr	PM2.5[2] g/hp-hr	VOC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb
Concrete Mixer	250	3.5	0.43	0.69	3.04	6.17	0.13	0.54	0.52	0.57	2.53	5.13	0.11	0.45	0.44
Concrete Truck	226	300	0.43	0.38	1.75	6.18	0.11	0.27	0.26	24.45	112.45	398.22	7.34	17.31	16.79
									Subtotal (lbs):	**25**	**115**	**403**	**7**	**18**	**17**

Table 5. Vertical Launch Area Building Construction - 2014 and 2015

6,400 SF

Off-road Equipment	Cumulative Hours of Operation[1]	Engine HP	Load Factor	VOC[2] g/hp-hr	CO[2] g/hp-hr	NOx[2] g/hp-hr	SO_2[2] g/hp-hr	PM10[2] g/hp-hr	PM2.5[2] g/hp-hr	VOC lb	CO lb	NOx lb	SO2 lb	PM lb	PM2.5 lb
Crane	3	330	0.58	0.25	1.22	5.26	0.11	0.21	0.20	0.33	1.65	7.10	0.15	0.28	0.27
Concrete truck	32	300	0.43	0.19	1.45	4.32	0.12	0.21	0.20	1.71	13.24	39.32	1.05	1.91	1.85
Diesel Generator (Assume 5 generators at 40 HP each)	26	40	0.43	0.26	1.41	3.51	0.11	0.23	0.22	0.25	1.37	3.41	0.10	0.23	0.22
On-road Equipment	**Cumulative Hours of Operation[1]**	**Engine HP**	**Productivity based Speed (miles/hour)**	**VOC[3]** lb/mile	**CO[3]** lb/mile	**NOx[3]** lb/mile	**SO_2[3]** lb/mile	**PM10[3]** lb/mile	**PM2.5[3]** lb/mile	**VOC** lb	**CO** lb	**NOx** lb	**SO2** lb	**PM** lb	**PM2.5** lb
Diesel Pickup Truck	2	400	30	0.00159	0.00831	0.03785	0.00002	0.00160	0.00156	0.11	0.57	2.62	0.00	0.11	0.11
Delivery Truck	154	365	60	0.00159	0.00831	0.03785	0.00002	0.00160	0.00156	14.65	76.63	348.80	0.16	14.75	14.33
									Subtotal (lbs):	**17**	**93**	**401**	**1**	**17**	**17**

Footnotes for Tables 1 through 5

[1]Complied from 2010 National Estimator, Equipment Manufacture's websites such as Freightliner and Cat, PACES, U.S. EPA. Open Burning and Construction Activities: Improved PM Fine Emission Estimation Techniques in the Nation Emissions Inventory, Ohio Emergency Management Agency. Appendix F Debris Estimating Guides, and Henderson, Chris. Project Management for Construction. Fundamental Concepts for Owners, Engineers, Architects, and Builders. Version 2.2. 2008

[2] EPA NONROAD2008a Model

[3]MOVES (Motor Vehicle Emission Simulator) 2010

Table 6. Vertical Launch Area - Launch Pad Construction - 2014 and 2015

Concrete Surface 12,004 SF 0.3 acres
Convert 1,334 SY 1.66666667 yards thick

[1]Off-road Equipment	[2]Cumulative Hours of Operation	[3]Engine HP	[4]Load Factor	[6,7]Emission Factors VOC g/hp-hr	CO g/hp-hr	NOx g/hp-hr	SO_2 g/hp-hr	PM10 g/hp-hr	PM2.5 g/hp-hr	Annual Emissions VOC lb	CO lb	NOx lb	SO2 lb	PM lb	PM2.5 lb
Grader (CAT 120M2 or similar)	15	150	0.61	1.06	3.52	8.24	0.06	0.47	0.47	3.26	10.80	25.27	0.17	1.44	1.44
Steel drum roller/soil compactor	152	401	0.56	0.70	3.18	7.20	0.05	0.28	0.28	52.47	239.60	541.69	3.76	21.23	21.23
Paving/Concrete Machine	152	164	0.53	1.14	3.71	8.87	0.49	0.49	0.49	33.07	107.95	258.53	14.39	14.39	14.39
Curbing Machine	8	130	0.59	1.14	3.71	8.87	0.49	0.49	0.49	1.46	4.76	11.41	0.64	0.64	0.64
Cement and Motar Mixer 1	152	9	0.56	0.92	2.64	5.41	0.07	0.35	0.35	1.55	4.46	9.14	0.11	0.59	0.59
Cement and Motar Mixer 2	152	9	0.56	0.92	2.64	5.41	0.07	0.35	0.35	1.55	4.46	9.14	0.11	0.59	0.59
Cement and Motar Mixer 3	152	9	0.56	0.92	2.64	5.41	0.07	0.35	0.35	1.55	4.46	9.14	0.11	0.59	0.59
Tractor/Loader/Backhoe	152	75	0.55	1.50	4.22	8.33	0.06	0.80	0.80	20.73	58.35	115.12	0.83	11.09	11.09
Pile Driver	59	260	0.43	0.46	1.55	5.90	0.11	0.31	0.30	6.78	22.67	86.23	1.66	4.59	4.45
All Terrain Forklift	59	85	0.59	0.51	3.94	4.93	0.13	0.52	0.51	3.34	25.82	32.30	0.84	3.42	3.31
[1]On-road Equipment	**[2]Cumulative Hours of Operation**	**[3]Engine HP**	**[5]Speed (miles/hour)**	**VOC lb/mile**	**CO lb/mile**	**NOx lb/mile**	**SO2 lb/mile**	**PM10 lb/mile**	**PM2.5 lb/mile**	**VOC lb**	**CO lb**	**NOx lb**	**SO2 lb**	**PM lb**	**PM2.5 lb**
Concrete Truck	152	230	20	0.00159	0.00831	0.03785	0.00002	0.00160	0.00156	4.83	25.29	115.09	0.05	4.87	4.73
Water Truck/Oil truck	15	230	10	0.00159	0.00831	0.03785	0.00002	0.00160	0.00156	0.24	1.26	5.75	0.00	0.24	0.24
									Subtotal (lbs):	**130.83**	**509.91**	**1,218.83**	**22.69**	**63.65**	**63.27**

Table 7. Vertical Launch Area - Construction of Runway Between Hangar and Launch Pad - 2014 and 2015

Concrete Surface 75,110 SF 1.7 acres
Convert 8,345 SY 1 yards thick

[1]Off-road Equipment	[2]Cumulative Hours of Operation	[3]Engine HP	[4]Load Factor	[6,7]Emission Factors VOC g/hp-hr	CO g/hp-hr	NOx g/hp-hr	SO_2 g/hp-hr	PM10 g/hp-hr	PM2.5 g/hp-hr	Annual Emissions VOC lb	CO lb	NOx lb	SO2 lb	PM lb	PM2.5 lb
Grader (CAT 120M2 or similar)	6	145	0.61	1.06	3.52	8.24	0.06	0.47	0.47	1.31	4.36	10.19	0.07	0.58	0.58
Steel drum roller/soil compactor	63	401	0.56	0.70	3.18	7.20	0.05	0.28	0.28	21.88	99.94	225.94	1.57	8.85	8.85
Paving/Concrete Machine	63	164	0.53	1.14	3.71	8.87	0.49	0.49	0.49	13.79	45.03	107.83	6.00	6.00	6.00
Curbing Machine	3	130	0.59	1.14	3.71	8.87	0.49	0.49	0.49	0.61	1.99	4.76	0.26	0.26	0.26
Cement and Motar Mixer 1	63	9	0.56	0.92	2.64	5.41	0.07	0.35	0.35	0.65	1.86	3.81	0.05	0.24	0.24
Cement and Motar Mixer 2	63	9	0.56	0.92	2.64	5.41	0.07	0.35	0.35	0.65	1.86	3.81	0.05	0.24	0.24
Cement and Motar Mixer 3	63	9	0.56	0.92	2.64	5.41	0.07	0.35	0.35	0.65	1.86	3.81	0.05	0.24	0.24
Tractor/Loader/Backhoe	63	75	0.55	1.50	4.22	8.33	0.06	0.80	0.80	8.65	24.34	48.01	0.35	4.63	4.63
[1]On-road Equipment	**[2]Cumulative Hours of Operation**	**[3]Engine HP**	**[5]Speed (miles/hour)**	**VOC lb/mile**	**CO lb/mile**	**NOx lb/mile**	**SO2 lb/mile**	**PM10 lb/mile**	**PM2.5 lb/mile**	**VOC lb**	**CO lb**	**NOx lb**	**SO2 lb**	**PM lb**	**PM2.5 lb**
Concrete Truck	63	230	20	0.00159	0.00831	0.03785	0.00002	0.00160	0.00156	2.02	10.55	48.01	0.02	2.03	1.97
Water Truck/Oil truck	6	230	10	0.00159	0.00831	0.03785	0.00002	0.00160	0.00156	0.10	0.53	2.40	0.00	0.10	0.10
									Subtotal (lbs):	**50.30**	**192.30**	**458.58**	**8.42**	**23.19**	**23.13**

Footnotes for Tables 6 and 7

[1]Equipment list from National Estimator, PACES and CALEE information.

[2] Productivty of the Equipment is based on a number of sources including PACE and National Estimator. The following is more detail on Productivity Factors:
Assume runway with cement stabilzed base (8 in thick) and asphalt running course (8 in thick)
We are estimating 1.5 yards thick (36" base (PACES) plus flexible upper course of 30 inches (Boeing)
Base productivity factor from PACES/National Estimator is 0.076 hour/CY of runway/taxi way/ Apron that is 1 yard thick. The concrete for NAS Lemoore is estimated to be a total of 1.83yards, which will mean 1.83 times longer
Number of Mortar mixers based on National Estimator File (at least 3)

[3]Engine HP is based on information compiled from CALEE, Caterpillar, and National Estimator.

[4]Load Factor is Offroad Default Load Factor from Page 12, Table 3.3 of "California Emissions Estimator Model Appendix D Default Data Tables"

[5]Estimated speed based on Hendrickson, Chris. Department of Civil and Environmental Engineering, Carnegie Mellon University. Project Management for Construction. Fundamental Concepts for Owners, Engineers, Architects and Builders. Version 2.2. 2008

[6]Emission Factors from Table 3.4 of of "California Emissions Estimator Model Appendix D Default Data Tables" Assume 2005 model year equipment

[7]On-road emission factors are from EMFAC 2007 Version 2.3, Scenario Year 2015 HHDT-DSL

Table 8. Vertical Launch Area Integration and Processing Hangar Construction - 2014 and 2015

43,200 SF

Off-road Equipment	Cumulative Hours of Operation	Engine HP	Load Factor	VOC[1] g/hp-hr	CO[1] g/hp-hr	NOx[1] g/hp-hr	SO_2[1] g/hp-hr	PM10[1] g/hp-hr	PM2.5[1] g/hp-hr	VOC lb	CO lb	NOx lb	SO2 lb	PM lb	PM2.5 lb
Crane	259	330	0.58	0.245701462	1.219506872	5.259786056	0.11407306	0.207722126	0.201490462	26.87	133.38	575.28	12.48	22.72	22.04
Diesel Generator for on-site power tools and office support (Assume 5 generators at 40 HP each)	202	40	0.43	0.428604232	1.939074134	4.940145337	0.12671328	0.460870473	0.447044359	3.28	14.86	37.85	0.97	3.53	3.43
Telehandler	432	99	0.59	0.509539721	3.939733939	4.928976552	0.127904404	0.521120014	0.505486414	28.35	219.17	274.20	7.12	28.99	28.12
Scissors Lift	346	83	0.59	0.509539721	3.939733939	4.928976552	0.127904404	0.521120014	0.505486414	19.01	147.00	183.91	4.77	19.44	18.86
Skid steer loader	216	67	0.59	1.692381246	7.96768939	6.697903379	0.148593624	1.189146888	1.153472482	31.86	149.99	126.08	2.80	22.38	21.71
Pile driver	213	260	0.43	0.464038203	1.551822205	5.901967532	0.113927487	0.313864738	0.304448796	24.40	81.60	310.34	5.99	16.50	16.01
All terrain forklift	213	84	0.59	0.509539721	3.939733939	4.928976552	0.127904404	0.521120014	0.505486414	11.88	91.83	114.89	2.98	12.15	11.78
On-road Equipment	**Cumulative Hours of Operation**	**Engine HP**	**Speed (miles/hour)**	**VOC[2] lb/mile**	**CO[2] lb/mile**	**NOx[2] lb/mile**	**SO_2[2] lb/mile**	**PM10[2] lb/mile**	**PM2.5[2] lb/mile**	**VOC lb**	**CO lb**	**NOx lb**	**SO2 lb**	**PM lb**	**PM2.5 lb**
Diesel Pickup Truck	293	400	30.00	1.59E-03	8.31E-03	3.78E-02	1.79E-05	1.60E-03	1.56E-03	13.96	73.02	332.38	0.16	14.05	13.66
Concrete truck	202	300	0.43	1.59E-03	8.31E-03	3.78E-02	1.79E-05	1.60E-03	1.56E-03	0.09	0.48	2.17	0.00	0.09	0.09
Delivery Truck	1,254	365	30.00	1.59E-03	8.31E-03	3.78E-02	1.79E-05	1.60E-03	1.56E-03	59.81	312.93	1424.39	0.67	60.21	58.53
									Subtotal (lbs):	**219.51**	**1224.24**	**3381.49**	**37.94**	**200.08**	**194.23**

Table 9. Vertical Launch Area Parts Storage Warehouse and Workshop Hangar Construction - 2014 and 2015

21,600 SF

Off-road Equipment	Cumulative Hours of Operation	Engine HP	Load Factor	VOC[1] g/hp-hr	CO[1] g/hp-hr	NOx[1] g/hp-hr	SO_2[1] g/hp-hr	PM10[1] g/hp-hr	PM2.5[1] g/hp-hr	VOC lb	CO lb	NOx lb	SO2 lb	PM lb	PM2.5 lb
Crane	130	330	0.58	0.245701462	1.219506872	5.259786056	0.11407306	0.207722126	0.201490462	13.44	66.69	287.64	6.24	11.36	11.02
Diesel Generator for on-site power tools and office support (Assume 5 generators at 40 HP each)	101	40	0.43	0.428604232	1.939074134	4.940145337	0.12671328	0.460870473	0.447044359	1.64	7.43	18.93	0.49	1.77	1.71
Telehandler	216	99	0.59	0.509539721	3.939733939	4.928976552	0.127904404	0.521120014	0.505486414	14.17	109.58	137.10	3.56	14.49	14.06
Scissors Lift	173	83	0.59	0.509539721	3.939733939	4.928976552	0.127904404	0.521120014	0.505486414	9.51	73.50	91.95	2.39	9.72	9.43
Skid steer loader	173	67	0.59	1.692381246	7.96768939	6.697903379	0.148593624	1.189146888	1.153472482	25.49	119.99	100.87	2.24	17.91	17.37
Forklift	108	85	0.59	0.509539721	3.939733939	4.928976552	0.127904404	0.521120014	0.505486414	6.08	47.04	58.86	1.53	6.22	6.04
On-road Equipment	**Cumulative Hours of Operation**	**Engine HP**	**Speed (miles/hour)**	**VOC[2] lb/mile**	**CO[2] lb/mile**	**NOx[2] lb/mile**	**SO_2[2] lb/mile**	**PM10[2] lb/mile**	**PM2.5[2] lb/mile**	**VOC lb**	**CO lb**	**NOx lb**	**SO2 lb**	**PM lb**	**PM2.5 lb**
Diesel Pickup Truck	146	400	30.00	0.00159	0.00831	0.03785	0.00002	0.00160	0.00156	6.98	36.51	166.19	0.08	7.03	6.83
Concrete truck	101	300	0.43	0.00159	0.00831	0.03785	0.00002	0.00160	0.00156	0.05	0.24	1.09	0.00	0.05	0.04
Delivery Truck	627	365	30.00	0.00159	0.00831	0.03785	0.00002	0.00160	0.00156	29.91	156.46	712.19	0.34	30.11	29.27
									Subtotal (lbs):	**107.26**	**617.45**	**1574.81**	**16.85**	**98.65**	**95.77**

Tables 8 and 9 Footnotes

[1] EPA NONROAD2008a Model

[2] MOVES (Motor Vehicle Emission Simulator) 2010

Table 10. Vertical Launch Area Paving - 2014 and 2015

Pavement - Surface Area 101,322 SF 1,251 CY

Paving - HMA 33,774 CF

Off-road Equipment	Cumulative Hours of Operation	Engine HP	Load Factor	VOC[1] g/hp-hr	CO[1] g/hp-hr	NOx[1] g/hp-hr	SO_2[1] g/hp-hr	PM10[1] g/hp-hr	PM2.5[1] g/hp-hr	VOC lb	CO lb	NOx lb	SO2 lb	PM lb	PM2.5 lb
Grader	310	150	0.59	0.38	1.41	4.16	0.12	0.30	0.29	22.79	85.49	251.94	6.98	17.90	17.36
Steel drum roller/vibratory roller	465	401	0.59	0.34	2.46	5.53	0.12	0.34	0.33	82.87	597.91	1,343.73	27.98	82.23	79.76
Paving Machine	621	164	0.59	0.38	1.44	4.25	0.12	0.30	0.29	50.31	190.97	562.92	15.25	39.72	38.52
Asphalt Curbing Machine	62	130	0.59	0.40	1.57	4.57	0.12	0.32	0.31	4.15	16.48	47.91	1.21	3.35	3.25
On-road Equipment	**Cumulative Hours of Operation**	**Engine HP**	**Productivity based Speed (miles/hour)**	**VOC[2] lb/mile**	**CO[2] lb/mile**	**NOx[2] lb/mile**	**SO_2[2] lb/mile**	**PM10[2] lb/mile**	**PM2.5[2] lb/mile**	**VOC lb**	**CO lb**	**NOx lb**	**SO2 lb**	**PM lb**	**PM2.5 lb**
Dump Truck	250	230	17	0.00159	0.00831	0.03785	0.00002	0.00160	0.00156	6.63	34.67	157.82	0.07	6.67	6.49
Water Truck	10	230	10	0.00159	0.00831	0.03785	0.00002	0.00160	0.00156	0.16	0.83	3.76	0.00	0.16	0.15
Hot Mix Asphalt (HMA)	**Volume of HMA (ft^3)**	**Weight of HMA (tons)**		**VOC[3] lb/ton of asphalt**	**CO lb/ton of asphalt**	**Nox lb/ton of asphalt**	**SO_2 lb/ton of asphalt**	**PM10 lb/ton of asphalt**	**PM2.5 lb/ton of asphalt**	**VOC lb**	**CO lb**	**NOx lb**	**SO2 lb**	**PM lb**	**PM2.5 lb**
Standard Hot Mix Asphalt	33,774	2,449		0.04	-	-	-	-	-	97.94	-	-	-	-	-
									Subtotal (lbs):	**264.84**	**926.35**	**2,368.09**	**51.50**	**150.02**	**145.54**

[1] EPA NONROAD2008a Model

[2] MOVES (Motor Vehicle Emission Simulator) 2010

[3] California Air Resources Board (CARB) 2005. Comparison of Asphalt Paving Emission Factors

Table 11. Vertical Launch Area Fugitive Dust - 2014 and 2015

Year	PM_{10} tons/acre/mo	acres	days of disturbance	PM_{10} Total (tons)	$PM_{2.5}/PM_{10}$ Ratio	$PM_{2.5}$ Total (tons)
2014	0.42	5	240	24.3	0.1	2.4
2015	0.42	5	120	12.2	0.1	1.2

Table 12. Vertical Launch Area Annual Construction Worker POVs 2014 and 2015 [1]

24 construction workers

Vehicles	# vehicles	# days	[1]mi/day	[2]VOCs lb/mi	[2]CO lb/mi	[2]NOx lb/mi	[2]SO_2 lb/mi	[2]PM_{10} lb/mi	[2]$PM_{2.5}$ lb/mi	VOCs lb	CO lb	NOx lb	SO_2 lb	PM_{10} lb	$PM_{2.5}$ lb
passenger vehicles	47	240	46	0.00118517	0.03467400	0.00486327	0.00001305	0.00019687	0.00018145	614.96	17991.64	2523.46	6.77	102.15	94.15
									Tons per Year	**0.31**	**9.00**	**1.26**	**0.00**	**0.05**	**0.05**

[1] while onsite only

[2] Emission factors from MOVES2010

Table 13. Vertical Launch Area Construction Summary

YEAR	VOC T/yr	CO T/yr	NOx T/yr	SO2 T/yr	PM10 T/yr	PM2.5 T/yr
2014	0.44	5.78	4.50	0.05	12.40	1.45
2015	0.44	5.78	4.50	0.05	6.32	0.84

TAB C. CONSTRUCTION EMISSIONS - CONTROL CENTER AREA

Basic Conversions

453.59	grams per pound
43,560	Conversion from Acre to SF
0.03704	Cubic feet to Cubic Yards
0.1111	Square Feet to Square Yards
1.4	tons/CY for Gravel
80,000	lbs/Truck Load for Delivery
1.66	CY for each CY of asphalt/concrete demo
0.333333333	asphalt thickness for demolition
0.333333333	asphalt thickness for pavement
2000	pounds per ton
145	lb/ft^3 density of Hot Mix Asphalt

Table 1. Control Center Area, All Areas - Clearing - 2014 and 2015 8.6 Acres

Off-road Equipment	Cumulative Hours of Operation[1]	Engine HP	Load Factor	VOC[2] g/hp-hr	CO[2] g/hp-hr	NOx[2] g/hp-hr	SO_2[2] g/hp-hr	PM10[2] g/hp-hr	PM2.5[2] g/hp-hr	VOC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb
Dozer	25	145	0.58	0.38	1.41	4.17	0.12	0.30	0.29	1.75	6.57	19.38	0.54	1.37	1.33
Loader w/ integral Backhoe	25	87	0.21	1.43	7.35	6.35	0.15	1.06	1.03	1.44	7.42	6.41	0.15	1.07	1.04
Small backhoe	25	55	0.21	1.43	7.35	6.35	0.15	1.06	1.03	0.91	4.69	4.05	0.09	0.68	0.66
On-road Equipment	**Cumulative Hours of Operation[1]**	**Engine HP**	**Productivity based Speed (miles/hour)**	**VOC[3] lb/mile**	**CO[3] lb/mile**	**NOx[3] lb/mile**	**SO_2[3] lb/mile**	**PM10[3] lb/mile**	**PM2.5[3] lb/mile**	**VOC lb**	**CO lb**	**NOx lb**	**SO2 lb**	**PM10 lb**	**PM2.5 lb**
Dump Truck	11	230	16	0.00159	0.00831	0.03785	0.00002	0.00160	0.00156	0.30	1.55	7.04	0.00	0.30	0.29
									Subtotal (lbs):	**4**	**20**	**37**	**1**	**3**	**3**

Table 2. Control Center Area Site Prep - Excavate/Fill - Trenching - Grading - 2014 and 2015

Site Prep - Excavate/Fill (CY)	16,665 CY	Assume 60% hauled in or out	9,999 CY hauled		
Trenching (LF)	12,815 LF	Assume 2 ft deep trench, 2 feet wide	1,899 CY	Assume 60% hauled in or out	1,139 CY hauled
Grading (SY)	376,285 SF	Convert	41,805 SY	Assume compact 0.5 feet (0.166 yards)	6,968 CY compacted

Off-road Equipment	Cumulative Hours of Operation[1]	Engine HP	Load Factor	VOC[2] g/hp-hr	CO[2] g/hp-hr	NOx[2] g/hp-hr	SO_2[2] g/hp-hr	PM10[2] g/hp-hr	PM2.5[2] g/hp-hr	VOC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb
Backhoe Excavator	33	243	0.59	0.34	1.21	4.03	0.12	0.22	0.22	3.62	12.74	42.45	1.21	2.35	2.28
Skid Steer Loader	40	160	0.23	0.38	1.47	4.34	0.12	0.31	0.30	1.24	4.77	14.08	0.37	0.99	0.96
Dozer	36	145	0.59	0.38	1.41	4.17	0.12	0.30	0.29	2.57	9.66	28.52	0.79	2.02	1.96
Scraper Hauler Excavator	36	365	0.58	0.38	1.42	4.19	0.12	0.30	0.29	6.38	24.00	70.79	1.95	5.01	4.86
Compactor	52	103	0.58	0.40	1.57	4.57	0.12	0.32	0.31	2.69	10.67	31.04	0.78	2.17	2.10
Grader	15	285	0.58	0.34	1.21	4.07	0.12	0.23	0.22	1.86	6.53	22.02	0.62	1.22	1.18
Trenching with backhoe loader	27	87	0.59	0.35	1.25	4.23	0.12	0.24	0.23	1.07	3.83	12.99	0.35	0.73	0.71
On-road Equipment	**Cumulative Hours of Operation[1]**	**Engine HP**	**Productivity based Speed (miles/hour)**	**VOC[3] lb/mile**	**CO[3] lb/mile**	**NOx[3] lb/mile**	**SO_2[3] lb/mile**	**PM10[3] lb/mile**	**PM2.5[3] lb/mile**	**VOC lb**	**CO lb**	**NOx lb**	**SO2 lb**	**PM10 lb**	**PM2.5 lb**
Dump Truck (12 CY capacity)	665	230	16	0.00159	0.00831	0.03785	0.00002	0.00160	0.00156	17.15	89.71	408.37	0.19	17.26	16.78
Delivery Truck	32	365	45	0.00159	0.00831	0.03785	0.00002	0.00160	0.00156	2.29	11.99	54.56	0.03	2.31	2.24
									Subtotal (lbs):	**39**	**174**	**685**	**6**	**34**	**33**

Table 3. Control Center Area Gravel Work - 2014 and 2015

9,959 CY

Off-road Equipment	Cumulative Hours of Operation[1]	Engine HP	Load Factor	VOC[2] g/hp-hr	CO[2] g/hp-hr	NOx[2] g/hp-hr	SO_2[2] g/hp-hr	PM10[2] g/hp-hr	PM2.5[2] g/hp-hr	VOC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb
Dozer	100	185	0.59	0.34	1.21	4.08	0.12	0.23	0.22	8.24	28.93	97.78	2.76	5.42	5.26
Wheel Loader for Spreading	124	87	0.59	0.35	1.25	4.23	0.12	0.24	0.23	4.91	17.59	59.64	1.62	3.36	3.26
Compactor	74	103	0.43	0.36	1.34	4.45	0.12	0.26	0.25	2.59	9.64	32.07	0.83	1.85	1.80
On-road Equipment	**Cumulative Hours of Operation[1]**	**Engine HP**	**Productivity based Speed (miles/hour)**	**VOC[3] lb/mile**	**CO[3] lb/mile**	**NOx[3] lb/mile**	**SO_2[3] lb/mile**	**PM10[3] lb/mile**	**PM2.5[3] lb/mile**	**VOC lb**	**CO lb**	**NOx lb**	**SO2 lb**	**PM10 lb**	**PM2.5 lb**
Dump Truck (gravel delivery)	1,286	230	26	0.00159	0.00831	0.03785	0.00002	0.00160	0.00156	52.76	276.02	1,256.41	0.59	53.11	51.63
									Subtotal (lbs):	**69**	**332**	**1,446**	**6**	**64**	**62**

Table 4. Control Center Area Concrete Work - Foundations and Sidewalks - 2014 and 2015

Total Concrete 4,244 CY

Off-road Equipment	Cumulative Hours of Operation[1]	Engine HP	Load Factor	VOC[2] g/hp-hr	CO[2] g/hp-hr	NOx[2] g/hp-hr	SO_2[2] g/hp-hr	PM10[2] g/hp-hr	PM2.5[2] g/hp-hr	VOC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb
Concrete Mixer (3 mixers total to one truck)	223	3.5	0.43	0.69	3.04	6.17	0.13	0.54	0.52	0.51	2.26	4.58	0.09	0.40	0.39
Concrete Truck	202	300	0.43	0.38	1.75	6.18	0.11	0.27	0.26	21.81	100.33	355.31	6.55	15.44	14.98
									Subtotal (lbs):	**22**	**103**	**360**	**7**	**16**	**15**

Table 5. Control Center Area Building Construction - 2014 and 2015

31,647 SF

Off-road Equipment	Cumulative Hours of Operation[1]	Engine HP	Load Factor	VOC[2] g/hp-hr	CO[2] g/hp-hr	NOx[2] g/hp-hr	SO_2[2] g/hp-hr	PM10[2] g/hp-hr	PM2.5[2] g/hp-hr	VOC lb	CO lb	NOx lb	SO2 lb	PM lb	PM2.5 lb
Crane	158	330	0.58	0.25	1.22	5.26	0.11	0.21	0.20	16.41	81.43	351.20	7.62	13.87	13.45
Concrete truck	158	300	0.43	0.19	1.45	4.32	0.12	0.21	0.20	8.44	65.46	194.44	5.19	9.45	9.17
Diesel Generator (Assume 5 generators at 40 HP each)	127	40	0.43	0.26	1.41	3.51	0.11	0.23	0.22	1.26	6.76	16.84	0.52	1.11	1.08
On-road Equipment	**Cumulative Hours of Operation[1]**	**Engine HP**	**Productivity based Speed (miles/hour)**	**VOC[3]** lb/mile	**CO[3]** lb/mile	**NOx[3]** lb/mile	**SO_2[3]** lb/mile	**PM10[3]** lb/mile	**PM2.5[3]** lb/mile	**VOC** lb	**CO** lb	**NOx** lb	**SO2** lb	**PM** lb	**PM2.5** lb
Diesel Pickup Truck	11	400	30	0.00159	0.00831	0.03785	0.00002	0.00160	0.00156	0.54	2.84	12.94	0.01	0.55	0.53
Delivery Truck	760	365	60	0.00159	0.00831	0.03785	0.00002	0.00160	0.00156	72.43	378.93	1724.80	0.82	72.91	70.88
									Subtotal (lbs):	**99**	**535**	**2300**	**14**	**98**	**95**

Footnotes for Tables 1 through 5

[1]Complied from 2010 National Estimator, Equipment Manufacture's websites such as Freightliner and Cat, PACES, U.S. EPA. Open Burning and Construction Activities: Improved PM Fine Emission Estimation Techniques in the Nation Emissions Inventory, Ohio Emergency Management Agency. Appendix F Debris Estimating Guides, and Henderson, Chris. Project Management for Construction. Fundamental Concepts for Owners, Engineers, Architects, and Builders. Version 2.2. 2008

[2] EPA NONROAD2008a Model

[3]MOVES (Motor Vehicle Emission Simulator) 2010

Table 6. Control Center Area Hangar Building Construction (Payload Processing Facility and Vehicle Launch Preparation Hangar) - 2014 and 2015

59,629 SF

Off-road Equipment	Cumulative Hours of Operation	Engine HP	Load Factor	VOC[1] g/hp-hr	CO[1] g/hp-hr	NOx[1] g/hp-hr	SO_2[1] g/hp-hr	PM10[1] g/hp-hr	PM2.5[1] g/hp-hr	VOC lb	CO lb	NOx lb	SO2 lb	PM lb	PM2.5 lb
Crane	358	330	0.58	0.245701462	1.219506872	5.259786056	0.11407306	0.207722126	0.201490462	37.09	184.11	794.06	17.22	31.36	30.42
Diesel Generator for on-site power tools and office support (Assume 5 generators at 40 HP each)	279	40	0.43	0.428604232	1.939074134	4.940145337	0.12671328	0.460870473	0.447044359	4.53	20.51	52.25	1.34	4.87	4.73
Telehandler	596	99	0.59	0.509539721	3.939733939	4.928976552	0.127904404	0.521120014	0.505486414	39.13	302.52	378.48	9.82	40.01	38.81
Scissors Lift	477	83	0.59	0.509539721	3.939733939	4.928976552	0.127904404	0.521120014	0.505486414	26.24	202.90	253.85	6.59	26.84	26.03
Skid steer loader	298	67	0.59	1.692381246	7.96768939	6.697903379	0.148593624	1.189146888	1.153472482	43.97	207.03	174.03	3.86	30.90	29.97
Pile Driver	294	260	0.43	0.464038203	1.551822205	5.901967532	0.113927487	0.313864738	0.304448796	33.68	112.63	428.36	8.27	22.78	22.10
All Terrain Forklift	294	85	0.59	0.509539721	3.939733939	4.928976552	0.127904404	0.521120014	0.505486414	16.59	128.26	160.47	4.16	16.97	16.46
On-road Equipment	**Cumulative Hours of Operation**	**Engine HP**	**Speed (miles/hour)**	**VOC[2]** lb/mile	**CO[2]** lb/mile	**NOx[2]** lb/mile	**SO_2[2]** lb/mile	**PM10[2]** lb/mile	**PM2.5[2]** lb/mile	**VOC** lb	**CO** lb	**NOx** lb	**SO2** lb	**PM** lb	**PM2.5** lb
Diesel Pickup Truck	404	400	30.00	1.59E-03	8.31E-03	3.78E-02	1.79E-05	1.60E-03	1.56E-03	19.27	100.79	458.79	0.22	19.39	18.85
Concrete truck	279	300	0.43	1.59E-03	8.31E-03	3.78E-02	1.79E-05	1.60E-03	1.56E-03	0.13	0.66	3.00	0.00	0.13	0.12
Delivery Truck	1,732	365	30.00	1.59E-03	8.31E-03	3.78E-02	1.79E-05	1.60E-03	1.56E-03	82.56	431.93	1966.08	0.93	83.11	80.79
									Subtotal (lbs):	**303**	**1691**	**4669**	**52**	**276**	**268**

Table 7. Control Center Area Paving - 2014 and 2015

Pavement - Surface Area 211,702 SF 2,614 CY

Paving - HMA 70,567 CF

Off-road Equipment	Cumulative Hours of Operation	Engine HP	Load Factor	VOC[1] g/hp-hr	CO[1] g/hp-hr	NOx[1] g/hp-hr	SO_2[1] g/hp-hr	PM10[1] g/hp-hr	PM2.5[1] g/hp-hr	VOC lb	CO lb	NOx lb	SO2 lb	PM lb	PM2.5 lb
Grader	648	145	0.59	0.38	1.41	4.16	0.12	0.30	0.29	46.02	172.68	508.85	14.09	36.16	35.07
Steel drum roller/vibratory roller	973	401	0.59	0.34	2.46	5.53	0.12	0.34	0.33	173.15	1,249.26	2,807.58	58.46	171.80	166.65
Paving Machine	1,297	164	0.59	0.38	1.44	4.25	0.12	0.30	0.29	105.11	399.01	1,176.16	31.87	82.98	80.49
Asphalt Curbing Machine	130	130	0.59	0.40	1.57	4.57	0.12	0.32	0.31	8.66	34.43	100.11	2.53	7.00	6.79
On-road Equipment	**Cumulative Hours of Operation**	**Engine HP**	**Productivity based Speed (miles/hour)**	**VOC[2]** lb/mile	**CO[2]** lb/mile	**NOx[2]** lb/mile	**SO_2[2]** lb/mile	**PM10[2]** lb/mile	**PM2.5[2]** lb/mile	**VOC** lb	**CO** lb	**NOx** lb	**SO2** lb	**PM** lb	**PM2.5** lb
Dump Truck	521	230	17	0.00159	0.00831	0.03785	0.00002	0.00160	0.00156	13.85	72.44	329.75	0.16	13.94	13.55
Water Truck	21	230	10	0.00159	0.00831	0.03785	0.00002	0.00160	0.00156	0.33	1.73	7.85	0.00	0.33	0.32
Hot Mix Asphalt (HMA)	**Volume of HMA (ft^3)**	**Weight of HMA (tons)**		**VOC[3]** lb/ton of asphalt	**CO** lb/ton of asphalt	**Nox** lb/ton of asphalt	**SO_2** lb/ton of asphalt	**PM10** lb/ton of asphalt	**PM2.5** lb/ton of asphalt	**VOC** lb	**CO** lb	**NOx** lb	**SO2** lb	**PM** lb	**PM2.5** lb
Standard Hot Mix Asphalt	70,567	5,116		0.04	-	-	-	-	-	204.64	-	-	-	-	-
									Subtotal (lbs):	**552**	**1,930**	**4,930**	**107**	**312**	**303**

Footnotes for Tables 6 and 7

[1] EPA NONROAD2008a Model

[2]MOVES (Motor Vehicle Emission Simulator) 2010

[3]California Air Resources Board (CARB) 2005. Comparison of Asphalt Paving Emission Factors

Table 8. Control Center Area Fugitive Dust

Year	PM_{10} tons/acre/mo	acres	days of disturbance	PM_{10} Total (tons)	$PM_{2.5}/PM_{10}$ Ratio	$PM_{2.5}$ Total (tons)
2014	0.42	4.3	120	10.9	0.1	1.1
2015	0.42	4.3	120	10.9	0.1	1.1

Table 9. Vertical Launch Area Annual Construction Worker POVs 2014 and 2015 [1]

24 construction workers

Vehicles	# vehicles	# days	[1]mi/day	[2]VOCs lb/mi	[2]CO lb/mi	[2]NOx lb/mi	[2]SO_2 lb/mi	[2]PM_{10} lb/mi	[2]$PM_{2.5}$ lb/mi	VOCs lb	CO lb	NOx lb	SO_2 lb	PM_{10} lb	$PM_{2.5}$ lb
passenger vehicles	47	240	46	0.00118517	0.03467400	0.00486327	0.00001305	0.00019687	0.00018145	614.96	17991.64	2523.46	6.77	102.15	94.15
									Tons per Year	**0.31**	**9.00**	**1.26**	**0.00**	**0.05**	**0.05**

[1] while onsite only

[2] Emission factors from MOVES2010

Table 10. Control Center Area Construction Summary

YEAR	VOC T/yr	CO T/yr	NOx T/yr	SO2 T/yr	PM10 T/yr	PM2.5 T/yr
2014	0.43	5.69	4.24	0.05	5.67	0.76
2015	0.43	5.69	4.24	0.05	5.67	0.76

TAB D. CONSTRUCTION SUMMARY BY PROJECT

Project Name	Building Number	Type (Renov or Const)	Year	FootPrint (AC)	Clearing (AC)	Grading (sf)	Demo Bldgs (SF)	Demo asphalt/ concrete (SF)	Site Prep - Excavate/Fill (CY)	Trenching (LF)	Building Construction - Total Size (sf)	Building Construction- foundation footprint (sf)	# Stories	Paving - Surface area (SF)	Pavement type, vehicle or aircraft	Paving - HMA (CF)	Sidewalks (sf)	Gravel Work (CY)	Concrete Work - sidewalks, etc (CY)	Concrete Work - foundation (CY)	Runway Construction (Concrete and Asphalt) (SF)	Concrete Pilings Required
CONSTRUCTION PROJECTS																						
Vertical Launch Area 2014 - 2015																						
General																						
Clearing within 20-acre facility	NA	Construction	2014	7.8	7.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fill & Grading for 9-acre building area	NA	Construction	2014	7.8	N/A	339,986	N/A	N/A	57,924	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Trenching for Utilities	NA	Construction	2014	0.1	N/A	N/A	N/A	N/A	N/A	2,285	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Buildings/Structures																						
Security Gate Guard Buildings (2)	NA	Construction	2014	N/A	N/A	N/A	N/A	N/A	178	N/A	3,200	3,200	1	N/A	N/A	N/A	320	6.5	4.0	118.5	N/A	N/A
Perimeter Fence	NA	Construction	2014	1.0	1.0	44,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Integration and Processing Hangar	NA	Construction	2014	1.0	N/A	N/A	N/A	N/A	4,000	N/A	43,200	43,200	1	N/A	N/A	N/A	4,320	1,760	53	2,400	N/A	Yes
Parts Storage Warehouse (Hangar Construction)	NA	Construction	2014	0.2	N/A	N/A	N/A	N/A	600	N/A	10,800	10,800	1	N/A	N/A	N/A	1,080	22	13	400	N/A	N/A
Workshop (Hangar Construction)	NA	Construction	2014	0.2	N/A	N/A	N/A	N/A	600	N/A	10,800	10,800	1	N/A	N/A	N/A	1,080	22	13	400	N/A	N/A
Office Building	NA	Construction	2014	0.1	N/A	N/A	N/A	N/A	178	N/A	3,200	3,200	1	N/A	N/A	N/A	320	7	4	119	N/A	N/A
Launch Pad	NA	Construction	2014	0.3	N/A	N/A	N/A	N/A	2,668	N/A	N/A	N/A	N/A	N/A	N/A		N/A	445	N/A	2,223	12,004	Yes
Launch Pad Retention Basin	NA	Construction	2014	0.0	N/A	N/A	N/A	N/A	440	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20	N/A	33	N/A	N/A
Propellant Tank Area	NA	Construction	2014	0.4	N/A	N/A	N/A	N/A	867	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	289	N/A	622	N/A	N/A
Roads/Parking																						
Entrance Road	NA	Construction	2014	0.3	N/A	N/A	N/A	N/A	604	N/A	N/A	N/A	N/A	12,229	asphalt	4,076	N/A	453	N/A	N/A	N/A	N/A
Hangar Parking	NA	Construction	2014	0.8	N/A	N/A	N/A	N/A	1,692	N/A	N/A	N/A	N/A	34,267	asphalt	11,422	N/A	1,269	N/A	N/A	N/A	N/A
Runway from Hangar to Launch Pad	NA	Construction	2014	3.4	N/A	N/A	N/A	N/A	8,346	N/A	N/A	N/A	N/A	37,555	50% concrete, 50% asphalt	12,518	N/A	2,782	N/A	4,173	75,110	N/A
Propellant Tank Resupply Road & Parking Pad	NA	Construction	2014	0.9	N/A	N/A	N/A	N/A	2,533	N/A	N/A	N/A	N/A	18,651	50% concrete, 50% asphalt	15,542	N/A	1,382	N/A	576	N/A	N/A
Perimeter Security Road	NA	Construction	2014	0.8	0.8	36,648	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Dirt	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Road From Launch Pad to Perimeter Fence Road	NA	Construction	2014	0.2	N/A	N/A	N/A	N/A	405	N/A	N/A	N/A	N/A	8,200	asphalt	2,733	N/A	304	N/A	N/A	N/A	N/A
TOTALS					**9.7**	**420,634**			**81,033**	**2,285**	**71,200**	**71,200**		**110,902**		**46,292**	**7,120**	**8,760**	**88**	**11,064**	**87,114**	**0**
Control Center Area 2014 - 2015																						
General																						
Clearing within fenceline	NA	Construction	2014	8.6	8.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grading within fenceline	NA	Construction	2014	8.6	N/A	376,285	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Trenching for Utilities	NA	Construction	2014	0.6	N/A	N/A	N/A	N/A	N/A	12,815	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Buildings/Structures																						
Control Center Building	NA	Construction	2014	0.7	N/A	N/A	N/A	N/A	1,603	N/A	28,855	28,855	1	N/A	N/A	N/A	2,886	588	36	1,069	N/A	N/A
Payload Processing Facility	NA	Construction	2014	0.7	N/A	N/A	N/A	N/A	1,603	N/A	28,855	28,855	1	N/A	N/A	N/A	2,886	588	36	1,069	N/A	Yes
Launch Vehicle Processing Hangar	NA	Construction	2014	0.7	N/A	N/A	N/A	N/A	2,849	N/A	30,774	30,774	1	N/A	N/A	N/A	N/A	3,077	627	38	1,710	N/A	Yes
Satellite Fuels Storage	NA	Construction	2014	0.0	N/A	N/A	N/A	N/A	22	N/A	400	400	1	N/A	N/A	N/A	N/A	N/A	N/A	18	N/A	N/A
Generator Facility	NA	Construction	2014	0.0	N/A	N/A	N/A	N/A	69	N/A	1,250	1,250	1	N/A	N/A	N/A	N/A	125	25	2	46	N/A	N/A
Diesel Storage Area	NA	Construction	2014	0.0	N/A	N/A	N/A	N/A	25	N/A	452	452	1	N/A	N/A	N/A	45	9	1	17	N/A	N/A
Security Gate Guard Buildings (3)	NA	Construction	2014	0.0	N/A	N/A	N/A	N/A	38	N/A	690	690	1	N/A	N/A	N/A	69	14	1	26	N/A	N/A
Roads/Parking																						
All Roads	NA	Construction	2014	1.6	N/A	N/A	N/A	N/A	3,334	N/A	N/A	N/A	N/A	67,518	asphalt	22,506	N/A	2,501	N/A	N/A	N/A	N/A
All Parking Areas (Payload Processing, Launch Control, and Hangar Parking)	NA	Construction	2014	3.3	N/A	N/A	N/A	N/A	7,120	N/A	N/A	N/A	N/A	144,184	asphalt	48,061	14,418	5,607	178	N/A	N/A	N/A
TOTALS					**8.6**	**376,285**			**16,665**	**12,815**	**91,276**	**91,276**		**211,702**		**70,567**	**23,506**	**9,959**	**290**	**3,953**		**0**

TAB E. CONSTRUCTION ASSUMPTIONS

General

Concrete Pilings

Four structures within the vertical launch and control center areas would require pilings in the foundation due to heavy loads: the launc
pad, Integration and Processing Hangar, Payload Processing facility, and the Launch Vehicle Processing Hangar
The pilings would be pre-cast concrete and metal. They would be installed through use of a rotary auger drill rig and a
pile driver. All pilings would be installed to a depth of 40 feet and at a spacing of 9 feet on center

General Construction Assumptions

For all buildings and parking lots, it has been assumed that the area to be covered with sidewalks and curbing would be
10% of the building or lot square footage, and that the thickness of gravel beneath buildings would be 6 inches (0.5 feet)
Also, the thickness of the concrete slab beneath builidngs would be 1 foot, unless the building requires a
additional thickness of concrete due to the heavy loads on it (e.g., Integration & Processing Hangar)
Areas for buildings and roadways would still need to be excavated, once the site had been cleared, graded, and fi
added to raise the surface elevation by 4.6 feet (see Level of Fill above). Building sites would be excavated to a depth tc
account for the thickness of concrete and gravel projected for the site; roadways would be excavated to a depth of 1 foo
for gravel plus the thickness of asphalt or concrete for the road

Vertical Launch Area

Area to be Cleared:

According to EIS Section 2, the area inside the fence line
around the launch pad and associated structures is 7.805 acres. It is this area that would be cleared, graded, and
filled prior to construction.
Area to be cleared = 7.805 acres
Note that because it has been assumed that the entire area around the buildings and roadways would be cleared,
clearing has not been calculated for individual projects such as specific buildings or roads, except for the are
around the perimeter fence and security road.
Calculations for clearing productivity rates were based on clearing in heavily wooded areas. A
the vertical launch area is not heavily wooded, the clearing productivity rates were adjusted to 25% of the
standard values. (with the exception of the loader, which would level the entire site)

Area to be Graded:

Basically, this would be the same 7.805 acres that would need to be cleared.
Note that because it has been assumed that the entire area around the buildings and roadways would be graded,
grading has not been calculated for individual projects such as specific buildings or roads, except for the are
around the perimter fence and security road.

Level of Fill:

The entire area to be graded (7.805 acres)
SpaceX personnel estimate the land surface would be raised 4 feet above current levels prior to construction
http://tidesandcurrents.noaa.gov/sltrends/sltrends.shtml
provides the following information on projected sea level rises in the area around Port Isabel
"The mean sea level trend is 3.64 mm/year with a 95% confidence interval of +/- 0.44 mm/year based on monthly
mean sea level data from 1944 to 2006 which is equivalent to a change of 1.19 feet in 100 years."
Assuming that the SpaceX Texas Launch Site has a lifespan of 50 years, based on these figures, an additiona
06. feet of elevation rise would be need to account for sea level rise. These figures do not account fo
storm surges.
Level of fill = 4.6 feet

Utility Trenches

According to EIS Section 2, there are no buildings or utilities on site, and all utilities would have to be brought in from
State Highway 4. Assumed one trench for all utilities, and this trench was excavated along the road and Hanga
Parking Lot, with branches off to the buildings. The main trench would then run down the Runway from the Hangar tc
the Launch Pad, with branches off to the Propellant tanks and the Security Gate and Guard Building.
Measurements were taken from Exhibit 2-1 of Section 2 to determine the length of the main trench and branches
Assumed a width of 2 feet and a depth of 2 feet for the utility trench

Security Gate Guard Buildings

According to EIS Section 2, two sets of gates would allow entry to the vertical launch area, and each gate would
have a "small" guard shack. GIS measurements from SpaceX information show the two buildings to have a
total square footage of 3,200.
Guard Shack Building Foundation Areas = 3200 square feet

Perimeter Fencing and Roadway

Information received from SpaceX and from EIS Section 2 indicates that the perimeter fence would enclose
20 acres and would consist of a double fence separated by 10 feet. The security road would be inside the second fenc
and would be a 7-foot wide dirt road. Based on Exhibit 2-1 of the EIS, the fence line is approximately 4,400 feet long
Allowing for the 10-foot distance between fences, the area to cleared/graded for the fencing is

4400	feet long	by	10	feet wide =	44000 square feet

The security road is 7 feet wide and runs along the inner perimeter of the fencing, but does not extend for the entir
perimeter. The length of the roadway has been measured at 3,054 feet using GIS. Adding approx. 5 feet between the
inner fence and the roadway itself that would need to be cleared and graded, the width of the area is 12 feet
Area to be cleared/graded for perimeter road = 12 ft wide X 3054 ft long = 36648 square ft
It has been assumed that no excavation is necessary for the fence or the road, and that these areas would not be filled i
to raise the current land surface by 4.6 feet.

Integration and Processing Hangar

Information from the client and GIS measurements indicates this Hangar would be 43,200 square feet in area (360 x 120 ft)
The thickness of concrete beneath this hangar would be 1.5 feet. The gravel thickness would be increased from 0.5 (standar
for other buildings) to 1.0 feet.
Depth of excavation at this site would therefore be 2.5 feet
Amount of concrete needed for foundation and pilings has been included in the hangar construction calculations

Warehouse, Workshop, and Office Buildings

Both the Warehouse and Workshop would be 10,800 square feet, with concrete foundation thickness of 1 foot
Gravel thickness would be the standard 0.5 feet. Depth of excavation would therefore be 1.5 feet
The Office building would have the same thickness of foundation and gravel
Note that a description of the Warehouse is not provided in the EIS; however, client-provided data shows th
Warehouse to be the same size and have the same foundation thickness as the Workshop. All construction for th
Warehouse is therefore assumed to be similar to the construction details for the Workshop
The EIS does not provide the number of stories for the Office; however, as the heights of other buildings, sucl
as the Workshop and the Hangar, are provided, it has been assumed that the Office is a standard 1-story building
It has been assumed that the Warehouse and Workshop would have construction similar to a Hangar; therefore th
Hangar Construction module has been used for air emissions calculations for these buildings, even though they d
not require concrete pilings (emissions for installation of the pilings have been removed from the calculations)

Launch Pad

Based on information from SpaceX, the Launch Pad would have a footprint of 12,004 square feet, and the
thickness of the concrete would be approximately 5 feet
It has been assumed that the thickness of gravel (road bed) beneath this pad would be the same as for the Integratio
and Processing Hangar, which is 1 foot. Total depth of excavation in the Launch Pad area would be the thickness of th
concrete and the gravel: 5 feet + 1 foot = 6 feet
The pad area is approximately 110 x 110 ft. With pilings installed every 8 ft, that means 14 pilings each way o
a total of 196 pilings.

Launch Pad Retention Basin

Based on information from the EIS and other Falcon 9 EAs, the retention basin would be 30 ft by
36 ft = 1080 square feet in area. The basin depth would be 10 feet. Assume a 6 inch (0.5 ft) thickness of concrete
for the basin, with a 6 inch (0.5 ft) thickness of gravel beneath the concrete
The volume of concrete for the basin would be the volume in the basal slab plus the volume in the basin walls

540	cubic ft	volume of basal slab (30 x 36 x 0.5)
360	cubic ft	volume of side walls (10 ft x perimeter of basin [72 ft] x 0.5 ft)
900	cubic ft	total volume of concrete

Propellant Tank Area

http://www.michigan.gov/documents/Vol2-35UIP11Tanks_121080_7.pdf
The above reference provides the volumes in gallons per foot of tanks of specified diameters.
Based on the numbers in this table, SpaceX could install 4 20-foot diameter tanks with a height of 25 feet, and each
tank would contain approximately 50,000 gallons. These four tanks would hold the projected 200,000 gallons of RP-1.
The containment area for the tanks would have to contain the entire volume of the largest tank plus sufficient room
for precipitation (40 CFR 112 regulations for SpillPrevention Control and Countermeasure plans).
The amount of concrete for the containment area would be

Pad	70	ft wide x	70	ft long x	1	ft deep =	4900 cubic ft
Wall of	3	ft high x	400	ft long x	1	ft thick =	1200 cubic ft
containment structure						Total	6100 cubic ft

According to SpaceX, only the RP-1 tanks would require containment

The remaining area in the Propellant Tank Area would need concrete pads for the storage tanks for helium, nitrogen and liquid oxygen. Based on Exhibit 2-1 in the EIS, the area outside the RP-1 tanks consists of a 180 ft by 80 ft area north of the runway between the Hangar and the Launch Pad, and a 100 ft by 70 f area south of the runway. The tanks would occur inside an area 14,400 square feet (north) and 7,000 square feet (south) Assume that roughly half of this area would need to be covered by concrete pads used to anchor the aboveground storage tanks, and that the concrete would be 1 foot thick in all of the pads. The amount of concrete needed would be

10700 sf of area 1 ft thick = 10700 cubic feet of concrete

Total concrete in the Propellant Tank Area would be RP-1 tanks + all other tank pads = 16800 cubic feet

The total square footage to be excavated would then be 10700 SF, half of tanks area

plus 4900 SF for RP-1 tanks & containment

Total 15600 SF for area to be excavated

Assume that all of the excavated area would have 0.5 feet of gravel beneath, with 1 foot thick concrete pads, for a tota depth of excavation = 1.5 feet

Entrance Road

Based on information from SpaceX, Entrance Road would be 12, 229 square feet and would have 12 inches (1 foot) of gravel for roadbed. The assumption has been made that the asphalt would be 4 inches (0.333333 ft) thick

Depth of excavation : 1 ft for gravel + 0.333333 ft for asphalt = 1.333333 ft

Based on the road area provided by SpaceX and Figure 2-1 of the EIS, this Entrance Road runs from the fron gate into the Hangar Area Parking Lot, and from the end of the parking lot north to the property boundary

Hangar Parking

Based on information fromSpaceX and Exhibit 2-1 of the EIS, the area of the Hangar parking lot is 34, 267 square feet. The same assumptions have been made for this parking lot as were made for the Entrance Road

Runway from Hangar to Launch Pad (Pad Access)

Based on measurements from GIS, the estimated area for the Runway is 75,110 square feet.

All other assumptions (thickness of gravel, asphalt, and concrete, type of base material, equipment used, etc. are industry standard numbers and are provided in the footnotes for the table calculating runway construction ai emissions.

Propellant Tank Resupply Road and Parking Pads

Based on information from SpaceX, the estimated area for the tank resupply road/parking is 37,301 square feet with half asphalt and half concrete. The aphalt and concrete would be 10 inches (0.833333 feet) thick with a 12 incl gravel road base: 1 ft thick gravel + 0.833333 ft thick asphalt or concrete = 1.833333 depth

The concrete volume would be: 18650.5 ft2 area x 0.83333 ft thick = 15542.02117 cubic feet

Road From Launch Pad to Perimeter Fence Road

From Exhibit 2-1 of the EIS,this road has a small parking area near the Launch Pad and runs from the north side of the pad to the perimeter road. The road is 30 ft wide by 220 ft long with a 20 ft by 80 ft parking area, for a total o 8,200 square feet. It is assumed this road would be constructed similarly to the Entrance Road (12 inch gravel roadbed 4 inches of asphalt).

Control Center Area

Area to be Cleared:

According to the EIS, most of the land area inside the proposed fence line at the Control Center Area would b disturbed during construction. Calculations done through GIS for the Biological Assessment portion of the EIS shov that the area inside the fence line is 8.638 acres. It is this area that would be cleared and graded prior to constructior

Area to be cleared = 8.63831 acres

Note that because it has been assumed that the entire area within the fence line would be cleared, clearing has not been calculated for individual projects such as specific buildings or roads

Area to be Graded:

Basically, this would be the same 8.638 acres that would need to be cleared.

Note that because it has been assumed that the entire area within the fence line would be graded, grading has not been calculated for individual projects such as specific buildings or roads

It has been assumed that fill would not be necessary for the site

General Construction Assumptions

For all buildings and parking lots, it has been assumed that the area to be covered with sidewalks and curbing would be 10% of the building square footage, and that the thickness of gravel beneath buildings would be 6 inches (0.5 feet)

Also, the thickness of the concrete slab beneath builidngs would be 1 foot, unless the building requires a additional thickness of concrete due to the heavy loads on it (e.g., Payload Processing Facility)

Areas for buildings and roadways would still need to be excavated, once the site had been cleared and graded

Building sites would be excavated to a depth to account for the thickness of concrete and gravel projected for the site roadways would be excavated to a depth of 1 foot for gravel plus the thickness of asphalt or concrete for the road

Control Center Building

Based on information from GIS measurements, this building on Parcel 2 is 14,669 square feet in size and has a concrete foundation 1 foot thick. It would be a one-story building. For Parcel 1, the proposed size of the same facility is 14,186 SF To account for the worst-case scenario, both structures were used in the calculations, for a total o 28855 SF

Payload Processing Facility

Based on information from GIS measurements, this building on Parcel 3 is 14,669 square feet in size and has a concrete foundation 1 foot thick. It would be a one-story hangar-type building that would require concrete pilings to be used The amount of concrete needed for the foundation and pilings have been included in the hangar construcion calcs For Parcel 1, the proposed size of the same facility is 14,186 SF. To account for the worst-case scenario, both structures were used in the calculations, for a total of 28855 SF

Launch Vehicle Processing Hangar

Based on information from GIS measurements, this building is 30,774 square feet in size. Additional information from the client indicates a concrete foundation 1.5 feet in thickness. It is assumed that the thickness of gravel under the building would increase to 1 foot due to the thickness of the concrete slab. The depth of excavation for this structur would therefore be 2.5 feet (1.5 feet concrete plus 1 foot gravel). This would be a 1-story hangar-type structure The amount of concrete needed for the foundation and pilings have been included in the hangar construcion calcs

Satellite Fuels Storage Building

According to the EIS, this structure is 20 ft by 20 ft with a roof, secondary containment, and floor to ceiling fencing It is assumed that the foundation would be concrete of a thickness of 1 foot, with a 0.5-foot gravel underlayment. It i also assumed that the structure would not require sidewalks, curbing, etc. For the secondary containment, a 1-foot thick and 1 foot high concrete riser would run along the perimeter of the floor, for an additional 80 cubic feet of concrete

Generator Facility

Based on the EIS Section 2 site maps, the size of the Generator Facility has been calculated at approximately 1,250 square ft It is assumed that the foundation would be concrete of a thickness of 1 foot, with a 0.5-foot gravel underlayment.

Diesel Storage Area

Based on the EIS Section 2 site maps, the size of the Diesel Storage Area has been calculated at approximately 452.4 square ft It is assumed that the foundation would be concrete of a thickness of 1 foot, with a 0.5-foot gravel underlayment.

Security Gate Guard Buildings (3)

A total of three Guard Buildings would be required for the Control Center Area. Based on GIS measurements, the tota area for all three structures would be 690 SF. These buildings would have concrete foundations 1 ft thick and a standar layer of gravel beneath them (0.5 feet).

Roads and Parking Areas

The total areas for all roads at the Control Center Area and for all parking areas have been calculated for the Biologica Assessment for the EIS. The BA figures have been used in these calculations. It has also been assumed that standar project thicknesses for asphalt (0.33333 feet) and gravel road bed thickness (1 foot) apply
Concrete curbing/sidewalk areas have been calculated for the parking areas at 10% of the parking surface area

Road surface area:	1.55	acres	=	67518	square feet	
Parking lot area:	3.31	acres	=	144184	square feet	
Depth of excavation :		1	ft for gravel +	0.333333	ft for asphalt =	1.333333 ft

Utility Trench

Using GIS measurements determined from the Biological Assessment for the EIS, the measured linear feet for utility trenches is 12815 LF
A standard width and depth of 2 feet by 2 feet has been assumed for all trenches

TAB F. CONSTRUCTION WORKER POV ASSUMPTIONS

The number of construction workers for the Proposed Action was calculated as a percentage
of the number of workers determined for the Final EIS for the Spaceport America Commercial Launch Site (FAA 2008).
The Spaceport America facilities footprint was calculated to be 145 acres.
The total SpaceX facilities footprint has been calculated at 9.42 acres, or 6.5% of the Spaceport America facilties.
For the Spaceport project, a total number of 725 workers were projected for the 3-year life of the project.
6.5% of 725 equals 47 workers for the Proposed Action.

Launch Site Annual Operation Emissions

Table 1. Falcon 9 and Falcon Heavy Launch Emissions

Launch Vehicle	Max # launches/yr	RP-1 Use gal/launch	RP-1 MMBtu/gal	[1]CO Tons/launch	CO Tons
Falcon 9	10	38,000	0.135	857.15	8571.5
Falcon Heavy	2	200,000	0.135	2571.45	5142.9
				Total CO	**13714.4**

1Tons CO per Falcon 9 launch from *SpaceX Falcon Program Environmental Assessment, Table 4-3,* 27 September 2007. U.S. Army Space and Missile Defense Command.

Table 2. Generator Operations

Assume the IC engines are typically operated 0.5 hours per week for testing and maintenance = 26 hr/yr
Assume five 24-hour periods of power outages per year for the Launch Site (weather events, etc.) = 120 hr/yr
Assume additional twelve 48-hour operational periods for launches = 576 hr/yr
722 Total

Generator size		VOC	CO	NOx	SO2	PM
kW	#	lb/yr	lb/yr	lb/yr	lb/yr	lb/yr
300	10	3650	9697	45002	N.D.	3194
	Tons/yr	**1.82**	**4.85**	**22.50**	**-**	**1.60**

50% Load Factor

Pollutant	Emission Factors Diesel Fuel [a, b] < 447 kW or < 600 hp
	lb/hp-hr
CO	0.00668
NO_x	0.031
PM	0.0022
SO_2[c]	N.D.
S	N.D.
VOC	0.0025141

[a] Emission factors used to estimate emissions from the consumption of diesel fuel

[b] Emission factors from U.S. Environmental Protection Agency. Compilation of Air Pollutant Emission Factors - Volume I (AP-42), Section 3.4, 5th Edition; factors based upon power output

[c] The variable S in the emissions factor equals the sulfur content of the fuel expressed as percent weight.
SO_2 factor was assumed to equal 0.05 for diesel fuel.

Table 3. Staff Commuters

Vehicles	# vehicles	# days	[1]mi/day	[1]VOCs lb/mi	[1]CO lb/mi	[1]NOx lb/mi	[1]SO_2 lb/mi	[1]PM_{10} lb/mi	[1]$PM_{2.5}$ lb/mi
regular staff	150	245	48	0.00119	0.03467	0.00486	0.00001	0.00020	0.00018
launch event staff	100	144	48	0.00119	0.03467	0.00486	0.00001	0.00020	0.00018

	VOCs lb	CO lb	NOx lb	SO_2 lb	PM_{10} lb	$PM_{2.5}$ lb
	2090.64	61164.93	8578.82	23.01	347.28	320.07
	819.19	23966.67	3361.50	9.02	136.08	125.42
Tons per Year	**1.45**	**42.57**	**5.97**	**0.02**	**0.24**	**0.22**
Metric Tons per Year						

Table 4. Supply Deliveries

LOX Deliveries	F9 = 77,000 gal X 10 Launches =	770,000	gal/yr /9000 gal per tanker =	86 Tanker trucks
	FH = 333,400 X 2 launches =	666,800	gal/yr /9000 gal per tanker =	74 Tanker trucks
RP-1 deliveries	F9 = 47,000 gal X 10 Launches =	470,000	gal/yr /9000 gal per tanker =	52 Tanker trucks
	FH = 200,000 X 2 launches =	400,000	gal/yr /9000 gal per tanker =	44 Tanker trucks
				256 Tanker trucks delivering propellant per year
Helium deliveries	F9 = 1,700 lbm X 10 launches =	17000	lbm/yr/1400 lbm per delivery truck	12 Delivery trucks
	FH = 4,300 lbm X 2 launches =	8600	lbm/yr/1400 lbm per delivery truck	6 Delivery trucks
				18 Delivery trucks delivering helium each year
Nitrogen deliveries	F9 = 100,000 lbm X 10 launches =	1,000,000	lbm/yr/33000 lbm per delivery truck =	30 Delivery trucks
	FH = 150,000 lbm X 2 launches =	300,000	lbm/yr/33000 lbm per delivery truck =	9 Delivery trucks
				39 Delivery trucks delivering nitrogen each year
Hydrazine	2 deliveries per year			
Gasoline and diesel fuel	12 deliveries per year			
Water deliveries				
	F9 = 100,000 gal X 10 launches =	1,000,000	gal/yr /9000 gal per tanker =	111 Tanker trucks
	FH = 200,000 gal X 2 launches =	400,000	gal/yr /9000 gal per tanker =	44 Tanker trucks
potable water estimated for operational needs =		996,000	gal/yr /9000 gal per tanker =	111 Tanker trucks
				266 Tanker trucks delivering water per year
				594 TOTAL DELIVERIES PER YEAR

594 total deliveries per year Roundtrip from Brownsville TX area = 48 miles

On-road Equipment	Miles Traveled	VOC[1] lb/mile	CO[1] lb/mile	NOx[1] lb/mile	SO_2[1] lb/mile	PM10[1] lb/mile	PM2.5[1] lb/mile
Deliveries	28,522	0.00159	0.00831	0.03785	0.00002	0.00160	0.00156
		VOC lb	**CO** lb	**NOx** lb	**SO2** lb	**PM10** lb	**PM2.5** lb
		45.33	237.16	1,079.50	0.51	45.63	44.36
Totals in tons per year		**0.02**	**0.12**	**0.54**	**0.00**	**0.02**	**0.02**

[1]Emission factors from USEPA's MOVES 2010

Table 5. Total Annual Operations

VOCs T/yr	[1]CObmh T/yr	[2]COamh T/yr	Nox T/yr	SO2 T/yr	PM10 T/yr	PM2.5 T/yr
3.30	**2,790.41**	**10,971.52**	**29.01**	**0.02**	**1.86**	**1.84**

[1]bmh = below mixing height

[2]amh = above mixing height

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Appendix F
Jurisdictional Wetland Determination

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DEPARTMENT OF THE ARMY
GALVESTON DISTRICT, CORPS OF ENGINEERS
CORPUS CHRISTI REGULATORY FIELD OFFICE
5151 FLYNN PARKWAY, SUITE 306
CORPUS CHRISTI, TEXAS 78411

September 6, 2012

REPLY TO
ATTENTION OF:

Corpus Christi Regulatory Field Office

SUBJECT: Permit Application No. SWG-2012-00381; Preliminary Jurisdictional Determination

Space Exploration Technologies Corp.
ATTN: Steve Davis, Director of Advanced Projects
1030 15th St. NW, Suite 220E
Washington, DC 20005

Dear Mr. Davis,

This is in reference to a Preliminary Jurisdictional Determination (PJD) for approximately 25.47 acres of wetlands, located within your two project sites, as shown in the attached plans in 2 sheets and the attached PJD form. The project sites are located at the proposed Vertical Launch Facility, located immediately south of the eastern terminus of Texas Farm-to-Market Road 4 where it meets the Gulf of Mexico approximately 6.3 miles southeast of Port Isabel, and the proposed Control Center location, located approximately 1.5 miles to the west of the proposed launch facility on Eichorn Boulevard in the Boca Chica community, Cameron County, Texas.

In an electronic message, dated June 8, 2012, your company requested that a PJD be provided for this project location. We have received and counter executed the PDJ form that was attached to our email, dated August 29, 2012. Accordingly, please find attached your copy of the executed PJD form. This PJD is valid for five years from the date of this letter and serves as a PJD of the boundaries for Wetland 1 through Wetland 3, and the wetland labeled as Parcel 3, as shown on the maps and table attached to the PJD.

Corps determinations are conducted to identify the limits of the Corps Clean Water Act jurisdiction for particular sites. Although PJD's are not appealable, the enclosed combined Notification of Administrative Appeal Options and Process and Request for Appeal form contains procedural information for PJD's. Please reference determination number **SWG-2012-00381** in future correspondence pertaining to this subject.

If you have any questions concerning this determination, please contact Matthew Kimmel at the letterhead address or by telephone at 361-814-5847 ext. 1002. To assist us in improving our service to you, please complete the survey found at http://per2.nwp.usace.army.mil/survey.html.

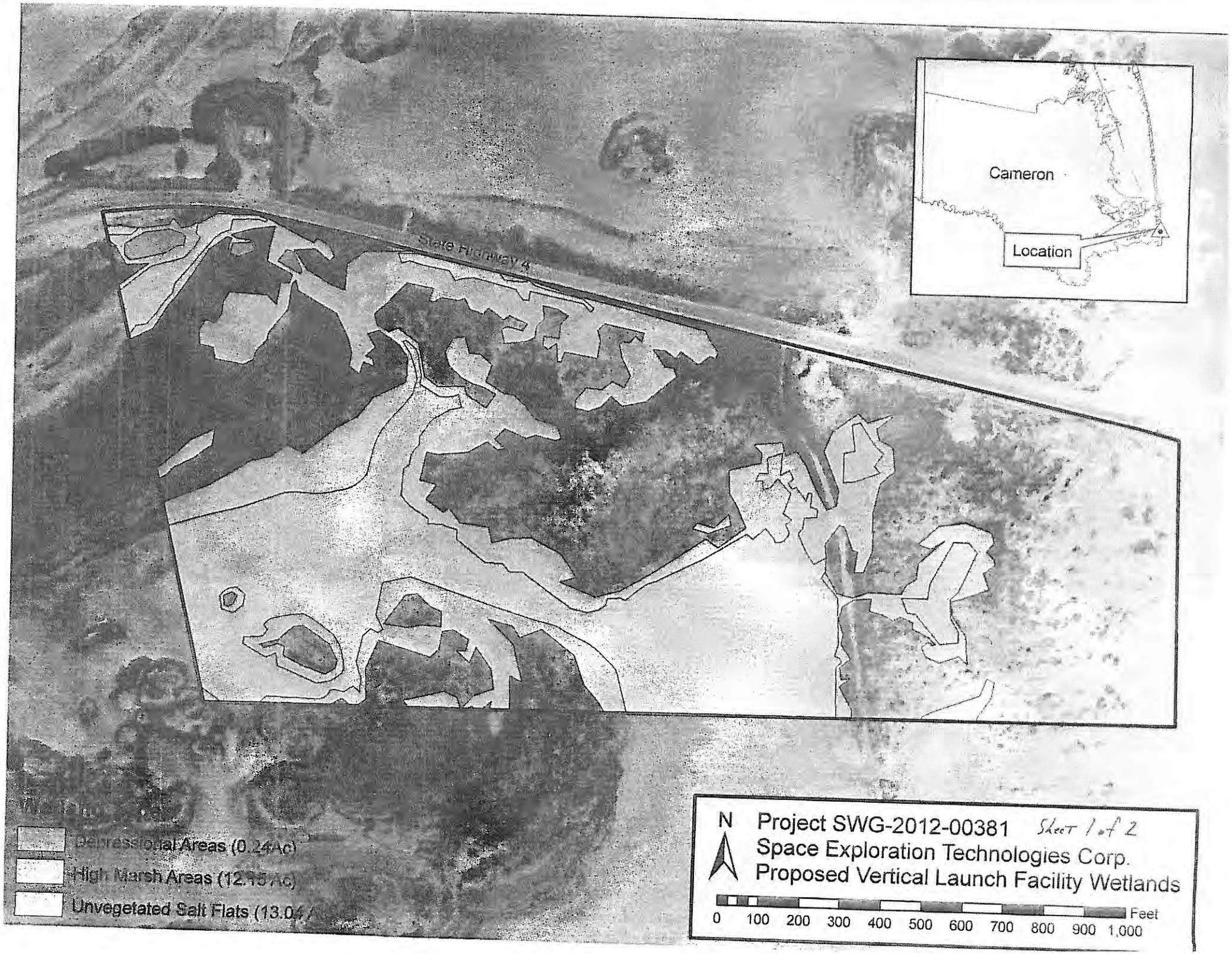
Sincerely,

for Lloyd Mullins, Supervisor
Corpus Christi Regulatory Field Office

Enclosures

Copies Furnished w/encl:

Cardno TEC, Inc., ATTN: Lucas DuPont
2496 Old Ivy Road, Suite 300, Charlottesville, VA 22903


Cameron
Location
State Highway 4
Depressional Areas (0.24 Ac)
High Marsh Areas (12.15 Ac)
Unvegetated Salt Flats (13.04 Ac)
N
Project SWG-2012-00381 Sheet 1 of 2
Space Exploration Technologies Corp.
Proposed Vertical Launch Facility Wetlands
0 100 200 300 400 500 600 700 800 900 1,000
Feet

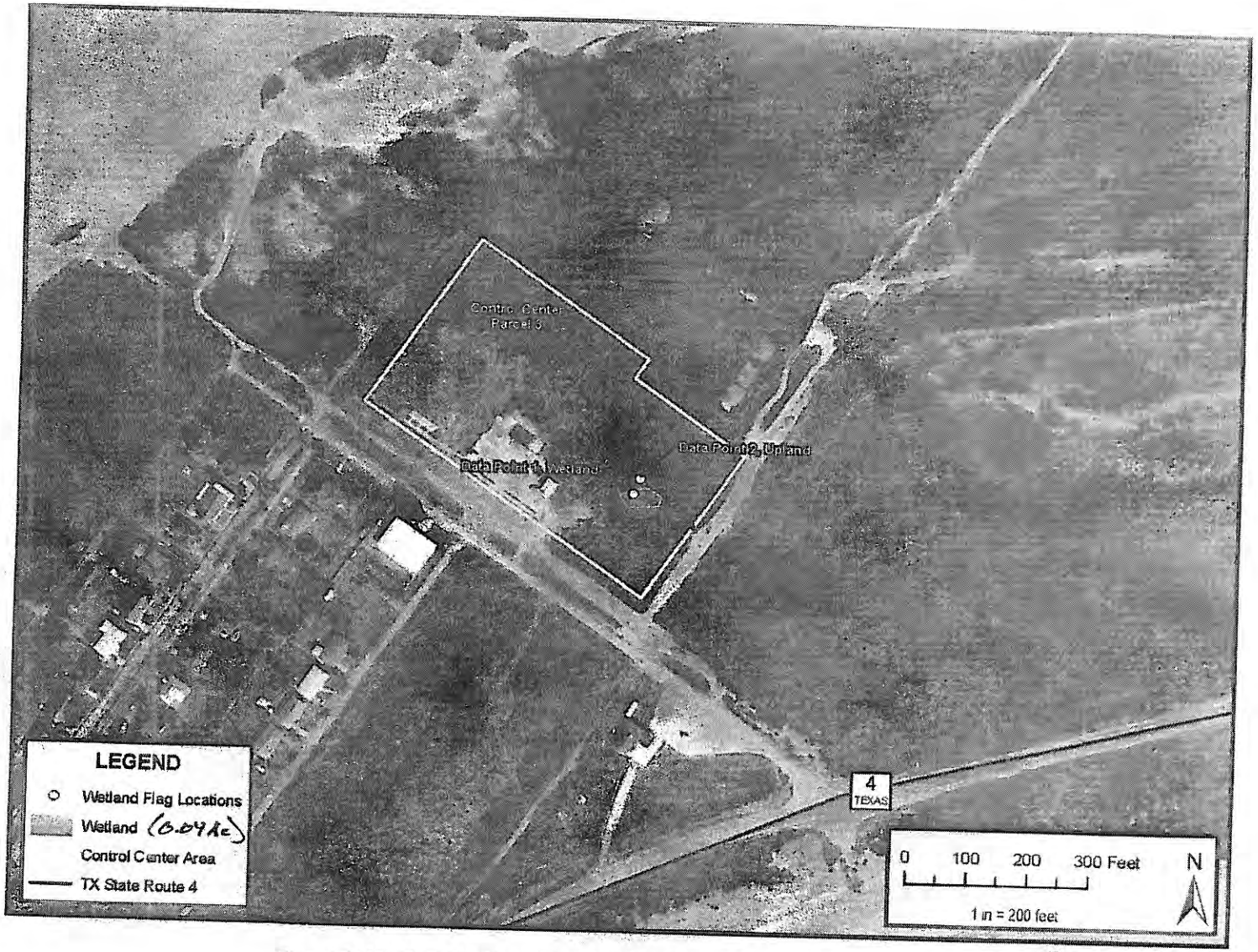


Figure 9. Wetland Delineation Map for Control Center Area (Parcel 3)

Project SWG-2012-00381
Sheet 2 of 2

ATTACHMENT

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD): 27 August 2012

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD: Cardno TEC, Inc., ATTN: Lucas DuPont, 2496 Old Ivy Road, Suite 300, Charlottesville, VA 22903

C. DISTRICT OFFICE, FILE NAME, AND NUMBER:Corpus Christi Regulatory Field Office, Galveston District, Project No. SWG-2012-00381, Proposed Space Exploration Technologies Corporation Launch Site

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION: (USE THE ATTACHED TABLE TO DOCUMENT MULTIPLE WATERBODIES AT DIFFERENT SITES)

State:TX County/parish/borough: Cameron City: Boca Chica
Center coordinates of site (lat/long in degree decimal format): Lat. 25.997° **N**, Long. 97.156° **W**.
Universal Transverse Mercator: NAD 83, Zone 14 - See attached spreadsheet
Name of nearest waterbody: Gulf of Mexico

Identify (estimate) amount of waters in the review area:
Non-wetland waters: linear feet: width (ft) and/or acres.
Cowardin Class:
Stream Flow:
Wetlands: 25.47 acres.
Cowardin Class: Emergent

Name of any water bodies on the site that have been identified as Section 10 waters:

Tidal:

Non-Tidal:

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:
☒ Field Determination. Date(s): 6 July 2012

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party

who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable. This preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .

☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.

- ☒ Office concurs with data sheets/delineation report.
- ☐ Office does not concur with data sheets/delineation report.

☐ Data sheets prepared by the Corps: .

☐ Corps navigable waters' study: .

☒ U.S. Geological Survey Hydrologic Atlas: .

- ☒ USGS NHD data.
- ☒ USGS 8 and 12 digit HUC maps.

☒ U.S. Geological Survey map(s). Cite scale & quad name:1:24,000, MOUTH OF RIO GRANDE, Texas.

☒ USDA Natural Resources Conservation Service Soil Survey. Citation:Mustang fine sand, saline - listed as hydric.

☒ National wetlands inventory map(s). Cite name:1:24,000, MOUTH OF RIO GRANDE, Texas.

☐ State/Local wetland inventory map(s): .

☒ FEMA/FIRM maps:480101 0375 D; revised May 4, 1992. Zone A.

☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)

☒ Photographs: ☒ Aerial (Name & Date):National Aerial Imagery Program, 2010 and Texas Orthoimagery Program, 2009.

or ☐ Other (Name & Date): .

☐ Previous determination(s). File no. and date of response letter: .

☐ Other information (please specify): .

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Matthew L. Kinnard

8/31/12

Signature and date of Regulatory Project Manager (REQUIRED)

8/31/12

Signature and date of person requesting preliminary JD (REQUIRED, unless obtaining the signature is impracticable)

Project SWG-2012-00381, Space Exploration Company
Proposed Launch Facility

Id	UTM Easting	UTM Northing	Wetland Type	Jurisdiction	Total Wetlands (Ac)
WET 1	684406	2876751	Depressional Wetlands	404	0.24
WET 2	684598	2876632	High Marsh Wetlands, containing both emergent and shrub-scrub wetland types	404	12.15
WET 3	684406	2876751	Unvegetated salt flats	404	13.04
Parcel 3	682134	2876173	Emergent high marsh wetland	404	0.04
					25.47 **Total Acres**

The project site consists of a potential vertical launch facility approximately 56.5 acres in size, of which 25.43 acres are jurisdictional wetlands. The wetlands are determined as adjacent due to their immediate location adjacent to, and including unvegetated salt flats which are subject to inundation by regularly occurring spring and storm tides by way of a hydrologic surface connection with South and Boca Chica Bays, approximately 540 feet to the north.

The proposed launch control facility (Parcel 3) is an approximately 4.0 acre site, of which 0.04 acres is palustrine emergent high marsh wetland. This parcel is approximately 1.5 miles to the west of the proposed vertical launch site.

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Space Exploration Technologies Corp.	File Number: SWG-2012-00381	Date: 6 SEP 2012
Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
	APPROVED JURISDICTIONAL DETERMINATION	D
X	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/CECW/Pages/reg_materials.aspx or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact: Lloyd Mullins, Supervisor U.S. Army Corps of Engineers Corpus Christi Regulatory Field Office 5151 Flynn Parkway, Suite 306 Corpus Christi, Texas 78411-4318 361-814-5851	If you only have questions regarding the appeal process you may also contact: Mr. Elliott Carman Administrative Appeals Review Officer (CESWD-PD-O) U.S. Army Corps of Engineers 1100 Commerce Street, Suite 831 Dallas, Texas 75242-1317 469-487-7061

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

_____ Signature of appellant or agent.	Date:	Telephone number:

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Jurisdictional Wetland Determination

Environmental Impact Statement

for the SpaceX Texas Launch Site

Federal Aviation Administration

August 31, 2012

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SpaceX Texas Launch Site Environmental Impact Statement, Jurisdictional Wetland Determination

1.0 Introduction

Cardno TEC has been retained by SpaceX to conduct a wetland delineation and jurisdictional determination (JD) of all federally-regulated wetlands (referred herein as "wetlands") within the proposed project area in Cameron County, Texas. The wetland delineation and JD will support an on-going third-party Environmental Impact Statement (EIS) being prepared by Cardno TEC for the FAA by providing quantifiable data for a detailed analysis of potential impacts to wetlands from the proposed construction and operation of a vertical launch area and control center area. These facilities would support the Falcon 9 and Falcon Heavy orbital vertical launch vehicles and a variety of reusable suborbital launch vehicles. Three parcels comprise the proposed location for the control center area and one larger site makes up the proposed vertical launch area (Figure 1). The wetland delineation has been initiated by FAA early in the planning process to determine the extent of wetlands within the project area in order to avoid and minimize potential wetland impacts. While best professional judgment has been used to determine the location and extent of any potential wetlands within the proposed project area, the official determination of wetlands only occurs when the United States Army Corps of Engineers (USACE) reviews these lines and formally makes the determination of the presence or absence of jurisdictional wetlands.

Wetlands are defined in the Code of Federal Regulations [40 CFR 230.3(t)] as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Section 404 of the Clean Water Act specifies that the placement of dredge or fill material into "Waters of the United States," including wetlands requires a USACE, Section 404 Permit. Section 10 of the Rivers and Harbors Act prohibits the unauthorized obstruction or alteration of any navigable water of the United States.

The Texas Commission on Environmental Quality (TCEQ) relies on the USACE to provide guidance on which projects require TCEQ review. Typically, if the proposed impact is less than 3 acres and does not affect rare and ecologically sensitive wetlands the project will qualify for Tier 1 401 Certificate. If the applicant incorporates the BMPs and other requirements of the Tier 1 Checklist, the 404 permit will proceed with no further review by the TCEQ (TCEQ 2012).



Figure 1. Location Map

The proposed vertical launch area is in Cameron County Texas, (Figure 1), approximately 17 miles east northeast of the Brownsville/South Padre Island International Airport and approximately 5 miles south of South Padre Island. The proposed vertical launch area is located at the eastern terminus of Boca Chica Boulevard (Texas State Route 4). The vertical launch area is approximately 56. 5 acres, positioned south of Boca Chica Boulevard and the eastern site boundary abuts the beach adjacent to the Gulf of Mexico. The parcels that comprise the proposed control center area are located north of Boca Chica Boulevard, and range from approximately 1.5 to 1.9 miles west of the proposed vertical launch area (Figure 1). Parcel 3, is approximately 4.0 acres and is located northeast of Eichorn Boulevard (Figure 2). Parcel 1, which is located the furthest from the proposed vertical launch area, is bounded on the southeastern side by Boca Chica Boulevard and the southwestern side by Remedios Avenue, and Parcel 2 which is bounded on the southeastern side by Boca Chica Boulevard, the southern end by San Martin Boulevard, and the northwest side is bounded by Joanna Street.

Based on best professional judgment and a site investigation, which included transects through each of the parcels, Parcels 1 and 2 are comprised entirely of uplands and are therefore excluded from this report and would not be included in the preliminary Jurisdictional Determination when issued by the USACE.

2.0 Offsite Evaluation

Prior to undertaking the field effort, the following resources were reviewed: United States Geological Service (USGS) maps, National Wetland Inventory (NWI) maps, Natural Resource Conservation Service (NRCS) Soils Mapping for Cameron County Texas, and Google Earth aerial imagery.

- The USGS quad map (Figure 3) for Mouth of the Rio Grande (rev. 1970) depicts the vertical launch area and Parcel 3 of the control center area as having little topographic relief, ranging from approximately 0 feet above sea level to 5 feet above sea level. The proposed vertical launch area is depicted as comprised of shifting sand and dunes, marsh/swamp, foreshore flats, three intermittent ponds, and uplands. Parcel 3 of the control center area is depicted as uplands.
- According to the NWI map for this area (Figure 4), the proposed vertical launch area is comprised of uplands and marine and estuarine wetlands. The wetlands are depicted as primarily located in the southern portion of the site. Additional wetlands are depicted in the eastern and western portions of the site. Parcel 3 is comprised almost entirely of uplands with the exception of a small wetland area as noted in Section 4.0 below.
- According to the NRCS Web Soil Survey (Figure 5), the soils underlying the proposed vertical launch area are comprised of Galveston fine snd, hummocky and Mustang fine sand, saline. The control center area is underlain by Galveston fine sand, hummocky. Galveston fine sand and Mustang fine sand are classified as partially hydric soils. Mustang fine sand, saline is classified as a hydric soil. A hydric soil classification indicates all of the soil components are listed as hydric. A hydric soil is saturated for a sufficient duration during the growing season for the development anaerobic conditions. Anaerobic conditions are due to the lack of oxygen and result in chemical and biological changes to the soil components.



Figure 2. Control Center Area Parcel 3

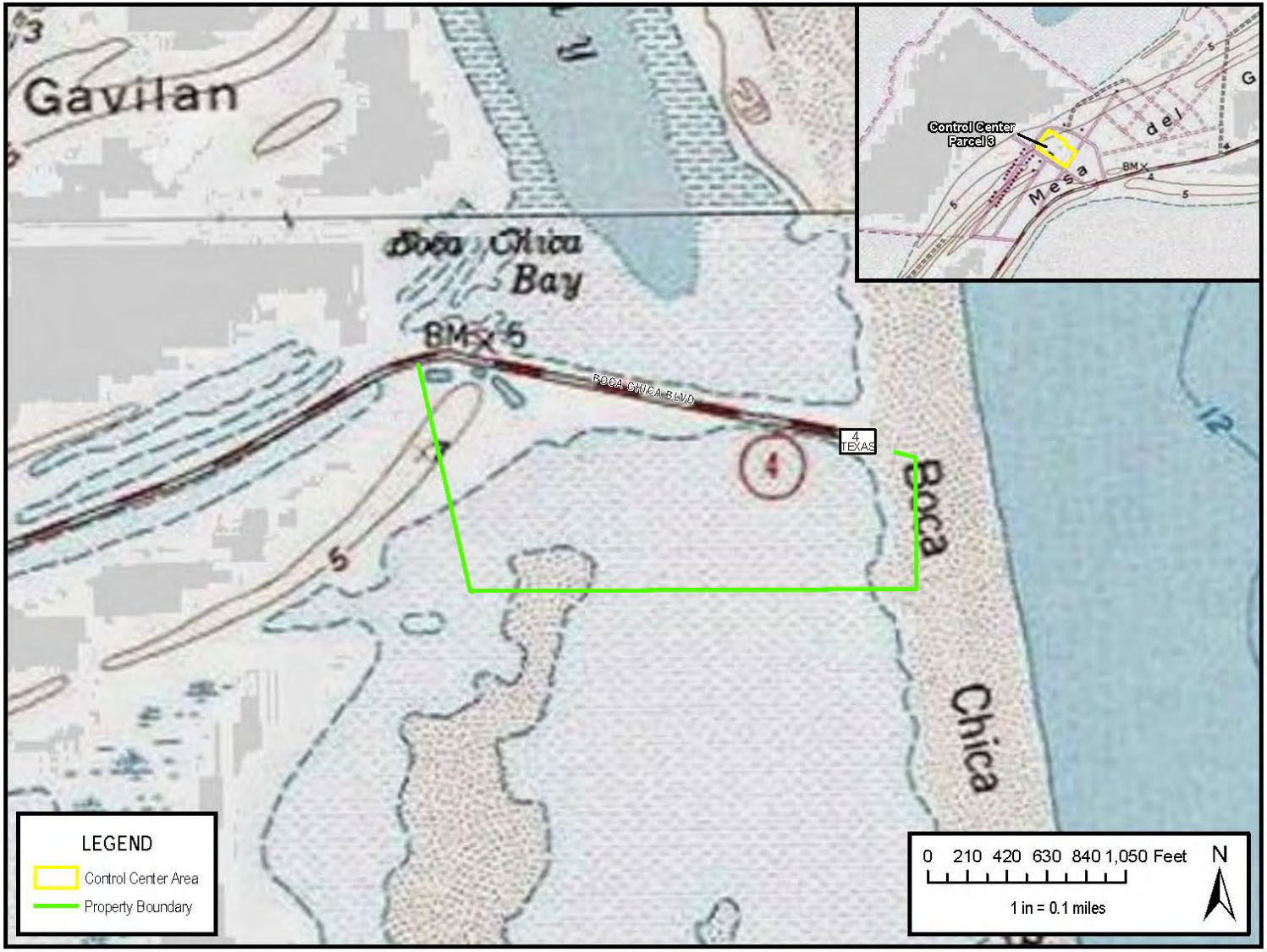

Figure 3. USGS Quad Map

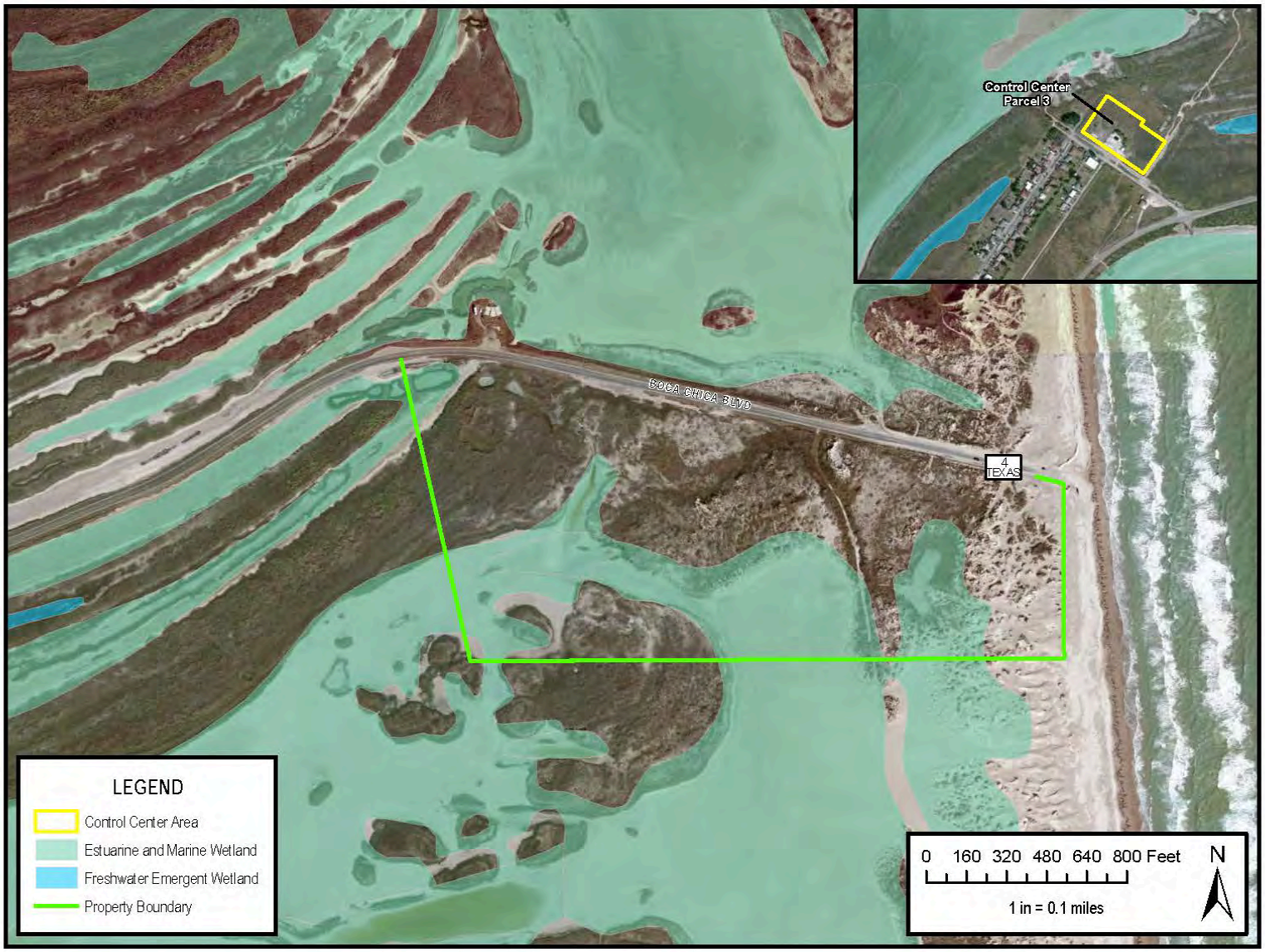

Figure 4. NWI Depicted Wetlands



Figure 5. NRCS Web Soil Survey

- Interpretation of Google Earth aerial imagery, taken 21 January 2011, indicates that Parcel 3 of the control center area is densely vegetated. The vertical launch area is depicted as less densely vegetated throughout most of the site with the exception of uplands in the western portion of the site, which are densely vegetated. The aerial also depicts large areas of unvegetated salt flats with inundation visible at multiple locations within the flats. Additional inundation is visible in three depressional features located in the northwestern portion of the site. Dunes are visible in the eastern portion of the site and the eastern boundary is comprised of beach associated with the Gulf of Mexico.

3.0 Onsite Evaluation Methodology

A wetland delineation was conducted on the entire project area from 14 May through 17 May 2012. The Mean High Water line for the Gulf of Mexico was obtained from the NOAA Tides and Current webpage (NOAA 2012) and then overlaid on the wetland delineation map to determine if the vertical launch area extended to the Gulf of Mexico. The rest of the wetland delineation was conducted using the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (2008)* and the *1987 Corps of Engineers Wetland Delineation Manual.* The wetland indicator status of flora within the sites was determined using the 1988 U.S. Fish and Wildlife Service National List (revised in 1996 and 1998). Fieldwork was conducted prior to the implementation of the 2012 National Plant List on 1 June 2012. Upland boundaries were determined and marked with pink and black striped flagging or a pin flag, where appropriate. Each WoUS line was designated with a letter value. The letter value was continued until the line intersected the project site limit or until the line created a polygon, representing an upland island or a surficial hydrologically isolated wetland. Each flag was given an alphanumerical value reflecting the wetland letter and the order of the flag placement (e.g., A-1, A-2, etc.). All flags were captured on a handheld GPS unit with sub-meter accuracy. Ten data forms (*Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Wetland Determination Data Forms*) were completed at relevant points within the vertical launch area. Two data points were completed at Parcel 3 of the control center area, in and adjacent to the only wetland onsite. All data points were paired, so that an upland data point is located adjacent to a wetland data point. Data point locations were marked in the field with red flagging and the locations were recorded with the GPS unit. Data point numbers included on the delineation map correspond with data point numbers marked on the flagging in the field. Data sheets are included as Appendix A.

4.0 Onsite Survey Results

The entire vertical launch area and Parcel 3 of the control center area were evaluated for potential wetlands. Figure 6 shows the project limits for the vertical launch area and control center area.

The uplands located within the vertical launch area project limits are largely comprised of sporadically vegetated sand dunes in the eastern portion of the site and moderately to densely vegetated uplands in the western portion of the site (Figure 7). Additional upland islands are located in the unvegetated salt flats. The wetlands onsite are comprised of scrub shrub and emergent wetlands both of which are categorized as high marsh areas, and unvegetated salt flats (Figure 8).

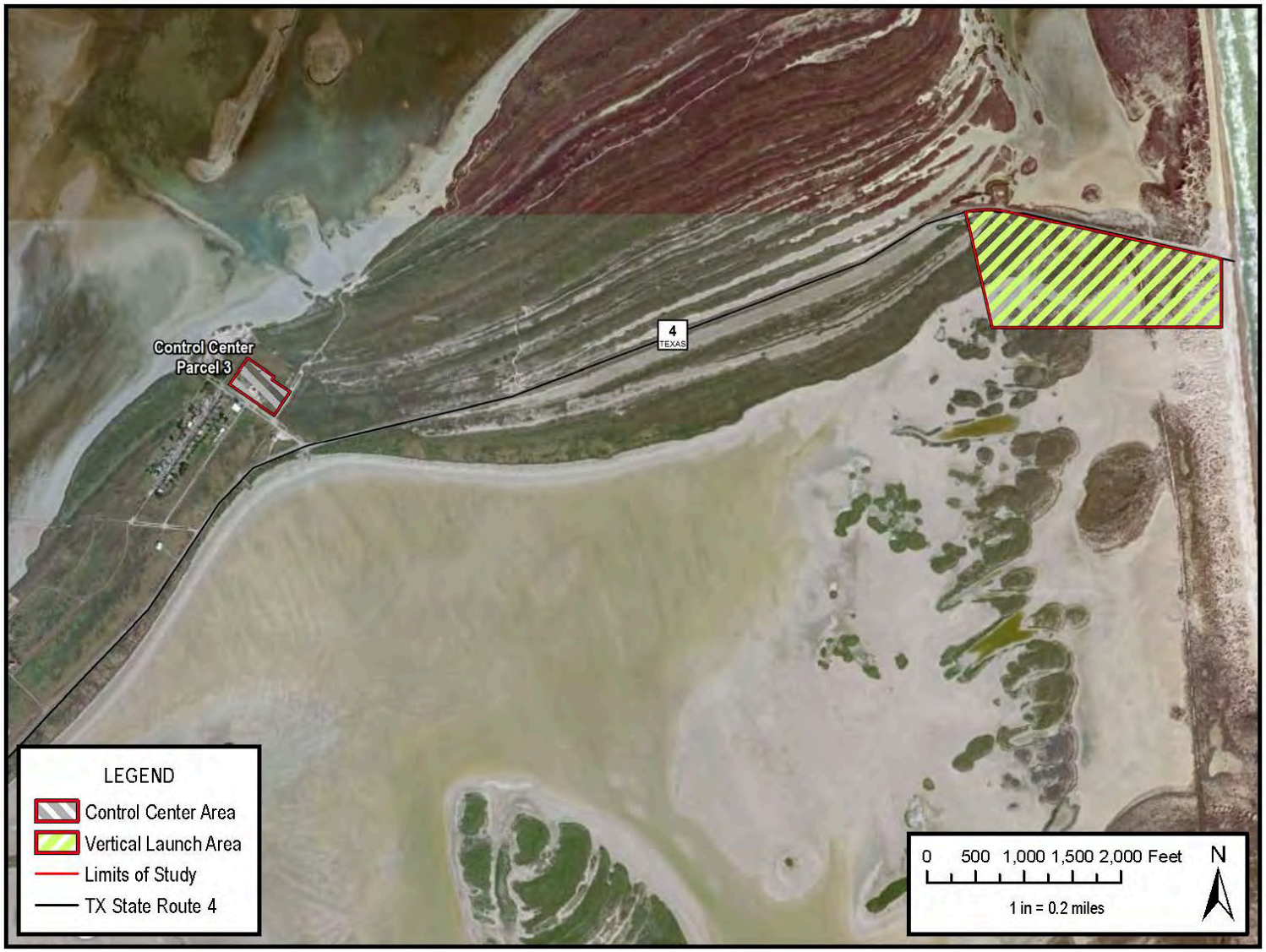

Figure 6. SpaceX Control Center Area (Parcel 3) and Vertical Launch Area Project Limits

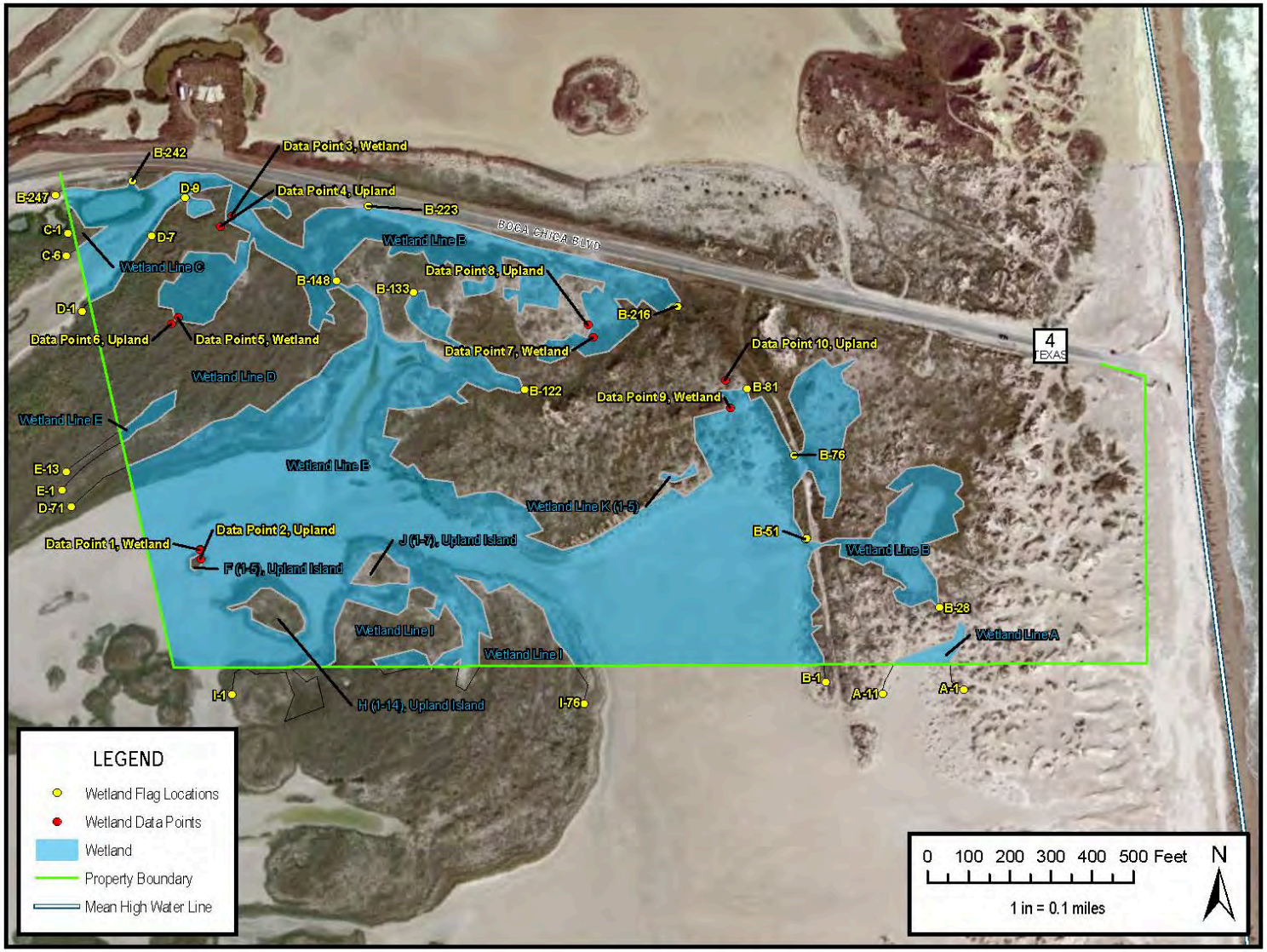

Figure 7. Wetland Delineation Map for Vertical Launch Area

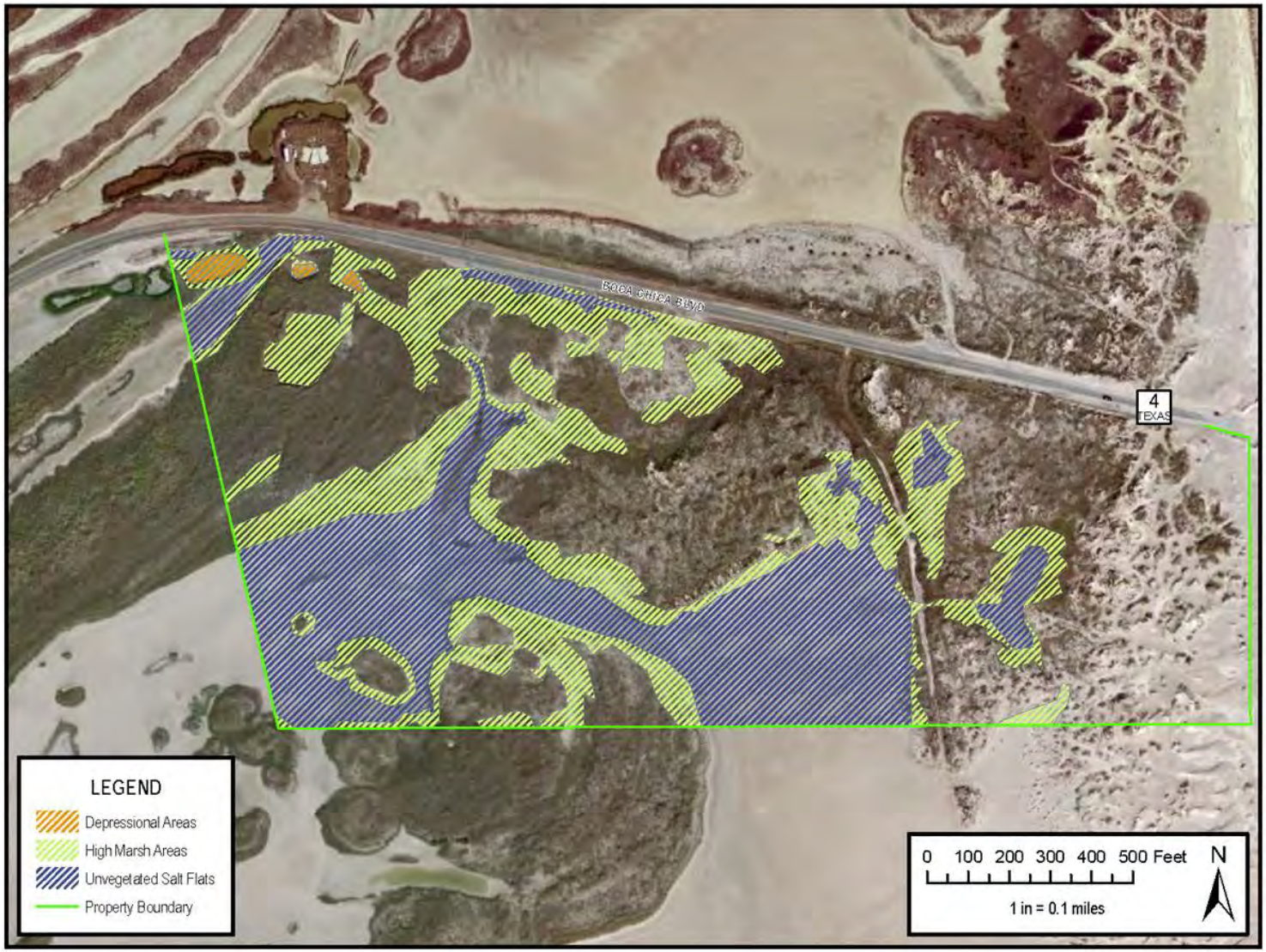

Figure 8. Wetland Types for Vertical Launch Area

Additionally, three small unvegetated depressional features were identified in the northwestern portion of the site. Inundation was visible during fieldwork in several low areas in the unvegetated salt flats and in the depressional areas (Figure 8). Wetland hydrology appears to be predominantly supplied by groundwater and is evidenced by saturation within 12 inches of the soil surface, water stained leaves, crayfish burrows, the Facultative neutral test (commonly known as the "FAC neutral test"), and geomorphic position. The hydric soils on site typically met the redox depression criteria. Upland vegetation is typified by Texas pricklypear (*Opuntia engelmannii*), honey mesquite (*Prosopis glandulosa*), giant reed (*Arundo donax*), Cuman ragweed (*Ambrosia cumanensis*) and golden tickseed (*Coreopsis tinctoria*). Wetland vegetation is primarily comprised of saltgrass (*Distichlis spicata*), shoregrass (*Monanathocloe littoralis*), Virginia glasswort (*Salicornia virginica*), shoreline seapurslane (*Sesuvium portulacastrum*), seaside tansy (*Borrichia frutescens*), and gulf cordgrass (*Spartina spartinae*).

The control center area is primarily comprised of uplands. The only wetland identified, is located in the southwestern portion of the parcel (Figure 9). It is a hydrologically isolated wetland located in a depression. Based on conversations with the USACE, although the depression appears to be hydrologically isolated, the USACE will take jurisdiction over the feature because it is considered "adjacent" to jurisdictional waters. Vegetation within the wetland is dominated by bushy seaside tansy, shoregrass, and saltgrass (Figure 10). Vegetation in the uplands is dominated by little bluestem (Schizachyrium scoparium), honey mesquite, cuman ragweed, and a yucca species. Hydrology was evidenced by crayfish burrows. Soils were determined to be hydric based on the redox depression criteria.



Figure 9. Wetland Delineation Map for Control Center Area (Parcel 3)



Figure 10. Wetland Types for Control Center Area

5.0 Conclusion

The vertical launch area is composed of approximately 56.50 acres, of which 25.43 acres are jurisdictional wetlands and 31.07 acres are uplands. In discussion with USACE, the following categories were requested to be used to describe the wetlands: depressional areas, high marsh areas, and unvegetated salt flats. Based on the Cowardin classification system the unvegetated salt flats and depressional features are estuarine, intertidal, and unconsolidiated shore with a sand substrate (E2US2). The emergent high marsh wetlands are estuarine, intertidal, and emergent with persistent vegetation (E2EM1). The scrub shrub high marsh wetlands are estuarine, intertidal, scrub-shrub with broad-leaved evergreen vegetation (E2SS3). Of the 25.43 acres of wetlands at the vertical launch area, 0.24 acres are comprised of depressional areas, 12.15 acres are comprised of high marsh areas, and 13.04 acres are comprised of unvegetated salt flats. The high marsh area contains both emergent and scrub shrub wetlands. Parcel 3 of the control center area is approximately 4.0 acres of which 0.04 acre is jurisdictional wetland. The 0.04 acre wetland is considered an emergent high marsh area.

Based on field observations, judicial precedent, and discussions with the Corpus Christi Regulatory Office of USACE, Cardno TEC believes the delineated areas are wetlands under Section 404 jurisdiction. With this submittal of the JD Request Form and Jurisdictional Wetland Determination Report, the FAA and Cardno TEC respectfully request the USACE confirmation of this wetland delineation.

The Wetland and Upland Data Sheets are included in Appendix A for USACE review and concurrence.



Luke DuPont, Professional Wetlands Scientist

6.0 References

National Oceanic and Atmospheric Administration (NOAA) 2012. April 2012. NOAA Tides and Currents. Website accessed April 4, 2012. http://tidesandcurrents.noaa.gov/tide_predictions.shtml?gid=232

Natural Resources Conservation Service (NRCS). May 2012. NRCS Web Soil Survey. National Cooperative Soil Survey. Website accessed May 24, 2012. http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

Texas Commission on Environmental Quality (TCEQ) 2012. April 2012. Tier 1 401 Certification. Website accessed June 5, 2012. http://www.tceq.texas.gov/permitting/401certification/401certification_tier1.html

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USACE 1987. Corps of Engineers Wetland Delineation Manual.

U.S. Fish and Wildlife Service (USFWS) 1998. 1988 U.S. Fish and Wildlife Service National List (revised in 1996 and 1998).

USFWS. May 2012. National Wetlands Inventory. Website accessed May 23, 2012. http://www.fws.gov/wetlands/Data/Mapper.html

Appendix A

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WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Launch Site City/County: Cameron County Sampling Date: 5/16/12

Applicant/Owner: SpaceX State: Texas Sampling Point: 1

Investigator(s): Luke Dupont Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Edge of Salt Flat Local relief (concave, convex, none): None Slope (%): 0

Subregion (LRR or MLRA): LRR T Lat: 25.9956 Long: -97.1576 Datum: WGS 84

Soil Map Unit Name: Mustang Fine Sand NWI classification: Estuarin and Marine

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation X, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

Based on conversations with the USACE personnel out of the Corpus Christi office, this area is naturally problematic. For example, upland vegetation can grow immediately adjacent to obligate vegetation due to the relatively dry climate and moisture laden air. Recorded rainfall for Cameron County in 2012 is slightly higher than an average year.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 10

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: 1

Tree Stratum (Plot size: NA)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling Stratum (Plot size: NA)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Shrub Stratum (Plot size: NA)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Herb Stratum (Plot size: 5')			
1. Monanthochloe littoralis	35	Y	OBL
2. Spartina spartinae	5		FACW
3. Sesuvium portulacastrum	15	Y	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	55 = Total Cover		
Woody Vine Stratum (Plot size: NA)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (If observed, list morphological adaptations below).

This data point was taken on the edge of an unvegetated tidal flat. As a result it meets on hydrology, but half the area also meets the sparsely vegetated concave surface hydrology indicator.

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	2.5Y 5/3	100					Sa	
2-5	10YR 5/2	95	10YR 5/4	5	C	M	SaCl	
5-14	10YR 5/3	95	10YR 5/6	5	C	M	Sa	
14-20	10YR 4/3	100					Cl	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12) **(LRR T, U)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Launch Site City/County: Cameron County Sampling Date: 5/16/12

Applicant/Owner: SpaceX State: Texas Sampling Point: 2

Investigator(s): Luke Dupont Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Mound Local relief (concave, convex, none): Convex Slope (%): 5

Subregion (LRR or MLRA): LRR T Lat: 25.9956 Long: -97.1576 Datum: WGS 84

Soil Map Unit Name: Mustang Fine Sand NWI classification: Estuarine Marine

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation X, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

Based on conversations with the USACE personnel out of the Corpus Christi office, this area is naturally problematic. For example, upland vegetation can grow immediately adjacent to obligate vegetation due to the relatively dry climate and moisture laden air. Recorded rainfall for Cameron County in 2012 is slightly higher than an average year.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches): _____
Water Table Present?	Yes _____	No X	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No X	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: 2

Tree Stratum (Plot size: NA)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling Stratum (Plot size: NA)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Shrub Stratum (Plot size: NA)			
1. Borrichia frutescens	5	Y	FACW
2. Opuntia engelmannii	10	-	NI
3.			
4.			
5.			
6.			
7.			
	15 = Total Cover		
Herb Stratum (Plot size:)			
1. Distichlis spicata	65	Y	FACW
2. Eragrostis secundiflora	10		FACU
3. Coreopsis tinctoria	20	Y	FAC
4. Prosopis glandulosa	5		NI
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: NA)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (If observed, list morphological adaptations below).

SOIL Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-20	10YR 7/3	100					Sa	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12) **(LRR T, U)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Launch Site City/County: Cameron County Sampling Date: 5/17/12

Applicant/Owner: SpaceX State: Texas Sampling Point: 3

Investigator(s): Luke Dupont Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Low Area Local relief (concave, convex, none): Concave Slope (%): 5

Subregion (LRR or MLRA): LRR T Lat: 25.9979 Long: -97.1573 Datum: WGS 84

Soil Map Unit Name: Galveston Fine Sand NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation X, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

Based on conversations with the USACE personnel out of the Corpus Christi office, this area is naturally problematic. For example, upland vegetation can grow immediately adjacent to obligate vegetation due to the relatively dry climate and moisture laden air. Recorded rainfall for Cameron County in 2012 is slightly higher than an average year.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

___ Surface Water (A1)	X Water-Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
___ Saturation (A3)	___ Marl Deposits (B15) **(LRR U)**	___ Drainage Patterns (B10)
X Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	X Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	X Geomorphic Position (D2)
___ Inundation Visible on Aerial Imagery (B7)	___ Other (Explain in Remarks)	___ Shallow Aquitard (D3)
		X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches): _____
Water Table Present?	Yes _____	No X	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches): 13

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: 3

Tree Stratum (Plot size: NA)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling Stratum (Plot size: NA)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Shrub Stratum (Plot size: 15')			
1. Borrichia frutescens	35	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	35 = Total Cover		
Herb Stratum (Plot size: 5')			
1. Scirpus robustis	45	Y	OBL
2. Distichlis spicata	5	-	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	50 = Total Cover		
Woody Vine Stratum (Plot size: NA)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	2.5Y 4/3	85	2.5Y 4/2	10	D	M	SaCl	
			2.5Y5/6	5	C	PL		
6-14	2.5Y 5/3	100					Sa	
14-20	2.5Y 5/2	95	2.5Y 5/6	5	C	PL	SaCl	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12) **(LRR T, U)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Launch Site City/County: Cameron County Sampling Date: 5/17/12

Applicant/Owner: SpaceX State: Texas Sampling Point: 4

Investigator(s): Luke Dupont Section, Township, Range:

Landform (hillslope, terrace, etc.): Upland Local relief (concave, convex, none): None Slope (%): 0

Subregion (LRR or MLRA): LRR T Lat: 25.9978 Long: -97.1574 Datum: WGS 84

Soil Map Unit Name: Galveston Fine Sand NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation X, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes ____ No X	

Remarks:

Based on conversations with the USACE personnel out of the Corpus Christi office, this area is naturally problematic. For example, upland vegetation can grow immediately adjacent to obligate vegetation due to the relatively dry climate and moisture laden air. Recorded rainfall for Cameron County in 2012 is slightly higher than an average year.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: 4

Tree Stratum (Plot size: NA)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling Stratum (Plot size: NA)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Shrub Stratum (Plot size:)			
1. Unidentified Shrub	5	-	-
2. Borrichia frutescens	10	Y	FACW
3.			
4.			
5.			
6.			
7.			
	15 = Total Cover		
Herb Stratum (Plot size:)			
1. Spartina spartinae	95	Y	FACW
2. Gaillardia pulchella	2		NI
3. Conoclinium coelestinum	10		FACW
4. Andropogon glomeratus	2		FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	109 = Total Cover		
Woody Vine Stratum (Plot size: NA)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	2.5Y 6/3	95	2.5Y 5/6	5	C	M	Sa	
4-16	10YR 6/3	100					Sa	
16-20	2.5Y 6/3	90	2.5Y 6/8	10	C	M	Sa	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12) **(LRR T, U)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Launch Site City/County: Cameron County Sampling Date: 5/17/12

Applicant/Owner: SpaceX State: Texas Sampling Point: 5

Investigator(s): Luke Dupont Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Low Area Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR or MLRA): LRR T Lat: 25.9972 Long: -97.1578 Datum: WGS 84

Soil Map Unit Name: Galveston Fine Sand NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation X, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

Based on conversations with the USACE personnel out of the Corpus Christi office, this area is naturally problematic. For example, upland vegetation can grow immediately adjacent to obligate vegetation due to the relatively dry climate and moisture laden air. Recorded rainfall for Cameron County in 2012 is slightly higher than an average year.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 12"

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: 5

Tree Stratum (Plot size: NA)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling Stratum (Plot size: NA)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Shrub Stratum (Plot size: 15')			
1. Iva texensis	5	-	NI
2.			
3.			
4.			
5.			
6.			
7.			
	5 = Total Cover		
Herb Stratum (Plot size: 5')			
1. Ambrosia cumanensis	15		FAC
2. Distichlis spicata	95	Y	FACW
3. Spartina spartinae	2		FACW
4. Fimbristylis castanea	5		OBL
5. Sesuvium portulacastrum	2		FACW
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	119 = Total Cover		
Woody Vine Stratum (Plot size: NA)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	2.5Y 5/3	95	10YR 4/2	5	D	M	SaCl	
3-15	2.5Y 6/3	90	10YR 5/8	10	C	M	Sa	
15-20	2.5Y 6/3	95	2.5Y 6/8	5	C	M	Sa	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12) **(LRR T, U)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Launch Site City/County: Cameron County Sampling Date: 5/17/12

Applicant/Owner: SpaceX State: Texas Sampling Point: 6

Investigator(s): Luke Dupont Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Vegetated Upland Local relief (concave, convex, none): None Slope (%): 0

Subregion (LRR or MLRA): LRR T Lat: 25.9971 Long: -97.1578 Datum: WGS 84

Soil Map Unit Name: Galveston Fine Sand NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation X, Soil X, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes _____ No X	

Remarks:

Based on conversations with the USACE personnel out of the Corpus Christi office, this area is naturally problematic. For example upland vegetation can grow immediately adjacent to obligate vegetation due to the relatively dry climate and moisture laden air. Recorded rainfall for Cameron County in 2012 is slightly higher than an average year. .

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: 6

Tree Stratum (Plot size: NA)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling Stratum (Plot size: NA)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Shrub Stratum (Plot size: 15')			
1. Borrichia frutescens	5	Y	FACW
2. Opuntia engelmannii	5	-	NI
3.			
4.			
5.			
6.			
7.			
	10 = Total Cover		
Herb Stratum (Plot size: 5')			
1. Spartina spartinae	90	Y	FACW
2. Ambrosia cumanensis	10		FAC
3. Conoclinium coelestinum	10		FACW
4. Andropogon glomeratus	5		FACW
5. Croton glandulosus	10		NI
6. Ratibida columnifera	2		NI
7. Commelina communis	2		FAC
8.			
9.			
10.			
11.			
12.			
	129 = Total Cover		
Woody Vine Stratum (Plot size: NA)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: 6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 5/3	100					Sa	
2-20	10YR 6/3	100					Sa	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12) **(LRR T, U)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Launch Site City/County: Cameron County Sampling Date: 5/17/12

Applicant/Owner: SpaceX State: Texas Sampling Point: 7

Investigator(s): Luke Dupont Section, Township, Range:

Landform (hillslope, terrace, etc.): Toe of Slope Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR or MLRA): LRR T Lat: 25.997 Long: -97.1547 Datum: WGS 84

Soil Map Unit Name: Mustang Fine Sand NWI classification: Estuarine Marine

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation X, Soil X, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:

Based on conversations with the USACE personnel out of the Corpus Christi office, this area is naturally problematic. For example upland vegetation can grow immediately adjacent to obligate vegetation due to the relatively dry climate and moisture laden air. Recorded rainfall for Cameron County in 2012 is slightly higher than an average year.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- X Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ____

Water Table Present? Yes ____ No X Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes X No ____ Depth (inches): 16

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: 7

Tree Stratum (Plot size: NA)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling Stratum (Plot size: NA)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Shrub Stratum (Plot size: 15')			
1. Borrichia frutescens	5	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	5 = Total Cover		
Herb Stratum (Plot size: 5')			
1. Typha domingensis	35	Y	OBL
2. Iva texensis	25	-	NI
3. Fimbristylis castanea	15		OBL
4. Distichlis spicata	20	Y	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: NA)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: 7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	2.5Y 6/3	90	2.5Y 5/2	10	D	M	SaCl	
5-10	2.5Y 5/3	90	2.5Y 6/8	10	C	M	Sa	
10-17	2.5Y 5/3	80	2.5Y 5/6	20	C	PL	SaCl	
17-20	5Y 5/2	80	2.5Y 5/6	20	C	PL	SaCl	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12) **(LRR T, U)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Launch Site City/County: Cameron County Sampling Date: 5/17/12

Applicant/Owner: SpaceX State: Texas Sampling Point: 8

Investigator(s): Luke Dupont Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Upland Local relief (concave, convex, none): Convex Slope (%): 5

Subregion (LRR or MLRA): LRR T Lat: 25.9971 Long: -97.1547 Datum: WGS 84

Soil Map Unit Name: Mustang Fine Sand NWI classification: Estuarine Marine

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation X, Soil X, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

Based on conversations with the USACE personnel out of the Corpus Christi office, this area is naturally problematic. For example upland vegetation can grow immediately adjacent to obligate vegetation due to the relatively dry climate and moisture laden air. Recorded rainfall for Cameron County in 2012 is slightly higher than an average year.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: 8

Tree Stratum (Plot size: NA)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling Stratum (Plot size: NA)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Shrub Stratum (Plot size: 15')			
1. Borrichia frustescens	5	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	5 = Total Cover		
Herb Stratum (Plot size: 5')			
1. Rayjacksonia phyllocephala	15	Y	FACW
2. Polygala alba	5		NI
3. Eragrostis secundiflora	20	Y	FACU
4. Iva texensis	15	-	NI
5. Sesuvium portulacastrum	5		FACW
6. Uniola paniculata	5		FACU
7. Distichlis spicata	10		FACW
8. Samolus ebracteatus	5		FACW
9.			
10.			
11.			
12.			
	80 = Total Cover		
Woody Vine Stratum (Plot size: NA)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: 8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	2.5Y 6/3	100					Sa	
12-20	10YR 6/3	100					Sa	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12) **(LRR T, U)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Launch Site City/County: Cameron County Sampling Date: 5/17/12

Applicant/Owner: SpaceX State: Texas Sampling Point: 9

Investigator(s): Luke Dupont Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Toe of Slope Local relief (concave, convex, none): Concave Slope (%): 5

Subregion (LRR or MLRA): LRR T Lat: 25.9966 Long: -97.1537 Datum: WGS 84

Soil Map Unit Name: Mustang Fine Sand NWI classification: Estuarine Marine

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation X, Soil X, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

Based on conversations with the USACE personnel out of the Corpus Christi office, this area is naturally problematic. For example upland vegetation can grow immediately adjacent to obligate vegetation due to the relatively dry climate and moisture laden air. Recorded rainfall for Cameron County in 2012 is slightly higher than an average year.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 10

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: 9

Tree Stratum (Plot size: NA)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling Stratum (Plot size: NA)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Shrub Stratum (Plot size: 15')			
1. Borrichia frutescens	15	Y	FACW
2. Iva texensis	20	-	NI
3.			
4.			
5.			
6.			
7.			
	35 = Total Cover		
Herb Stratum (Plot size: 5')			
1. Sesuvium portulacastrum	15	Y	FACW
2. Batis maritima	5		OBL
3. Distichlis spicata	25	Y	FACW
4. Rayjacksonia phyllocephala	5		FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	50 = Total Cover		
Woody Vine Stratum (Plot size: NA)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (If observed, list morphological adaptations below).

SOIL Sampling Point: 9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-4	2.5Y 5/3	100					Sa	
4-20	2.5Y 5/3	80	10YR 4/6	20	C	M	SaCl	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12) **(LRR T, U)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Launch Site City/County: Cameron County Sampling Date: 5/17/12

Applicant/Owner: SpaceX State: Texas Sampling Point: 10

Investigator(s): Luke Dupont Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 10

Subregion (LRR or MLRA): LRR T Lat: 25.9967 Long: -97.1537 Datum: WGS 84

Soil Map Unit Name: Mustang Fine Sand NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation X, Soil X, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

Based on conversations with the USACE personnel out of the Corpus Christi office, this area is naturally problematic. For example, upland vegetation can grow immediately adjacent to obligate vegetation due to the relatively dry climate and moisture laden air. Recorded rainfall for Cameron County in 2012 is slightly higher than an average year.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches): _____
Water Table Present?	Yes _____	No X	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No X	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: 10

Tree Stratum (Plot size: NA)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling Stratum (Plot size: NA)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Shrub Stratum (Plot size: 15')			
1. Iva angustifolia	5	Y	NI
2.			
3.			
4.			
5.			
6.			
7.			
	5 = Total Cover		
Herb Stratum (Plot size: 5')			
1. Fimbristylis castanea	10	Y	OBL
2. Distichlis spicata	15	Y	FACW
3. Eragrostis secundiflora	10	Y	FACU
4. Andropogon glomeratus	5		FACW
5. Polygala alba	5		NI
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	45 = Total Cover		
Woody Vine Stratum (Plot size: NA)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: 10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	2.5Y 6/3						Sa	
14-20	2.5Y 6/4	90	10YR 5/6	10	C	M	Sa	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12) **(LRR T, U)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Control Center, Option 3 City/County: Cameron County Sampling Date: 5/17/12

Applicant/Owner: SpaceX State: Texas Sampling Point: 1

Investigator(s): Luke Dupont Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR or MLRA): LRR T Lat: 25.9931 Long: -97.1804 Datum: WGS 84

Soil Map Unit Name: Galveston Fine Sand NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation X, Soil X, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

Based on conversations with the USACE personnel out of the Corpus Christi office, this area is naturally problematic. For example upland vegetation can grow immediately adjacent to obligate vegetation due to the relatively dry climate and moisture laden air. Recorded rainfall for Cameron County in 2012 is slightly higher than an average year.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: 1

Tree Stratum (Plot size: NA)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling Stratum (Plot size: NA)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Shrub Stratum (Plot size: 15')			
1. Borrichia frutescens	35	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	35 = Total Cover		
Herb Stratum (Plot size: 5')			
1. Monanthocloe littoralis	40	Y	FACW
2. Sesuvium portulacastrum	15		OBL
3. Prosopis glandulos	20	Y	FACW
4. Opuntia engelmannii	2		NI
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	77 = Total Cover		
Woody Vine Stratum (Plot size: NA)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (If observed, list morphological adaptations below).

SOIL Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 5/3	100					ClLo	
4-16	10YR 6/3	95	7.5YR 4/6	5	C	M	Cl	Very Dense Clay
16-20	2.5Y 4/2	85	2.5Y 5/4	15	C	M	Cl	Very Dense Clay

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12) **(LRR T, U)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks:

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-20	10YR 5/3	100					SaCl	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12) **(LRR T, U)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Control Center, Option 3 City/County: Cameron County Sampling Date: 5/17/12

Applicant/Owner: SpaceX State: Texas Sampling Point: 2

Investigator(s): Luke Dupont Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Vegetated Upland Local relief (concave, convex, none): None Slope (%): 0

Subregion (LRR or MLRA): LRR T Lat: 25.9932 Long: -97.1804 Datum: WGS 84

Soil Map Unit Name: Galveston Fine Sand NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation X, Soil X, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

Based on conversations with the USACE personnel out of the Corpus Christi office, this area is naturally problematic. For example upland vegetation can grow immediately adjacent to obligate vegetation due to the relatively dry climate and moisture laden air. Recorded rainfall for Cameron County in 2012 is slightly higher than an average year.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches): _____
Water Table Present?	Yes _____	No X	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No X	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: 2

Tree Stratum (Plot size: NA)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Sapling Stratum (Plot size: NA)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	= Total Cover		
Shrub Stratum (Plot size: 15')			
1. Borrichia frutescens	20	Y	FACW
2. Opuntia engelmannii	15	-	NI
3.			
4.			
5.			
6.			
7.			
	35 = Total Cover		
Herb Stratum (Plot size: 5')			
1. Ambrosia cumanensis	15	Y	FAC
2. Distichlis spicata	25	Y	FACW
3. Prosopis glandulos	20	Y	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	60 = Total Cover		
Woody Vine Stratum (Plot size: NA)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (If observed, list morphological adaptations below).

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SUMMARY OF THE FINAL BIOLOGICAL AND CONFERENCE OPINION ON THE EFFECTS TO THE ENDANGERED OCELOT (*Leopardus pardalis*), ENDANGERED GULF COAST JAGUARUNDI (*Herpailurus yagouaroundi cacomitli*), ENDANGERED NORTHERN APLOMADO FALCON (*Falco femoralis septentrionalis*), ENDANGERED KEMP'S RIDLEY SEA TURTLE (*Lepidochelys kempii*), ENDANGERED HAWKSBILL SEA TURTLE (*Eretmochelys imbricata*), ENDANGERED LEATHERBACK SEA TURTLE (*Dermochelys coriacea*), THREATENED GREEN SEA TURLTE (*Chelonia mydas*), THREATENED LOGGERHEAD SEA TURTLE (*Caretta caretta*), THREATENED PIPING PLOVER (*Charadrius melodus*) AND ITS CRITICAL HABITAT, AND PROPOSED TO BE LISTED AS THREATENED RED KNOT (*Calidris canutus rufa*) FROM THE PROPOSED ISSUANCE OF FEDERAL AVIATION ADMINISTRATION LAUNCH LICENSE AUTHORIZING SPACEX TO LAUNCH FALCON 9 AND FALCON HEAVY ORBITAL VERTICAL LAUNCH VEHICLES AND A VARIETY OF REUSABLE SUBORBITAL LAUNCH VEHICLES FROM PRIVATE PROPERTY, BOCA CHICA, CAMERON COUNTY, TEXAS

Consultation No. 02ETCC00-2012-F-0186

Date of the Final Biological and Conference Opinion: December 18, 2013

Action agency: Federal Aviation Administration

Proposed Action: Issuance of launch licenses and/or experimental permits to SpaceX

Listed and Proposed Species: ocelot, Gulf Coast jaguarundi, northern aplomado falcon, Kemp's ridley sea turtle, hawksbill sea turtle, leatherback sea turtle, green sea turtle, loggerhead sea turtle, piping plover and its critical habitat, and the proposed as threatened red knot.

Biological and Conference Opinion: It is the opinion of the Service that the proposed SpaceX project is not likely to jeopardize the continued existence of any of the above listed or proposed to be listed species nor adversely modify piping plover critical habitat.

Incidental Take Statement: The Service anticipates that despite implementation of avoidance and minimization measures throughout the term of this BCO (2025) a risk still exists, although minimal, that species and critical habitat could be taken and therefore the Service has issued the following incidental take as

The Service anticipates incidental take of an ocelot and jaguarundi in the form of harm and harassment will be difficult to detect because 1) the species is wide-ranging, 2) elusive, 3) nocturnal, and 4) finding a dead or impaired specimen that has resulted from impaired essential behavioral patterns like breeding, feeding or sheltering is unlikely. The take of an ocelot or jaguarundi, however, can be reasonably anticipated by increased risk of injury by road mortality, and/or by prevented dispersal of cats into otherwise suitable habitat. Therefore, the Service anticipates:

1) 2 endangered cats (ocelots and/or jaguarundi) would be taken in the form of harm and harassment, due to the construction and operations of SpaceX and/or injury or mortality

due to a vehicular collision, noise and human disturbance within the project area for the life of the project.

2) Sea turtle nesting habitat along 7.53 miles of beachfront will be disturbed by vehicular traffic associated with security activities; however, incidental take of sea turtles will be difficult to detect for the following reasons:
   - the loggerhead, green, leatherback and hawksbill turtles nest primarily at night and although the Kemp's ridley primarily nest during the day, some have been known to nest at night
   - all nests are not located because a) natural factors, such as rainfall, wind, and tides may obscure crawls; and b) human-caused factors, such as pedestrian and vehicular traffic, may obscure crawls, and result in nests being destroyed because they were missed during a nesting survey and egg relocation program;
   - the total number of hatchlings per undiscovered nest is unknown;
   - the reduction in percent hatching and emerging success per relocated nest over the natural nest site is unknown; and
   - an unknown number of females may avoid the project beach and be forced to nest in a less than optimal area.

However, take of these species can be anticipated because:
- sea turtles nest within the beach portion of the action area;
- project security patrols and monitoring will likely occur along the beach area during a portion of the nesting season.

Take is expected to be in the form of harassment, injury, and/or death from:
- destruction of all nests that may be constructed and eggs that may be deposited from March 15 through October 1 and missed by a nest survey and egg relocation program within the boundaries of the beach portion of the action area;
- injury or death from vehicles and/or equipment driving over an adult sea turtle, hatchling, stranded or post-hatchling washback, sea turtles from an undetected, unmarked/unprotected sea turtle nest, and
- harassment in the form of disturbing or interfering with female turtles attempting to nest during security patrols or monitoring; behavior modification of nesting females resulting in false crawls or situations where they choose marginal or unsuitable nesting areas to deposit eggs.

As stated previously, approximately 91 sea turtle nests have been recorded along South Padre Island and Boca Chica beaches to the Rio Grande. The Service anticipates the proposed project could potentially "take" a maximum of 91 nesting sea turtles prior to any avoidance and minimization measures being implemented. Implementation of avoidance and minimization measures further reduces the estimated number of sea turtles that could be taken. The Kemp's ridley is the most frequently documented sea turtle occurring in the action area and the loggerhead is a very infrequent second. Thus, the potential for SpaceX related activities interacting with Kemp's ridley adults; hatchlings or eggs would be greater, thus the number of Kemp's ridley adults, hatchlings and eggs at risk of "take" would also be greater.

Therefore, the Service anticipates that despite avoidance and minimization measures implemented through the term of this BCO (2025) a risk still exists, although minimal, that adult sea turtles could be struck by vehicles and nests could go undetected by the egg relocation program surveys within the proposed action area and:

- 3 adult Kemp's ridley sea turtles and 3 nests per year, including all hatchlings and/or eggs (up to approximately 200 eggs) could be taken.
- 1 adult loggerhead sea turtle and 1 nest per year, including all hatchlings and/or eggs (up to approximately 200 eggs) could be taken.
- 1 adult green sea turtle and 1 nest per year, including all hatchlings and/or eggs (up to approximately 200 eggs) could be taken.
- 1 adult leatherback sea turtle and 1 nest per year, including all hatchlings and/or eggs (up to approximately 200 eggs) could be taken.
- 1 adult hawksbill sea turtle and 1 nest per year, including all hatchlings and/or eggs (up to approximately 200 eggs) could be taken.

If the agreed upon avoidance and minimization measures are to be deviated from or if the level of take is reached for any one of the species, FAA and SpaceX must contact the Service's Coastal Ecological Services Field Office immediately to review the circumstances and revisit the take analysis. Although incidental take is anticipated for three Kemp's ridley nests per year, if one nest is taken the Service also would appreciate the opportunity to review the circumstances and the avoidance and minimization measures.

3) 1 northern aplomado falcon to be taken by harm or harassment due to noise and human disturbance through the term of this BCO (2025).

4) Incidental take of piping plovers will be difficult to detect for the following reasons: a) harassment to the level of harm may only be apparent on the breeding grounds the following year; and b) dead plovers may be carried away by waves or predators. The level of take of this species can be anticipated by the proposed activities because: a) piping plovers migrate to and winter in the action area; b) increased levels of construction and operational disturbance is expected. Take is expected in the form of harm and harassment due to decreased fitness and survivorship of wintering plovers due to loss and degradation of foraging and roosting habitat and decreased fitness and survivorship of plovers attempting to migrate to breeding grounds due to loss and degradation of foraging and roosting habitat. Therefore, the Service anticipates direct and indirect take of an unspecified number of piping plovers.

5) The direct and indirect loss of 6.18 acres from construction and the conversion of 8.66 acres of occupied piping plover critical habitat in Critical Habitat Unit TX-1, for a total take of 14.84 acres of piping plover critical habitat.

After reviewing the current status of the red knot, the environmental baseline for the action area, the effects of the proposed issuance of a launch permit, and the cumulative effects, it is the Service's conference opinion that the project, as proposed, is not likely to jeopardize the continued existence of the proposed red knot.

Reasonable and Prudent Measures: Avoidance and minimization measures to reduce impacts to nesting adult sea turtles, their nests and hatchlings; ocelots; Gulf Coast jaguarundis; northern aplomado falcons; and piping plovers and piping plover critical habitat in Critical Habitat Units TX-1 and TX-2.

Conservation Recommendations: 1) Locate areas where there are opportunities to present or establish Service-approved workshops, signage, or other opportunities for each species in counties where study will be conducted. 2) Work with the Service to design and fund a research program to determine the population of ocelots and jaguarundis and prey species available to the cats in the south Texas counties. 3) Promote progressive range management techniques for the falcon on large expanses of grassland and coastal prairie habitat with long term cooperative arrangements such as leases, exchanges, purchases, and conservation education.

United States Department of the Interior
FISH AND WILDLIFE SERVICE
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In Reply Refer To:
FWS/R2/CCES/

December 18, 2013

Stacey Zee
Federal Aviation Administration
800 Independence Avenue. SW
Washington, DC 20591

Consultation No. 02ETCC00-2012-F-0186

Dear Ms. Zee:

This transmits the U.S. Fish and Wildlife Service's (Service) Final Biological and Conference Opinions (BCO) based on our review of the proposed issuance of Federal Aviation Administration (FAA) launch licenses and/or experimental permits to authorize Space Exploration Technologies Corp. (SpaceX) to launch Falcon 9 and Falcon Heavy orbital vertical launch vehicles and a variety of reusable suborbital launch vehicles near Boca Chica, Cameron County, Texas and the effects on the endangered ocelot (*Leopardus pardalis*), endangered Gulf Coast jaguarundi (*Herpailurus yagouaroundi cacomitli*), endangered northern aplomado falcon (*Falco femoralis septentrionalis*), endangered Kemp's ridley sea turtle (*Lepidochelys kempii*), endangered hawksbill sea turtle (*Eretmochelys imbricata*), endangered leatherback sea turtle (*Dermochelys coriacea*), threatened green sea turtle (*Chelonia mydas*), threatened loggerhead sea turtle (*Caretta caretta*), threatened piping plover (*Charadrius melodus*) and designated critical habitat, and the proposed to be listed as threatened red knot (*Calidris canutus rufa*) in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. §1531 et seq.).

This BCO is based on information provided in FAA's *Revised Final Biological Assessment, Potential Effects on USFWS-Listed Species from the Issuance of Launch Licenses and/or Experimental Permits for the Proposed SpaceX Texas Launch Site, Cameron County, Texas,* dated March 2013 (BA); the Draft Environmental Impact Statement (DEIS) dated April 2013; and other sources of information. A complete record of this consultation is on file in the Corpus Christi Office of the Texas Coastal Ecological Services Field Office.

In addition the FAA determined the proposed action "may affect, but is not likely to adversely affect," the endangered West Indian manatee (*Trichechus manatus*). We concur and understand that in order to protect these species FAA will ensure precautions and education outreach efforts will be enforced.

Consultation History: Please see Appendix A for a history of the consultation.

BIOLOGICAL AND CONFERENCE OPINION

I. Description of the Proposed Action

FAA proposes to issue launch licenses and/or experimental permits to authorize SpaceX to launch Falcon 9 and Falcon Heavy orbital vertical launch vehicles and other suborbital launch vehicles from a private launch site. SpaceX proposes to construct facilities, structures and utility connections to support and operate a vertical launch site and a control center on approximately 56.5 acres in Cameron County, Texas (Figure 1).

Location

The property is adjacent to the eastern terminus of State Highway 4 (SH4) (also known as Boca Chica Boulevard), to South Bay and to the Gulf of Mexico. It lies south of Boca Chica State Park, Brazos Island State Park, approximately 5 miles south of Port Isabel and South Padre Island, approximately 18 miles east-northeast of Brownsville/South Padre Island International Airport, and approximately 3 miles north of the U.S.-Mexico border. The Lower Rio Grande Valley National Wildlife Refuge (NWR) borders the property on either side of SH4 and the Palmito Ranch Battlefield National Historic Landmark (NHL) is approximately 8.5 miles west of the site (Figure 2).

Action Area

The action area is the geographic area in which project effects could potentially be experienced by listed species. The action area includes areas impacted by proposed construction activities at the vertical launch and control center areas, noise and disturbance from launch operations, beach closure activities on launch days, and daily activities. The action area begins at the soft checkpoint located near the junction of SH4 and N. Oklahoma Avenue, just before the Border Patrol checkpoint, and encompasses all areas south of the Queen Isabella Causeway south to the Rio Grande, east to Boca Chica Beach (Figure 3). The action area includes portions of two piping plover Critical Habitat Units, TX-1 and TX-2 (Figure 4).

Construction Activities

Construction of the launch and control center facilities is expected to be complete within 24 months. Most construction will occur during the hours of 8 a.m. to 5 p.m., Monday through Friday. Night construction will occur for approximately 2 weeks during concrete pouring and approximately 2 weeks for pile driving.

Launch Area

The proposed vertical launch area will occupy 20 of the 56.5 acres owned or leased by SpaceX. The rest of the acreage will remain undeveloped/open space. Fill material will raise land levels to minimize flooding impacts. The facilities will be constructed at an elevated level of approximately 4-5 feet and where possible, creating a natural drainage away from the facilities to two storm water retention ponds that will include valves and outlets to release accumulated storm water. Runoff will be into jurisdictional unvegetated salt flats associated with the Gulf of

Mexico. Equipment within the facility will be mounted or located above floor level to provide additional protection. Pilings will be driven to construct the larger facilities that support heavy loads. Staging areas will occur within proposed project boundaries and no additional areas will be needed. Facilities within the launch area will include the integration and processing hangar (hangar), launch pad, launch stand with flame duct, water tower, deluge water retention basin, propellant storage and handling areas, workshop and office area, parts storage warehouse, roads, parking areas, fencing, security gates, and utilities (Figure 5 and 6).

Integration and Processing Hangar
The hangar will be used to prepare launch vehicles, with final fueling and payload loading onto the vehicle. It will be approximately 43,200 square feet (360 feet by120 feet by 65 feet high), and constructed of prefabricated steel framework with steel or aluminum sheet walls. The fueling facilities will have up to two active scrubbers consisting of scrubbing towers, storage tank, service panel, circulation pump and a liquid separator, all mounted on a "low boy" trailer for easy transport.

Launch Pad
The launch vehicle will be transported via a concrete road from the hangar to the pad. The road will be approximately 75,110 square feet. The launch pad will be used to erect the launch vehicle to a vertical position prior to launch. It will cover about 17,900 square feet and be approximately 50 feet tall with a concrete and steel structure with a flame duct, launch mount, and upper deck. The flame duct will direct the heat and combustion products and the initial sound blast toward the Gulf of Mexico. The pad will also include two concrete and steel wings, pad lighting, and four lightning protection towers, not to exceed 200 feet in height.

Deluge Water System
Deluge systems are open fire sprinklers with simultaneous operation and designed for special hazards with rapid fire spread such as a rocket launch. Water for the deluge system will be withdrawn from the underlying aquifer. A 250 foot tall water tower will be installed with at least 250,000 gallons of water for cooling, sound and vibration suppression, and fire protection. Approximately 50,000-200,000 gallons will be discharged during a launch event, and all water not vaporized and expelled during the launch will go to a retention basin underneath the pad and not released into the nearby tidal flat. This water will be sampled and analyzed for controlled contaminant levels. If levels exceed the Texas Commission on Environmental Quality (TCEQ) water quality standards, the water will be removed and hauled to an approved industrial wastewater treatment facility outside of the vertical launch area. Water not exceeding levels will be pumped back to the water tower. Approximately 50% (25,000-100,000 gallons) of the deluge water discharged during a launch event is expected to be vaporized over the site and adjacent wind tidal flats. A plan will be developed to address potential vegetation changes.

Propellant Storage and Handling Areas
The propellant storage areas will be built on approximately 28,550 square feet. These areas include storage and handling equipment for propellants and gases that fuel the launch vehicle. There are four primary areas: liquid oxygen (LOX), rocket propellant-1 (RP-1), helium, and

nitrogen. Each area will include storage tanks or vessels, containment area, fluid pumps, gas vaporizers, and other components necessary to control fuel flow to the launch vehicle. Each area will include a concrete or asphalt parking area for delivery trucks to refill the storage tanks.

Workshop and Office
Both facilities will be prefabricated steel framing with steel or aluminum sheet walls. The workshop would be approximately 10,800 square feet (80 feet by 135 feet) and approximately 40 feet tall and the office is expected to be approximately 3,200 square feet (80 feet by 40 feet). The workshop will include machining and welding equipment and other tools. The office area will provide easy access to company network files and information.

Access Roads and Infrastructure
Roads and utilities will provide access, power, data, and water to the facilities within the vertical launch area. Approximately 2.45 acres will be parking and road area. Parking for the launch area and the control area will accommodate up to 250 personnel. Roads will be constructed of concrete or asphalt. The perimeter access road would be dirt/gravel. The area will also include exterior lighting, security fences, and gates.

Utilities will include power, data, water, and septic. An estimated 1,000-3,000 kilowatts per hour (kW/hr) is required by the vertical launch area during launch operations. Primary power for the vertical launch area would be provided by commercial power from the control center area, located approximately 2 miles west, to the vertical launch area. New power and data lines will be installed within the SH4 right-of-way (ROW) from the control center area to the vertical launch area. Potable water will either be delivered by truck to a holding tank at the vertical launch area or pumped from a well on the property. The septic system would consist of a mobile above ground processing unit and holding tank.

Facility Security
Two security gates and two 400 square foot guard houses will be constructed to control access to the vertical launch area. The guard houses will be staffed by a minimum of two 24 hour security personnel, with 12 hour shifts. During times of high activity or risk, the number of security offers will be scaled up appropriately and will respond via foot or vehicles suitable for the terrain. Two 6-foot tall perimeter chain-link fences will be erected around the vertical launch area and will enclose approximately 20 acres. The two fences will be approximately 10 feet apart with a 7-foot wide dirt access road inside the inner fence for security patrols. The outside perimeter fence will include a sensor system to detect unauthorized access. The control center will maintain 24 hour monitoring of all security systems.

Lighting will be positioned to illuminate the perimeter and a zone leading up to the controlled areas in hours of darkness. All building exterior lights will be lit from dusk to dawn. The exterior lights will consist of 135 watt low pressure sodium "full cutoff" wall mounted fixtures with amber sleeved, fluorescent tube fixtures on the ceiling underneath the overhangs. Site lighting will consist of high-pressure sodium (HPS), halogen, or LED (light-emitting diode) light

fixtures, or occasionally metal halide spotlights, and will be designed so that none of the lighting is visible seaward of the dunes.

Control Center Area
The proposed control center area will consist of three parcels (4.0 acres, 4.4 acres, 4.0 acres) north of SH4, adjacent to Boca Chica Village, 2 miles west of the proposed vertical launch area and north of Boca Chica Boulevard. Flooding is also likely at this location; therefore, facilities could also be physically elevated by 0-2 feet above ground level. Storm water discharge will be to unvegetated salt flats to north of the site associated with South Bay. Proposed facility and infrastructure construction at the control center area will include two launch control center buildings, two payload processing facilities, launch vehicle processing hangar, two radio frequency transmitter/receivers, generators with diesel storage facilities, roads, parking areas, fencing, and utilities, including water and septic systems, and a satellite fuels and gas storage facility. Land will be leveled and pilings sunk to support larger facilities (Figure 7).

The control center buildings will be single story and approximately 14,186 square feet and 30-45 feet in height. They will consist primarily of large rooms for control consoles, conference rooms, support rooms, and offices for site personnel. The payload processing facilities will support the final processing of two payloads simultaneously, prior to loading the launch vehicle. Each building will be approximately 14,669 square feet and 65-85 feet in height. The proposed 30,774 square foot, 50-65 foot tall launch vehicle processing hangar will be used to refurbish flown stages, or prepare launch vehicle stages before final integration. One or more antenna dishes will be located within the site fence. The antenna mounts will be approximately 20 square feet and antenna dishes will be no larger than 20 feet in diameter and 25 feet high.

Roads and utilities will provide access, power, data, and water to the facilities within the control center area. Total parking and road area is approximately 4.86 acres. Exterior lighting, security fences, and gates will be constructed throughout the site. Utilities will include commercial power, data, potable water, fire protection water, and septic systems. Power and data lines will be upgraded and buried within the SH4 ROW. The upgraded lines that are currently underground would remain underground, and lines that are currently aboveground would remain aboveground. Potable water would be from a well on site or delivered by truck to a holding tank at the control center area and vertical launch area, and water distribution lines would be installed intrasite to provide potable water to the area. If in the future, a water distribution line is determined to be necessary between the control center area and the vertical launch area that line will be placed in the same alignment as other utility lines and will be the sole property of SpaceX and will not be utilized for additional outside connecting lines.

The Dragon capsule, a satellite, typically uses hydrazine, a different fuel than the launch vehicle. The satellite fuel and gas storage facility will be approximately 20 by 20 feet (400 square feet) and 15 foot in height. It will be protected overhead by a roof, secured by floor-to-roof fencing, and include spill containment to support the expected storage volume. In addition to fuels, approximately 1,000 cubic feet of helium storage and 3,000 cubic feet of nitrogen storage would

be installed. The propellant and gas will arrive at the site in closed shipping containers and tank trucks, and be stored at the site prior to loading onto the spacecraft.

Project Operations
Falcon 9 and Falcon Heavy launches will have commercial payloads, satellites, experimental payloads, or a capsule, such as the SpaceX Dragon capsule. SpaceX may also launch smaller suborbital launch vehicles with all launch trajectories to the east and over the Gulf of Mexico. SpaceX proposes up to 12 launch operations per year through 2025, within a few days or weeks of payload arrival at the launch site. Launch operations could include Falcon 9 launches, a maximum of two Falcon Heavy launches, and associated pre-flight activities such as mission rehearsals and static fire engine tests.

Launch Vehicles
The 224-foot long Falcon 9 has a gross lift-off weight of approximately 1,100,000 pounds. The Falcon 9 uses LOX and RP-1 to carry payloads into orbit and has two stages. It uses helium gas stored in high pressure composite over-wrapped cylinders to pressurize the propellant tanks for both first and second stages. The 224-foot long Falcon Heavy has a gross lift-off weight of approximately 3,400,000 pounds (Figure 8).

Payloads
Primary commercial payload processing activities will occur at the control center area. Falcon 9 and Falcon Heavy launches will carry commercial or Department of Defense payloads, satellites, experimental payloads, and sometimes the SpaceX Dragon Capsule. Activities include payload checkout, spacecraft propellant loading, payload encapsulation, radiating, and a common standard communication check before launch. Once primary payload processing is completed, the payload will be trucked to the vertical launch area prior to launch.

Payload propellants may include hypergolic fuels that ignite on contact with an oxidizer, such as unsymmetrical dimethyl hydrazine, 4,840 to 12,000 pounds of monomethylhydrazine, and nitrogen tetroxide, as well as pressurized gasses including helium and nitrogen, and some solid propellants. Prior to use, propellants will be stored in sealed containers at the control center area. Payloads will be fueled in either the payload processing facility or the integration and processing hangar and any residual propellants would be returned to the storage facility. Helium and nitrogen gases would be required at both the vertical launch and control center areas. A small amount of ordnance, such as small explosive bolts and on-board batteries, will also be used and stored in the payload processing facility in the control center area. Any hazardous materials will be handled in accordance with Federal, State, and local laws and regulations. An emergency response team will be established, and spills will be contained and cleaned up per the procedures identified in the SpaceX Hazardous Materials Emergency Response Plan (HMERP).

Ground transportation consists of a truck to deliver a crane and four over-sized delivery trucks and two security escorts to deliver the first stage, second stage, interstage, and payload. Fuel, helium, and potentially potable water trucks will make monthly deliveries, as needed. Vertical

launch area operations and vehicle processing for the Falcon 9 and the Falcon Heavy will be virtually identical.

Propellant, Gas, Fuel, Oil, and Solvent Storage Areas
Helium will be transported via a tanker and stored in above ground tanks and LOX and RP-1 will be stored in dedicated propellant storage areas within the vertical launch area and have the appropriate level of separation and protection. All tanks and containment systems will be cleaned, tested, and certified before first use. Permanent over-ground lines will be installed to connect both the LOX and the RP-1 storage areas to the launch pad. These piping systems will be designed, installed, and tested. First and second stage fueling of LOX and RP-1 will be done with quick disconnect fittings. Gaseous nitrogen will be used on the system for cleanliness purges and liquid nitrogen would be used for cooling purges on an as-needed basis. Gaseous nitrogen will be created from liquid nitrogen delivered to the site by commercial truck.

Approximately 100 gallons of isopropyl alcohol will also be on site per launch for additional cleaning operations, though only 20 gallons will be required during launch preparation. Solvent flushes will be performed during operation of the launch vehicle programs. Small volumes (less than 300 gallons) of heavy gear oil, hydraulic oil, and cutting oil (less than 5 gallons), and a limited supply of various solvents and adhesives would be stored in the shop area in the hangar or at the pad for general use in the maintenance of ground equipment. Welding equipment and an oxygen/acetylene torch with its associated gases (carbon dioxide and argon) may also be used on a limited basis. Approximately 10,000 gallons of generator fuel (diesel/gasoline) would be stored at the vertical launch area.

Pre-Launch Activities
Pre-launch activities will include two dress rehearsals (usually within 32 days of launch) for coordination with governmental agencies, media outlets, and team training between SpaceX crew and operations personnel. These rehearsals include a dry dress rehearsal (without propellants on board) and a wet dress rehearsal (with propellants on the vehicle). A dry rehearsal would not require restricted public access. Wet dress rehearsals will require restricted access in the immediate vicinity of the vertical launch area and control center area. In addition SpaceX may conduct static fires. Static fires are identical to wet dress rehearsals except engines ignite for approximately 2 seconds then shut down. Static testing may last up to three hours.

Approximately 2 weeks in advance of a launch operation with restricted public access (i.e., actual launch, wet dress rehearsal, or static fire engine test), FAA/SpaceX will coordinate with the Cameron County Commissioner's Court, Secretariat of Communications and Transportation – Mexico, U.S. Coast Guard (USCG), Houston Air Route Traffic Control Center (ARTCC), Texas Parks and Wildlife Department (TPWD), National Park Service (NPS), the Service's Lower Rio Grande Valley NWR and Ecological Services Office, National Marine Fisheries Service, and Customs and Border Patrol regarding launch activities and ensure public safety. This will allow for the issuance of a Notice to Mariners (NOTMARs) and Notice to Airmen (NOTAMs). Approximately 3-6 days prior to a launch operation with restricted public access, the public would be notified of the upcoming launch operation and security closure through local

media and through the use of NOTMARs and NOTAMs. The notices will include the proposed date, the expected closure time and a backup closure date and time.

Security Plan Implementation
The majority of launch operations will be conducted between 7:00 a.m. and 7:00 p.m. with one nighttime launch per year, to the east over the Gulf of Mexico. Safety keep-out zones will be established for each launch operation (Figure 9). Launch operation day activities will include securing the safety zone at least 6 hours prior to a launch operation. Personnel will restrict access to unauthorized persons at the soft checkpoint on SH4, just west of the U.S. Customs and Border Protection checkpoint (approximately 14–16 miles west of the SH 4 terminus at Boca Chica Beach), and the hard checkpoint just west of the control center, approximately 1.5 miles from the coast near Massey Road. Boca Chica beach will be temporarily closed from the Brownsville Ship Channel south to the U.S./Mexico border on the Gulf side for up to 15 hours. Sweeps of the beach and closure areas will be conducted prior to a launch operation with manned or unmanned (drones) aerial assets or by vehicles or all-terrain vehicles (ATVs) along existing roads and beach areas suitable for travel to ensure the public is out of the hazard area. FAA/SpaceX will develop a plan in coordination with Padre Island National Seashore (PAIS) Sea Turtle Coordinator or Sea Turtle Inc. (STI) to notify and allow sea turtle patrollers to survey the beach for sea turtles and sea turtle nests once the beach is closed to the public and prior to beach security patrols, and also prior to the beach being reopened to the public after a launch. FAA/ SpaceX, in coordination with USCG, will also develop a plan for clearing waters offshore of Boca Chica beach and will include boat patrols to sweep the offshore area and a final sweep by helicopter. Sweeps will continue until the area is clear. No ground sweeps will be conducted on TPWD or Service lands, or tidal flats unless an emergency arises. The total number of closures and closure hours for wet dress rehearsals, static fire engine tests, and actual launches will fall within SpaceX's proposed 12 launch operations per year or annual maximum of 180 hours of closure per year.

The launch vehicle will be moved to the launch pad, connected to the launch stand, erected, and a final systems check completed. Approximately 3 hours prior to launch, propellant will be loaded, and deluge water will be sprayed on the launch pad deck for sound and vibration suppression. Once launched, FAA/SpaceX will notify law enforcement when the area is safe, and checkpoints will be raised, and the public areas will be re-opened. Prior to the opening of beach areas to the public, sea turtle patrollers will be allowed beach access and sufficient time to complete a complete survey of Boca Chica beach.

Launch Failure
A launch could fail and could result in a fire and/or explosion on the launch pad potentially spreading debris. FAA and SpaceX expect impacts will be contained within the FAA approved hazard area. In the event the vehicle veers from the planned trajectory, the vehicle is expected to break up and debris could land in the Gulf of Mexico.

Recovery Efforts
After launch, the Falcon 9's first stage will land, approximately 550 miles downrange, in the Gulf of Mexico, and be recovered by a salvage ship. The first stage will be returned to SpaceX facilities. If it is not able to be located, it will likely sink in the Gulf waters. The second stage will go into orbit.

Personnel Levels
On average, beginning in 2016, it is expected 30 full-time SpaceX employees/contractors will be present at the launch area and control center. They will work a single shift, between the hours of 8:00 a.m. to 5:00 p.m. During launch operation events, which are expected to last up to two weeks, an additional 100 local or transient workers would be onsite and will work extended hours. For two of those days, both transient and full time employees will need to be onsite for up to 24 hours per day. Average personnel levels are expected to rise from 30 to 130 and the maximum levels during a launch from 130 to 250 employees onsite between 2016 and 2025. If additional facilities are proposed in the future, supplemental analysis will be prepared to address potential impacts.

Conservation Measures
Conservation measures represent actions, pledged in the project description, correspondence and/or meetings that the action agency will implement to minimize the effects of the proposed action and further the recovery of the species under review. Such measures should be closely related to the action and should be achievable within the authority of the action agency. Since conservation measures are part of the proposed action, their implementation is required under the terms of the consultation. SpaceX and FAA have proposed the following conservation measures and FAA will condition the permits and licenses issued to the SpaceX to reflect those measures.

1. A Storm water Pollution Prevention Plan (SWPPP) that includes Best Management Practices (BMPs) for erosion and sedimentation controls, including techniques to diffuse and slow the velocity of storm water to reduce potential impacts (e.g., soil loss and sedimentation) to water quality during construction will be prepared. All construction activities with the potential of impacting water quality due to potential runoff from the site will be conducted in accordance with SWPPP requirements.

2. Uncontaminated rainwater will be allowed to drain or pumped out of containment structures only following visual inspection to determine the absence of evidence of a spill or leak of oil and/or visible seen on the surface of the water. If a spill has occurred within the last 48 hours preceding a rain event, SpaceX will conduct analytical sampling of the waters before releasing.

3. The perimeter of all areas to be disturbed during construction or maintenance activities will be clearly demarcated using flagging or temporary construction fence and no disturbance outside that perimeter will be authorized (in particular tidal flats and dunes).

4. Areas already disturbed by past activities or those that will be used later in the construction period shall be used for staging, parking, and equipment storage within the project boundary.

5. FAA/SpaceX employees and construction personnel and FAA inspectors will be educated on the potential for vehicle collisions with wildlife, particularly ocelots and jaguarundis, and mandated, with strict internal repercussions, to reduce their speeds along SH4 between and within the vertical launch and control center areas to 25 miles per hour. Vehicles will be restricted to existing paved and dirt roads, parking areas and authorized construction sites.

6. FAA/SpaceX will coordinate with the Texas Department of Transportation (TxDOT) regarding funding the installation of "Watch Out for Ocelots/Jaguarundis" or "Watch Out for Wildlife" signs along SH4. The number and placement of the signs would be determined by FAA/SpaceX in coordination with TxDOT and the Service.

7. FAA/SpaceX will coordinate with TxDOT to maintain clear shoulders on road edges to allow drivers to more easily see wildlife, such as ocelots and jaguarundis, along the road edge and reduce incidents of vehicle/wildlife collisions.

8. Roads will be designed and located where roadbed erosion into federally listed species habitat, such as sand flats, is avoided or minimized and the potential for surface water being trapped within the roadbed due to grading would also be avoided or minimized.

9. The depth of any pits created will be minimized and covered or checked daily during construction so animals do not become trapped.

10. Materials such as gravel or topsoil will be obtained from existing developed or previously used sources, not from undisturbed areas adjacent to the property.

11. Drip pans underneath equipment, containment zones in vehicle refueling areas and equipment, and other measures will be implemented.

12. Non-hazardous waste materials litter, and other discarded materials, such as construction waste, will be in placed containers until removed from the construction site. All trash containers will have predator-proof secured lids and be kept closed at all times and trash will be removed regularly to help prevent attracting predators or debris blowing into sensitive areas.

13. Prior to entry into the action area, all equipment will be cleaned on a paved surface with cleaning water appropriately contained, to prevent importation of non-native plant species, and inspected to ensure that hydraulic fittings are tight, hydraulic hoses are in good condition and replaced if damaged, and there are no petroleum leaks.

14. No excavated or fill material will be placed in delineated Clean Water Act (CWA) Section 404 waters of the U.S. except as authorized by a permit from the U.S. Army Corps of Engineers (USACE).

15. Concrete mixing and placement activities will be conducted to ensure discharge water associated with these activities does not reach surrounding water bodies or pools unless specifically authorized in a CWA discharge permit.

16. FAA/SpaceX will designate a Field Contact Representative (FCR) to be present at the beginning of the construction period to provide all construction personnel and SpaceX employees with an environmental worker-education briefing that would include but not be limited to the following:

    - Information regarding threatened and endangered species that may occur in the area, impacts that may occur, conservation measures being implemented, their responsibilities under the Endangered Species Act, and avoidance and reporting procedures.

    - Wildfire prevention measures to be implemented, including restricting smoking to areas clear of vegetation, ensuring no fires of any kind are ignited, and equipping vehicles with spark arrestors and fire extinguishers.

    - The cleaning of all equipment and vehicles at designated locations and required inspections of all vehicles to ensure absence of loose soil and that plant debris is removed before leaving the project areas to prevent the spread of noxious weeds.

    - Requirements for safe handling and disposal of hazardous wastes to be implemented.

17. FAA/SpaceX will designate an FCR who would be responsible for overseeing compliance with these conservation measures and any other required terms and conditions resulting from consultation between the FAA and the Service. The FCR will have the authority to halt construction, operation, or maintenance activities that are in violation of these requirements.

18. If construction activities occur during avian breeding season (15 February through 31 August), construction will avoid impacts to nesting migratory birds within the project area to the maximum extent practicable. Specifically, a biologist will check the proposed areas of construction activities, including laydown areas, for nests (in shrubs and on the ground) once before the construction phase has begun. If the biologist finds an active nest, construction workers would not directly or indirectly disturb the nest or adjacent areas until the biologist determines the nest is no longer in use.

19. A qualified biologist will conduct pre-, during, and post-construction monitoring for piping plovers, red knots, and aplomado falcons. A monitoring plan will be coordinated

with the Service. The monitoring would include at the minimum presence/absence surveys and would record the number and location of all candidate and federally listed species observed, including the piping plover, red knot, and aplomado falcon, as well as all migratory birds.

20. Prior to construction, the FAA will provide the Service with SpaceX developed monitoring plans tracking potential induced vegetative changes of listed species habitat as a result of proposed construction activities, fencing, security, stormwater discharge, and launch activities, including pre-, during, and post-construction. The Service will be provided a copy of the draft plan for review and approval.

21. Prior to construction and operational activities, a Draft Lighting Management Plan will be provided to the Service for review and comment. The Final Lighting Management Plan will be approved by the Service and the NPS and implemented prior to night-time construction activities at the vertical launch area to minimize overall lighting impact, including potential direct impacts and cumulative glow, on wildlife and adjacent sea turtle nesting beaches. Examples of lighting requirements that would be incorporated into the plan include:

    - FAA/SpaceX will design a training program for site personnel educating them on the effects of lighting on sensitive species in the area.

    - FAA/SpaceX will issue annual notices to all complex personnel prior to sea turtle nesting season reminding personnel of light use requirements and responsibilities.

    - The Service may conduct onsite inspections coordinated with SpaceX to verify compliance and make recommendations for changes and revisions to the plan.

    - FAA/SpaceX will direct, shield, or position the lighting of facilities to the extent possible (without decreasing safety and security) to avoid visibility from the beach, minimize lateral light spread, and decrease uplighting. Low-pressure sodium or amber LED lighting will be used where possible. A full cut-off classification of light fixture will be used for illumination of all surface level areas.

    - Lighting poles of 20 feet or higher will be painted in the same "paint, colors, schemes, or treatments" as discussed in the National Historic Preservation Act (NHPA) Programmatic Agreement.

    - Where applicable, new lighting will be installed with multiple levels of control so that lighting levels can be matched with specific activities.

    - Where lighting is not essential to safety or security, timers will be installed to switch lights off in the evening. Where applicable and not a threat to security, motion-detector switches will be installed.

- Replacement lighting will use the best available light technology to minimize sea turtle disorientations, while still meeting safety and security requirements.

- High-intensity spot lighting to illuminate elevated structures at night, such as the launch vehicle when vertical on the pad prior to lift-off, will be occasionally used and on a temporary basis. Spot lights will be focused to minimize light spread; fixtures will be located out of the direct sight from beach areas, either below ground level or behind a visual barrier.

- Building entrances will be marked with path lighting and directed downward.

- Parking areas will be illuminated with full cut-off, LED or high/low pressure sodium fixtures oriented away from beaches.

- Main gate areas may have some true white light illumination, overhead light will be downward directed, full-cutoff, low sodium lighting. Lighting inside the gate house will be directed away from windows and doorways.

- Perimeter lighting, runway lighting, launch pad lighting and propellant storage areas lighting will be full-cutoff fixtures and pole heights minimized. Fixtures will be high/low pressure sodium, halogen or LED.

- During a night launch, large wattage (1,000 watts) metal halide spotlights or high-power fixtures supported by generators will be on from 2 to 10 hours.

- Flashing red lights will be located at the top and maybe partway up the sides of the water towers.

22. Should there be the need for additional local temporary lighting to support construction activities, the following will be considered:

    - Whenever possible, lights shall be placed so that they do not shine directly towards the beach and uplighting will be utilized to the maximum extent possible,

    - Lighting will be extinguished upon completion of work in an area,

    - The size, type and number of exterior lights will be minimized and will be restricted to low pressure sodium, to the extent practicable, during sea turtle nesting season (March 15 – October 1).

    - Fixtures will be shielded or screened whenever practical, and

- Lighting will be monitored on a routine basis to insure lights cannot be seen on the beach.

23. To the maximum extent possible, FAA/SpaceX will avoid launches at dusk and dawn during the most active time for jaguarundis and ocelots, and will avoid nighttime launches during sea turtle nesting season (March 15 – October 1).

24. FAA/SpaceX will ensure compliance with the Lighting Management Plan by issuing annual notices to all complex personnel prior to sea turtle nesting season reminding personnel of light use requirements and responsibilities. FAA/SpaceX will also conduct unannounced evening inspections between 2100 hours and 0500 hours during sea turtle nesting season (March 15 – October 1).

25. FAA/SpaceX will develop an Emergency Action Plan to provide guidance to personnel in the event of an emergency. The Plan is to include an emergency call list and the list will include the South Texas Refuges Complex Office, Lower Rio Grande Valley NWR, and the Service's spill response team.

26. FAA/SpaceX will develop a Hazardous Materials Emergency Response Plan for the launch facility and the control site. The plan will include the policies, process and procedures used in handling hazardous materials during operations and in the event of an unplanned or uncontrolled release, a list of hazardous materials stored on site, and a launch vehicle failure response plan in the event of a mishap. The Service and the TCEQ will be contacted in the event impacts extend beyond the fence line and will be participants in developing the cleanup and mitigation plans. If debris or spills occur on Refuge, TPWD or NPS lands, those individual agencies will be contacted including the National Marine Fisheries Service (NMFS).

27. FAA/SpaceX will prepare a Commercial Launch Site Hurricane Preparation Plan. The plan will describe the process for preparing for and responding to hurricane conditions at the launch site. FAA/SpaceX will coordinate with local emergency management agencies and State and Federal agencies, including Cameron County Emergency Management Agency, Brownsville Local National Weather Service Forecast Office, Texas Division of Emergency Management, TCEQ, TPWD, TGLO, Brownsville Navigation District, Natural Disaster Operational Workgroup and the Service's Lower Rio Grande Valley NWR.

28. FAA/SpaceX will become a beach guardian in the Adopt-a-Beach Program organized by TGLO. It will adopt a 3-mile portion of Boca Chica Beach centered on the terminus of SH4. At a minimum, FAA/SpaceX will participate in two annual cleanups organized by TGLO and will organize and fund one more that will involve educational speakers to teach the community about the area's wildlife, sensitive areas, beach debris, beach cleanup, and collect information about trash collected.

29. In an effort to reduce impacts to Section 4(f) properties FAA/SpaceX will use non-reflective material and light color, to the extent practicable, to disguise the proposed facilities, water tower and lightning protection towers, so that they will blend in with the natural colors of the landscape. Efforts will be coordinated with the State and Federal Parks and Service refuges.

30. FAA/SpaceX will educate the public on safe and lawful areas where they may watch the launches.

Status of the Species


http://wildlifeanimalz.blogspot.com

Ocelot

In 1982, the ocelot was designated as an endangered species under the Act, a status that extended U.S. protections to the species throughout its range in 22 countries, including Texas, Mexico, and Central and South America. Ocelot populations gained greater protections in 1989, when the species was upgraded to Appendix I of the Convention on International Trade in Endangered Species of Flora and Fauna (CITES); a protection that prohibits CITES signatories from permitting any trade in the species or its parts. Two subspecies occur in the U.S.: the Texas ocelot (*L.p. albescens*) and the Sonoran ocelot (*L.p. sonoriensis*). The Texas ocelot is isolated from the Sonoran ocelot by the Sierra Madre highlands in Mexico (Tewes and Schmidly 1987, Service 1990a).

Description

The ocelot is a medium-sized cat, measuring up to 3 feet in body length and weighing twice as much as a large domestic cat. It is slender and covered with attractive, irregular-shaped rosettes and spots that run the length of its body. The ocelot's background coloration can range from light yellow, to reddish gray, to gold, to a grayish gold color. They have a white underside. The head has spots, 2 black stripes on the cheeks, 4 to 5 longitudinal black stripes on the neck and their black ears have large white spots on the back. The tail has dark bars or incomplete rings. Though it resembles the margay (*Leopardus wiedii*) the ocelot is approximately twice the size of a margay with a slightly shorter tail (Murray and Gardner 1997, de Oliveira 1998)

The ocelot is primarily nocturnal, although some diurnal activity has been recorded (Navarro-Lopez 1985, Tewes 1986, Tewes and Schmidly 1987, Laack 1991, Caso 1994). Navarro-Lopez (1985) found ocelots in Texas to have two peaks of activity, one at about midnight and the other at daybreak. Ocelots are solitary hunters and eat a wide variety of prey, but mammals, especially rodents, make up the bulk of their diet (Bisbal 1986, Emmons 1987, Service 1990a). Other prey includes birds, armadillos, marsupials, monkeys, rabbits, bats, feral hogs, reptiles, fish and crabs (Emmons 1987, Ludlow and Sunquist 1987, Service 1990a).

The reproductive season is year round, with spring or autumn breeding peaks noted in Texas and Mexico. Laack (1991) observed first reproduction in wild females between 30 and 45 months-of-age, but Eaton (1977) and Tewes and Schmidly (1987) estimated they may produce young at 18-30 months of age. Ocelots can produce young year round and have a gestation period of 70-80 days (Eaton 1977; Laack 1991). Litters contain 1, 2, and rarely 3 kittens (Eaton 1977, Laack 1991). Laack et al. (2005) reported an average of 1.2 kittens per litter for 16 litters born to 12 ocelots in Texas. Den sites are usually well hidden and include dense, thorny scrub, caves, hollows in trees or logs, and grass tussocks (Laack 1991; Tewes and Schmidly 1987). The mother provides extended parental care to the young until they become proficient at capturing prey. Males are believed to contribute little to direct parental care (Tewes 1986, Laack 1991).

Ocelots live solitary lives except when a female is with kittens or when pairs come together briefly to breed. They disperse from the natal range at approximately two years of age. Young males always disperse from their natal areas, while young females may or may not leave their natal area. Laack (1991) reported on the dispersal of five male and four female subadult ocelots at Laguna Atascosa NWR. One ocelot dispersed at 14 months-of-age, another at 20 months-of-age, and 5 at 30-35 months-of-age, but only four lived to establish home ranges. Seven to 9.5 months elapsed between the leaving the natal range and establishing an independent home range. One female moved 1.6 miles (distance between home range centers) and the males moved 4.3 to 5.6 miles. During dispersal, the ocelots used narrow (16.4- foot – 328-foot) corridors of brush along resacas and drainage ditches and small scrub patches within agricultural or pasture land. The ocelots tended to avoid areas occupied by adults.

Adults of both sexes tend to have home ranges exclusive of other adult individuals of the same sex, but there is considerable home range overlap between the sexes (Emmons 1988, Laack 1991). Adult males have larger home ranges than adult females. The home ranges of subadult males and females tend to be similar in size to the home ranges of adult females until dispersal (Laack 1991). A number of studies have looked at the home range size of ocelots in Texas and Mexico, as determined from monitoring radio-collared individuals. Home range size generally varies from 0.77 to 6.9 square miles (Caso 1994, Ludlow and Sunquist 1987, Konecny 1989, and Dillon 2005). The established adult home ranges of ocelots in Laack's study (1991) of dispersing ocelots did not include semi-isolated patches and transient home ranges were at times farther from the natal range than the animal's eventual home range.

Tamaulipan brushland is a unique ecosystem in South Texas and northeastern Mexico.

Characteristic vegetation of Tamaulipan brushland is dense and thorny. It is estimated approximately 95 percent has been cleared for agriculture, urban development, road developments and expansions, and recreation (Service 1990, Jahrsdoerfer and Leslie 1988). Tewes and Everett (1986) found less than 1 percent of South Texas supported the extremely dense thornscrub used by ocelots.

Tewes and Everett (1986) classified ocelot habitat in Texas according to the amount of foliar canopy. Class A or optimal habitat was 95 percent canopy cover, Class B or suboptimal habitat was 75 percent to 95 percent canopy cover, and Class C, with 75 percent or less canopy cover, was considered inadequate. The most crucial habitat component is probably dense cover near the ground (<3 feet in height). Jackson et al (2005) suggest that the ocelot in Texas prefers closed canopy over other land cover types, but that areas used by this species tend to consist of more patches with greater edge. The cat is reported to occur along watercourses, and will readily enter the water (Goodwyn 1970 as cited by Service 1990a), but it is unclear if this proximity to water is a habitat requisite or simply an indication of where dense cover is most likely to occur.

Species composition of shrubs used by ocelots was quantified in three plant communities, two in Texas and one in Mexico (Shindle and Tewes 1998, Caso 1994). The dominant species were granjeno (*Celtis pallida*), crucita (*Eupatorium odoratum*), Berlandier fiddlewood (*Citharexylum berlandieri*), honey mesquite (*Prosopis glandulosa*), and desert olive (*Forestiera angustifolia*) and honey mesquite and snake-eyes (*Phaulothamnus spinescens*) in Texas. In Mexico, ocelot habitat use was 97.6 percent mature forest (heavy rain forest to sparse tropical deciduous forest) and 2.4 percent pasture-grassland (Caso 1994).

Population Dynamics

Tewes and Miller (1987) suggested that several factors, including habitat islands saturated with resident ocelots, frustrated dispersal, and offspring that fail to leave parental home ranges, may indicate the possibility of inbreeding. The Service believes the fragmentation of habitat is likely reducing the ability of ocelots to interact freely, which will likely reduce the genetic viability of the species over time, and, because ocelots have to cross areas of little or no habitat to interact, may also be increasing the risk of harm to individual ocelots. Genetic studies to determine genetic differentiation were done on three populations, the Laguna Atascosa NWR in Cameron County, the Willacy County population and Tamaulipas and Vera Cruz, Mexico population. Low variability was expected within the Texas populations because of range reduction and fragmentation. Inbreeding was not detected among the three populations. The study showed the Willacy County and Mexico populations were more closely related genetically than the Laguna Atascosa population was to either. Walker (1997) suggested that Laguna Atascosa NWR and Willacy County populations have lost genetic variation when they became isolated from ocelots in Mexico and from each other. Several studies resulted in the estimation of various survival rates. Tewes (1986) reported a survival rate of 71 percent based on four mortalities while monitoring 12 radio-tagged ocelots and Haines et al. (2005b) estimated an annual survival rate at 87 percent for resident adults and 57 percent for transient ocelots. For newborn ocelots, Laack et al. (2005) estimated 68 percent annual survival rate.

Status and Distribution
Reason for listing:
Fragmentation of habitat, loss of connectivity, and habitat loss due to brush clearing are primary reasons for ocelot decline. Ocelots rely upon thick vegetation along the Lower Rio Grande and the South Texas Tamaulipan brush community for foraging, resting, and establishing dens. They require corridors, such as rivers, shorelines, and natural drainages to travel between optimal habitat areas. Destruction and fragmentation of optimal habitat and travel corridors increases threats to the ocelot, such as incidental trapping, competition from feral dogs and cats, and mortality from vehicles. In Mexico, particularly in the northeast, ocelots suffer from habitat loss due to charcoal production, agriculture, and livestock ranching. Human population increases and associated urban expansion in the lower Rio Grande Valley have resulted in brush clearing and increased pollution (Service 1986). Brushland habitats have also been converted to rangeland with herbicides (Bontrager et al. 1979), root plowing, and fire (Hanselka 1980). Industrialization has degraded water quality (Service 1986).

Range-wide Trend:
Historically, the ocelot occurred in Arkansas, Arizona, southern California, Texas, Mexico and southward through Central and South America to Peru, Uruguay, and northern Argentina (Navarro-Lopez 1985). Today it ranges from southern Texas and northern Sonora, Mexico to Central America, Ecuador and northern Argentina, but in reduced numbers (Tewes and Everett 1986; Emmons 1990; Murray and Gardner 1997).

Two U.S. breeding populations of ocelot occur in southern Texas (Tewes and Everett 1986). One population occurs in Willacy and Kenedy counties primarily on private lands (Navarro-Lopez 1985) and the other in Cameron County primarily on the Laguna Atascosa NWR (Laack 1991).

In Texas, over the past 20 years, individual ocelots have only been documented in Cameron, Hidalgo, Willacy, Kenedy and Jim Wells counties (Tewes and Hughes 2001). Laack and Rappole (1986) documented ocelot sightings in Cameron County. Shinn (2002) used camera traps and hair snares on 25 widely scattered tracts managed by the Service's South Texas Refuges Complex (STRC), and did not find evidence of ocelots west of Brownsville on the Rio Grande River. His studies did confirm the presence of the species in extreme southern Cameron County and in extreme western Willacy County.

"Occupied habitat" occurring in Jim Wells, Nueces, Live Oak, and Kleberg counties, 50 miles north of the Willacy-Kenedy population is shown in Figure 9 of the recovery plan (Service 1990a). It is presumed that ocelots may still occur there because of documented roadkills on US 77 South but no reproducing populations have been found. In 1997 and 1998, Tuovila (1999) did a trapping study in the southern half of Live Oak County and northernmost Jim Wells. He trapped 17 bobcats and 238 non-target animals, but no ocelots. No ocelots were documented at Choke Canyon Reservoir in Live Oak and McMullen counties during trapping efforts despite a 10-year increase in optimal ocelot cover (Grassman et al. 2006).

Tewes and Everett (1986) based a "crude estimate" of the total ocelot population size in South Texas from 80 to 120 individuals upon an aerial survey of brush habitat and knowledge gained from following the movements of radio-collared ocelots trapped in or near Laguna Atascosa NWR. Haines et al. (2005a) estimated the number of breeding individuals in the Laguna Atascosa NWR population was 19 ocelots with a total population of 38 ocelots in Cameron County. He estimated the population by averaging ocelot home range sizes reported by Navarro-Lopez (1985), Tewes (1986), and Laack (1991) and extrapolating this estimate to the amount of available dense thornscrub habitat and assumed adults equaled half of the total population. Today, fewer than 60 individuals may remain in South Texas and the U.S. The Cameron County ocelot population is estimated at 13 individuals (Pers. Comm., Mitch Sternberg, Zone Biologist for Region 2, 2013). A much larger population of the Texas ocelot occurs in Tamaulipas, Mexico near San Fernando, approximately 100 miles south of the U.S.-Mexico border (Caso 1994). In forested South America alone, Emmons (1988) noted that even at the lowest density estimates (one animal per 1.9 square miles) there would be approximately 800,000 ocelots.

Critical Habitat
Critical habitat has not been designated for this species.



Gulf Coast Jaguarundi

The jaguarundi was listed as endangered on June 14, 1976 (41FR24064). The jaguarundi is also listed in the CITES Appendix I of the convention which bans international commerce. CITES offers some protection over much of its range. Hunting is prohibited in Argentina, Belize, Bolivia, Columbia, Costa Rica, French Guiana, Guatemala, Honduras, Mexico, Panama, Paraguay, Surinam, Uruguay, United States, and Venezuela. Hunting is regulated in Peru, while no legal protection is offered in Brazil, Nicaragua, Ecuador, El Salvador, and Guyana.

Description
The jaguarundi has a long slender body, short legs, and sleek un-patterned fur, and looks more like a large weasel than a cat. They are roughly twice the size of a domestic cat, weighing about 7 to 22 pounds, standing 10 to 14 inches at the shoulder, and can be up to 4 feet long from nose to tail tip, with the tail taking up about a third of its length. It has a long and flat head instead of a round one. The ears are short and rounded, and this is one of the few cat species that does not have a contrasting color on the backs of the ears. Their eyes are small and set closely together.

Most information gathered on the jaguarundi comes from historical writings and information gained from studying the ocelot in South Texas and in Mexico. Caso (1994) captured and radio collared jaguarundi in Tamaulipas, Mexico from 1991 to 2005. He found home range sizes averaged 3.8 and 3.22 square miles for males and females, respectively. The study captured jaguarundi in undisturbed brush and grasslands with scattered second growth woodlands (Caso 1994). Historical accounts from Mexico suggest that jaguarundi are good swimmers and enter the water freely.

Little is known of jaguarundi reproduction in the wild. Den sites include dense thickets, hollow trees, spaces under fallen logs overgrown with vegetation, and ditches overgrown with shrubs (Tewes and Schmidly 1987; Davis and Schmidly 1994). In Mexico, they are observed as being solitary, except during November and December when they mate. Young have been born in March and August with possibly two litters per year. Usually two to four young comprise a litter, with litters being either all of one color phase or containing both the red and gray phases. Jaguarundi kittens are spotted at birth, and lose their markings as they mature. Gestation (for captive jaguarundi) varies from 63 to 75 days (Goodwyn 1970; Tewes and Schmidly 1987; Davis and Schmidly 1994). Jaguarundis communicate by calls, of which 13 have been identified in captive animals. The largest repertoire occurs during the mating season (Hulley 1976).

The jaguarundi is primarily diurnal, although some nocturnal activity has been recorded (Konecny 1989, Caso 1994). However, it appears to be less nocturnal than the ocelot. They are excellent climbers although they spend most of the time on the ground. Prey is largely birds, but bird eggs, rats, mice, rabbits, reptiles and fish are also taken (Goodwyn 1970; Tewes and Schmidly 1987; Davis and Schmidly 1994).

Habitat requirements in Texas are similar to those for the ocelot: thick, dense thorny brushlands or chaparral. Approximately 1.6 percent of the land area in South Texas is this type of habitat (Tewes and Everett 1986). The thickets do not have to be continuous but may be interspersed with cleared areas. Jaguarundis possibly show a preference for habitat near streams (Goodwyn 1970; Davis and Schmidly 1994) and may be more tolerant of open areas than the ocelot. The jaguarundi uses mature forest (i.e., brush) and pasture-grassland (Caso 1994). Jaguarundi habitat use was 53 percent mature forest and 47 percent pasture-grassland in northeast Mexico. Jaguarundis use open areas for hunting and sometimes resting, but if threatened with a potential danger they will seek cover in brush areas.

The most common plants occurring in habitats where the jaguarundi is known to occur are huisache (*Acacia farnesiana*), blackbrush acacia (*Acacia rigidula*), prairie baccharis (*Baccharis texana*), chilipiquin (*Capsicum annuum*), lotebush (*Ziziphus obtusifolia*), althorn (*Koeberlinia spinosa*), goatbush (*Castela texana*), Texas persimmon (*Diospyros texana*), coyotillo (*Karwinskia humboldtiana*), common lantana (*Lantana horrida*), berlandier wolfberry (*Lycium berlandier*), javelinabrush (*Microrhammus ericoides*), Texas pricklypear (*Opuntia lindheimeri*), retama (*Parkinsonia aculeata*), honey mesquite, cedar elm (*Ulmus crassifolia*), and lime pricklyash (*Zanthoxylum fagara*) (Goodwyn 1970).

Population Dynamics
Habitat loss and alteration due to brush-clearing activities, human encroachment, and human persecution are the main cause for the decline in jaguarundi populations (Service 1995). Tracts of at least 75 or 100 acres of isolated dense brush, brush interconnected with other habitat tracts by brush corridors, or smaller tracts adjacent to larger areas of habitat may be used by jaguarundi. Roads, narrow water bodies, and rights-of-way are not considered barriers to movements. Brush strips connecting areas of habitat, such as brushy fence lines and water courses, are very important in providing escape and protective cover.

Status and Distribution
Reason for Listing:
Loss of habitat is one of the main threats to the jaguarundi. Historically, dense mixed brush occurred along dry washes, arroyos, resacas, and the floodplains of the Rio Grande. A majority of shrub land has been converted to agriculture and urban development. Unfortunately for the jaguarundi, the best soil types used for agricultural crops also grow the thickest brush and thus produce the best habitat for the jaguarundi. Less than 5 percent of the original native brush vegetation remains in the Rio Grande Valley.

Range-wide Trend:
The jaguarundi historically occurred in southeast Arizona, South Texas, Mexico and Central and South America as far south as northern Argentina. Today this cat has a similar distribution, but in reduced numbers, although it probably no longer occurs in Arizona (Tewes and Schmidly 1987). It may also be extinct in Uruguay. They are reported to occur at Masaya National Park in Nicaragua, Soberania National Park in Panama and El Imposible National Park in El Salvador (Nowell and Jackson 1996). The presence of jaguarundis in Florida is likely the result of human introduction (Nowak and Paradiso 1983).

Goodwyn (1970) reported from interviews he conducted in 1969 that jaguarundis were thought to occur in seven specific areas: Santa Ana NWR; Laguna Atascosa NWR "Paso Real", an area along the lower Arroyo Colorado on the border between Cameron and Willacy counties; the southern part of the El Sauz Ranch in northeast Willacy County; a small area west of Olmito in southern Cameron County; an area east of Villa Nueva; and an area near the Port Isabel airport in Cameron County.

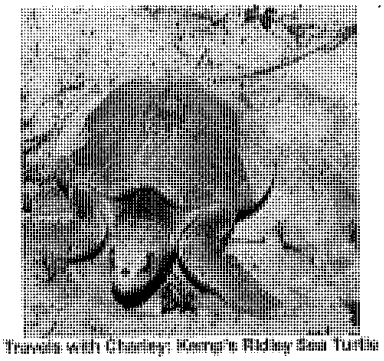
Tewes (1987) and Tewes and Everett (1986) documented several other credible reports of jaguarundis in Cameron, Willacy and Webb counties. One was a road-killed male jaguarundi found near the junction of SH4 and Farm-to-Market Road (FM) 511 (Keller's Corner) in Cameron County on April 21, 1986 (Tewes 1987; Laack and Rappole 1986). There have also been numerous unconfirmed jaguarundi sightings in Hidalgo County. In November 2010, a Service biologist saw a jaguarundi at Big Bend National Park (Pers. Comm., Ernesto Reyes, Fish and Wildlife Biologist, Ecological Services, Alamo, TX, 2013). A Service biologist also sighted a jaguarundi at Laguna Atascosa NWR, in Cameron County, on January 2005, (Pers. Comm., Ernesto Reyes, Fish and Wildlife Biologist, Ecological Services, Alamo, TX, 2013). On

November 22, 2004, two jaguarundis were sighted approximately 0.75 mile north of FM 106 and Buena Vista Road (Pers. Comm., Ernesto Reyes, Fish and Wildlife Biologist, Ecological Services, Alamo, TX, 2013).

Critical Habitat
Critical habitat has not been designated for this species.

Sea Turtles

The Service has jurisdiction for protecting sea turtles in inland waters and on nesting beaches. The NMFS has jurisdiction for protecting sea turtles in the marine environment. Five species of sea turtles are found in U.S. waters and nest on U.S. beaches: leatherback, hawksbill, loggerhead, green and Kemp's ridley. All are known to nest in Texas. The leatherback and hawksbill rarely nest in Texas but offshore waters are important feeding, resting, and migratory corridors.



Kemp's Ridley Sea Turtle

Description
The Kemp's ridley sea turtle was listed as endangered on December 2, 1970 (35 FR 18320). It is the smallest of the sea turtles, reaching about 2 feet in length and weighing up to 75-100 pounds and adults reach maturity at about 10-15 years of age. Kemp's ridley turtles nest mostly during the daytime, often in groups called "arribadas." An individual Kemp's ridley may nest as many as three times a season (Service and NMFS 1992), with an average of 2.5 clutches per season. Clutch size averages around 100 eggs. Hatchlings emerge after about 50 days of incubation and hatchling emergence occurs during the night or day. Kemp's ridleys are found in the Gulf of Mexico and Atlantic Ocean and some adjoining estuarine areas. Nesting occurs primarily near Rancho Nuevo, Tamaulipas, Mexico. Each year, some nests are also found at scattered locations between the Texas coastline and Veracruz, Mexico. Very rarely, Kemp's ridleys nest at other locations in the U.S. outside of Texas.

Population Dynamics
The Kemp's ridley sea turtle numbers have precipitously declined since 1947, when more than 40,000 nesting females were estimated in a single *arribada* or mass nesting event (Service and NMFS 1992). The reproductive strategy of sea turtles involves producing large numbers of offspring to compensate for high natural mortality through the first several years of life. Nesting in Mexico has been increasing in recent years but, despite protection for the nests, turtles have been and continue to be lost to incidental catch by shrimp trawls (Service and NMFS 1992).

Status and Distribution
Reason for listing:
For at least two decades, several factors have contributed to the decline of sea turtle populations along the Atlantic and Gulf coasts. Commercial over-utilization of eggs and turtle parts, incidental catches during commercial fishing operations, disturbance of nesting beaches by coastal housing, marine pollution, as well as entanglement and ingestion of debris threaten sea turtles (Service and NMFS 1992). Additional threats are expanding human populations adjacent to important nesting beaches, degradation of coastal foraging habitats, and the potential for global warming to skew sex ratios (NMFS and Service 2007).

Range-wide Trend:
Since 1978, an international, experimental project involving the NPS, PAIS, Service, NOAA, etc., has been on-going to establish a secondary nesting colony of Kemp's ridley turtles at the park. Since 1996, some turtles from this project have been documented returning to PAIS and nearby vicinity to lay eggs (Shaver 1997, 1998, 1999a, 1999b, 2005; Shaver and Caillouet 1998).

In 1986, a program was initiated to detect, monitor, and protect Kemp's ridley nests at PAIS. Detection involves patrols to look for nesting activity, public education, and investigation of reports from patrollers, beach workers, and the public. This on-going program has since expanded to include the four other species of sea turtles and adjacent State beaches to the north of the park. Patrollers (PAIS staff members and volunteers) use utility terrain vehicles (UTVs) to for sea turtle tracks and nesting turtles each day, from April through mid–July.

Historic nesting frequency on the South Texas coast is poorly known and only six Kemp's ridley turtles were documented prior to 1979 (Shaver and Caillouet 1998). From 1979 through 2012, 1,393 Kemp's ridley nests were found on the Texas coast (Pers. Comm., D. Shaver, PAIS, 2012), but additional nests were likely missed, especially when patrols were not conducted or were less comprehensive. Most nests were found during the months of April, May, June, and July; the months that beach surveys were conducted most intensively. Today, through conservation efforts with Mexico and commercial fisheries, the population of Kemp's ridley appears to be in the early stages of recovery (Pers. Comm. Shaver, PAIS 2008, NMFS and Service 2007).

Critical Habitat
Critical habitat has not been designated for this species.



Photo Credit: NOAA

Loggerhead Sea Turtle

Description

The loggerhead sea turtle was listed as a threatened species on July 28, 1978 (43 Federal Register [FR] 32800). Adults grow to an average weight of about 200 pounds. It occurs in temperate and tropical waters of both hemispheres. The species inhabits the continental shelves and estuarine environments along the margins of the Atlantic, Pacific, and Indian oceans. Historic nesting frequency on the Texas coast is poorly known.

Adult loggerhead sea turtles reach maturity in 25 to 30 years. Loggerheads are nocturnal nesters, although some daytime nesting occurs. They nest from one to seven times within a nesting season (average of approximately 4.1 clutches); clutch size averages 100-125 eggs along the southeastern U.S. coast (NMFS and Service, 1991b). Hatchling emergence typically occurs at night. In the Gulf of Mexico, there are distinct nesting populations on the coast of the Florida panhandle and the Yucatan Peninsula. Scattered nests can be found occasionally along other areas of the U.S. Gulf Coast from the Chandeleur Islands, Louisiana, south to the U.S./Mexico border.

From 1979 through 2012, approximately 50 nests were found on the Texas coast (Pers. Comm. Shaver, PAIS 2012), but additional nests were likely missed, especially when patrols were not conducted or were less comprehensive. Loggerhead nests are found on North Padre Island from mid-May through mid-August, although nesting has been documented in the southeastern U.S. from late-April through early September.

Population Dynamics

Florida's long-term loggerhead nesting data (1989-2013) was analyzed. Observed nest counts on 26 core index beaches peaked at 59,918 in 1998 to a low in 2007 of 28,074 (FWC 2013). Annual trends revealed a 30 percent increase between 1989 and 1998, but nest counts declined over nearly a decade. Over the last six years annual nest counts showed an increase but, no trend indicating a reversal of the post-1998 decline was observed (FWC 2013).

Status and Distribution
Reason for Listing:
From a global perspective, the southeastern U.S. nesting aggregation is second in size only to that on islands in the Arabian Sea off Oman (Ross 1982, Ehrhart 1989, NMFS and Service 1991b). The status of the Oman loggerhead nesting population, reported to be the largest in the world (Ross I979), is uncertain because of the lack of long-term standardized nesting or foraging ground surveys and its vulnerability to increasing development pressures near major nesting beaches and threats from fisheries interactions on foraging grounds and migration routes (Service 2007). The loggerhead nesting aggregations in Oman, the southeastern U.S., and Australia have been estimated to account for about 88 percent of nesting worldwide (NMFS and Service 1991b).

Threats include incidental take from channel dredging and commercial trawling, longline, and gill net fisheries; loss or degradation of nesting habitat from coastal development and beach armoring; disorientation of hatchlings by beachfront lighting; excessive nest predation by native and non-native predators; degradation of foraging habitat; marine pollution and debris; watercraft strikes; and disease.

Range-wide Trend:
Hildebrand (1981) suggested that loggerhead nesting along the Texas coast has occurred within the last 300 years, but the earliest loggerhead nest that he was able to confirm for Texas was found in 1977. Total estimated loggerhead nesting in the U.S. is approximately 68,000 to 90,000 nests per year (NOAA 2013a). Long-term nesting data show the population is declining in southeast Florida, North Carolina, South Carolina and Georgia. However, in Texas, during the last decade, nesting has remained stable, with 1-13 nests per year (Pers. Comm., D. Shaver, PAIS, 2013). Nesting in the Caribbean is sparse. In the Mediterranean, nesting is almost exclusively confined to the eastern portion of the Mediterranean Sea. In the Indian Ocean, most trends on loggerhead nesting populations are unknown. In Honduras, Mexico, Colombia, Israel, Turkey, Bahamas, Cuba, Greece, Japan, and Panama loggerhead nesting population have been declining (NOAA 2013a).

Critical Habitat
Critical habitat has not been designated for this species.



Photo: Douglas Shea

Green Sea Turtle

Description

The green sea turtle was listed as threatened in all of its range except the waters of Florida and the Pacific coast of Mexico, where it is endangered under the Act on July 28, 1978 (43 FR 32800). Adult green sea turtles can grow to a shell length of 4 feet and range from 250 to 450 pounds. It is distributed circumglobally in tropical and sub-tropical waters.

Adult green sea turtles reach maturity at 30 to 50 years of age. Females nest at night. From one to seven clutches are deposited within a breeding season (the average number is usually two to three clutches) (NMFS and Service 1991a). Average clutch size is usually 110-115 eggs. Hatchling emergence occurs at night. In this region, nesting sites include southern Florida and scattered locations in Mexico, although a few nests are found in south Texas annually.

In 1979-2012, 40 green sea turtle nests were documented on the Texas coast (Pers. Comm., Shaver 2012), but 15 were recorded there during 2013 (Pers. Comm., D. Shaver 2013). The nests were found in Texas from June through early-September although, nesting occurs from May through September in this region.

Population Dynamics

Within the U.S., green sea turtles nest in small numbers in the U.S. Virgin Islands, Puerto Rico, and Texas, and in larger and growing numbers along the east coast of Florida (NMFS and Service 1991a). Total population estimates for the green turtle are unavailable, however, green turtle nests on index beaches ranged from 464 in 1989 to 25,553 in 2013, an increase of approximately over 10 percent per year in Florida (FWC 2013). Populations in Surinam, and Tortuguero, Costa Rica, may be stable, but there is insufficient data for other areas to confirm a trend.

Status and Distribution

Reason for Listing:

Major factors contributing to the green sea turtle's decline worldwide is commercial harvest for eggs and food, fibropapillomatosis or the development of multiple tumors on the skin and internal organs, loss or degradation of nesting habitat from coastal development and beach

armoring, disorientation of hatchlings by beachfront lighting, excessive nest predation by native and non-native predators, degradation of foraging habitat, marine pollution and debris, watercraft strikes, and incidental take from channel dredging and commercial fishing operations.

Range-wide Trend:
Globally there is a declining trend, however green turtle population growth rates are variable among nesting populations and regions (NOAA 2013b). Most green turtles in Texas waters are juveniles and their numbers are increasing (Pers. Comm. D. Shaver, PAIS 2013). The Hawaiian green turtle population has increased 53% over the last 25 years (NOAA 2013b). The Martine Turtle Specialist Group indicates populations in all major ocean basins have declined over the past 100-150 years (NOAA 2013b).

Critical Habitat
NMFS designated critical habitat for the green sea turtle on October 2, 1998. Critical habitat included waters extending seaward 3.5 miles from the mean high water line of Isla de Culebra (Culebra Island, Puerto Rico). Critical habitat has not been designated in Texas.



Photo: Caroline Rogers, USGS

Atlantic Hawksbill sea turtle

Description
The hawksbill was listed as an endangered species on June 2, 1970 (35 FR 8491). It primarily occurs in tropical and subtropical seas of the Atlantic, Pacific, and Indian oceans inhabiting coast waters of more than 108 countries. Young hawksbills occur with some regularity in Texas waters, since northern currents carry them from nesting beaches in Mexico (Hildebrand, 1981). Historic nesting by this species on the Texas coast is unknown.

Hawksbills have a hawk-like beak, from which their name originates. They are small to medium-sized marine turtles, ranging from 176 to 279 pounds. Hawksbills are usually brown with ornate shells, which are dark amber with radiating streaks of brown or black. Their shells are also known as bekko or carey. The name "tortoise shell" was also given to their carapaces, which are made into many types of objects such as tortoise shell jewelry, combs, eyeglass

frames, and tabletops. A combination of characters distinguish the hawksbill from other sea turtles: the pairs of prefrontal scales; thick, posterior overlapping scutes on the carapace; four pairs of costal scutes; two claws on each flipper; a beak-like mouth and, when on land, it has a alternating gait, unlike the leatherback and green sea turtles. They use different habitats, such as shallow coastal areas, lagoons and coral reefs, at different stages of their life cycle. Females exhibit strong fidelity in nesting sites (NMFS and Service 2013). Post hatching hawksbills take shelter in weed lines at convergence zones and later re-enter coastal waters when their carapace length reaches to approximately 8 to 10 inches. Juvenile, subadult and adult hawksbills feed primarily on sponges found on coral reefs algae, sea grasses, soft corals, crustaceans, mollusks, jellyfish and sea urchins.

The nesting season for hawksbills varies geographically and may extend from April through October in the Caribbean and along the Gulf Coast of Mexico. Female hawksbill sea turtles nest mostly during the night, but rare daytime nesting is known, usually on small isolated beaches above the high tide. They nest an average of 4.5 times per season (up to 12 clutches); clutch size averages approximately 140 eggs (NMFS and Service, 1993). Hatchling emergence occurs at night. Hawksbills nest on scattered islands and beaches between 25° North and 25° South latitudes, including beaches in southeastern Florida and the states of Campeche and Yucatan in Mexico. Nesting does not regularly occur on the Texas coast.

Population Dynamics
Since the 2007, trends and distribution of the species' nesting populations in the eastern Pacific, Nicaragua, and western Caribbean appears to have improved, but throughout the globe largely is unchanged (NMFS and Service 2013). The hawksbill turtle has declined in most areas over the last century and represents only a fraction of its historical populations (NMFS and Service 2013). The populations were analyzed by ocean basin at 88 nesting sites in 10 different regions of the world.

Historic trends for 25 sites were unknown and the remaining 63 sites declined year 20 to 100 years. Recent trend data was available at 41 sites was more optimistic with 10 (24 percent) increasing, 3 (7 percent) stable, and 28 (68 percent) decreasing (NMFS and Service 2013).

Status and Distribution
Reason for Listing:
Threats to hawksbills in their nesting environment include poaching, beach erosion, erosion control methods, sand mining, landscaping of privately owned sites, artificial lighting, beach cleaning, increased human presence, beach vehicular driving, and nest depredation. Marine threats include entanglement, ingestion of marine debris, commercial and recreational fishing, watercraft collisions, sedimentation and siltation, sewage, agricultural and industrial pollution, illegal exploitation, oil and gas exploration, development, transportation and storage, anchoring and vessel groundings, and increases in international shipping traffic.

Range-wide Trend:
Determining population trends or estimates on nesting beaches is difficult since hawksbill sea

turtles are solitary nesters. The largest populations are found in the Caribbean, the Republic of Seychelles, Indonesia, and Australia. The largest in the U.S. occurs in Puerto Rico and the U.S. Virgin Islands, with approximately 500-1000 nests on Mona Island, Puerto Rico and another 100-150 nests on Buck Island Reef National Monument off St. Croix in the U.S. Virgin Islands (NOAA 2013c). Nesting is restricted in the southeast coast of Florida and the Florida Keys. In addition a majority of nesting occurs in Mexico and Cuba with the largest nesting population of hawksbills in Australia, with approximately 2,000 nests on the northwest coast and 6,000 to 8,000 nests off the Great Barrier Reef each year (NOAA 2013c). Atlantic populations in general are doing better than in the Indian and Pacific Oceans and the Indian populations are doing better than the Pacific Ocean.

Critical Habitat

NMFS designated critical habitat for the hawksbill turtle on October 2, 1998. Critical habitat only included waters extending seaward 3.5 miles from the mean high water line of Mona and Monito Islands, Puerto Rico. No critical habitat has been designated in Texas.



Image Credit: Leather On Land via Flickr CC

Leatherback sea turtle

Description

The leatherback sea turtle is federally listed as an endangered species. It ranges throughout the tropical waters of the Atlantic, Pacific, and Indian oceans, but has also been recorded from the North Atlantic, North Pacific, South Atlantic, South Pacific and Gulf of Mexico. Leatherbacks are primarily found in the open ocean, as far north as Alaska and as far south as the southern tip of Africa and known to be active in water below 40° Fahrenheit. The leatherback is the largest and most pelagic sea turtle species and is normally found in the deeper waters of the Gulf of Mexico, where it may undertake extensive migrations.

Its shell is made of a layer of thin, tough, rubbery skin that looks like leather, thus the name leatherback. The carapace is about 1.5 inches thick, large, and elongated and strengthened by thousands of tiny bone plates. Seven narrow ridges run down the length of the carapace, which is typically black with many spots. The plastron is whitish to black and marked by five ridges.

Weight can range from 500 to 1,500 lbs. Both adults and hatchlings upper jaws have two tooth-like projections and each flanked by deep cusps. They feed almost exclusively on jellyfish.

Leatherback nesting grounds are distributed circumglobally. In the U.S. and Caribbean, nesting begins in February and continues through July. Nesting occurs primarily at night and diurnal nesting occurs only occasionally. They nest at intervals of two to three years and up to five to seven times per year, with an average clutch size between 110 to 116 eggs (NMFS and Service 1992). Eggs incubate for about 65 days. Hatchling emergence typically occurs at night.

Population Dynamics
Over the past 30 years 99.4% of all leatherback nesting was recorded in Florida (10,005 to 10,065 nests) revealing the number of nest has increased by 10.2% per year since 1979 across the state (Stewart et al 2011). An assessment of 11 Atlantic Ocean rookeries showed an increase of 3-24% per year, one had remained stable, and one was decreasing slightly (Stewart et al 2011). This increase may be due to both the implementation of conservation measures and variable ocean climates. In contrast, the eastern Pacific nesting beaches in Mexico and Costa Rica have not been as successful with populations decreasing in recent decades. This may be attributed to longer intervals between nesting years and a less consistent foraging environment.

Status and Distribution
Reason for Listing:
Threats to the leatherback nesting environment include poaching, beach erosion, beach armoring beach nourishment, artificial lighting, beach cleaning, increased human presence, recreational beach equipment, and beach vehicular driving. Threats to the marine environment included entanglement or ingestion of marine debris, commercial fishing, oil and gas exploration, development, transportation and storage, boat collisions and pollution.

Range-wide Trend:
Leatherback sea turtles frequent nest on different beaches making it difficult to estimate population trends. The International Union for Conservation notes that most leatherback populations have declined more than 80% in the Pacific (NOAA 2013d). In other areas some population trends are increasing or stable. In the U.S. nesting trends have been increasing in recent years (NOAA 2013d). In Texas one leatherback nest was located at PAIS in 2008, and prior to that in the 1930s, although it is possible that a few were undetected, especially when patrols were not conducted or were less comprehensive.

Critical Habitat
No critical habitat has been designated for this species.



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Piping Plover

On January 10, 1986, the piping plover was listed as endangered in the Great Lakes watershed and threatened elsewhere within its range, including migratory routes outside of the Great Lakes watershed and wintering grounds (Service 1985). Piping plovers were listed principally because of habitat destruction and degradation, predation, and human disturbance. Three separate breeding populations have been identified, each with its own recovery criteria: the northern Great Plains (threatened), the Great Lakes (endangered), and the Atlantic Coast (threatened). The piping plover winters in coastal areas of the U.S. from North Carolina to Texas, and along the coast of eastern Mexico and on Caribbean islands from Barbados to Cuba and the Bahamas (Haig and Elliott-Smith 2004). Piping plovers from the Great Lakes and northern Great Plains breeding populations as well as birds that nest along the Atlantic coast may winter in the same coastal areas. For the purpose of this BO, discussions will be focused on the Texas wintering piping plover population and its designated critical habitat.

Description

The piping plover is a small, pale sand-colored shorebird, about seven inches long with a wingspan of about 15 inches and weighs about 40-65 ounces (Palmer 1967). Piping plovers live an average of five years, although studies have documented birds as old as 11 (Wilcox 1959) and 15 years (Clapp *et al* 1982). Adult piping plovers can arrive on the wintering grounds with partial breeding plumage. This will consist of a single black breastband, sometimes incomplete and a black bar across the forehead. In the late summer or early autumn, they will lose the black bands and the legs will fade from orange to pale yellow and the bill turns from orange to black. Prior to returning northward, they begin their molt back into breeding plumage (Service 2012).

Southward migration to the wintering grounds along the southern Atlantic coast and Gulf of Mexico shoreline extends from late July, August, and September. Piping plovers spend up to 10 months of their life cycle on their migration and winter grounds. They leave the wintering grounds as early as mid-Feburary and as late as mid-May.

Winter Habitat
Wintering plovers are dependent on a mosaic of habitat patches and move among these patches depending on local weather and tidal conditions (Nicholls and Baldassarre 1990). Maddock et al. (2009) observed shifts to roosting habitats and behaviors during high-tide periods in South Carolina. In South Carolina, exposed intertidal areas were the dominant foraging substrate (accounting for 94 percent of observed foraging piping plovers) (Service 2009a).

Atlantic Coast and Florida studies highlighted the importance of inlets for non-breeding piping plovers. Almost 90 percent of observations of roosting piping plovers at ten coastal sites in southwest Florida were on inlet shorelines (Lott et al. 2009). Piping plovers were among seven shorebird species found more often than expected at inlet locations versus non-inlet locations in an evaluation of 361 International Shorebird Survey sites from North Carolina to Florida (Harrington 2008). In Texas, high numbers of piping plovers are typically found along the sides of unjettied inlets (Bolivar Flats, San Luis, Wolf Island, Dacros Point, Cedar Bayou, Mansfield Pass) (Pers. Comm. Cobb, Service 2010). In Texas, plovers use ocean beaches and bay shorelines and flats depending on the season and weather conditions.

This species exhibits a high degree of intra- and inter-annual wintering site fidelity (Nicholls and Baldassarre 1990, Drake et al. 2001, Noel et al. 2005, Stucker and Cuthbert 2006). On the lower Texas coast, individual plovers are known to use areas about 3,000 acres in size, moving two miles or more between foraging sites as tidal movements shift the availability of productive tidal flats (TPWD 2000). Recent studies show significantly more stringent site fidelity with individual birds returning to more precise locations (+/-400 feet in lateral distance on the beach) each year (USACE 2009b).

Foraging Habitat
Behavioral observation of piping plovers on the wintering grounds suggests that they spend the majority of their time foraging (Nicholls and Baldassarre 1990, Drake 1999a, 1999b). Feeding activities may occur during all hours of the day and night (Staine and Burger 1994, Zonick 1997), and at all stages in the tidal cycle (Hoopes 1993, Service 2009b). Wintering plovers primarily feed on invertebrates such as polychaete marine worms, various crustaceans, fly larvae, beetles, and occasionally bivalve mollusks (Bent 1929, Cairns 1977, Zonick and Ryan 1996). They peck these invertebrates on top of the sand or just beneath the surface. Plovers forage on moist substrate features such as intertidal portions of ocean beaches, washover areas, mudflats, sand flats, algal flats, shoals, wrack lines, sparse vegetation, and shorelines of coastal ponds, lagoons, ephemeral pools and adjacent to salt marshes (Service 2009a, Zivojnovich 1987, Nichols 1989, Nicholls and Baldassarre 1990, Loegering 1992, Zonick 1997, Service 2009a).

Roosting Habitat
Several studies identified wrack (organic material including seaweed, seashells, driftwood, and other materials deposited on beaches by tidal action) as an important component of roosting habitat for nonbreeding piping plovers. In South Carolina, 45 percent of roosting piping plovers were in old wrack, and 18 percent were in fresh wrack. The remainder of roosting birds used intertidal habitat (22 percent), backshore (defined as zone of dry beach from mean high water

line up to the toe of the dune)(8 percent), washover (2 percent) and ephemeral pools (1 percent) (Service 2009a).

Population Dynamics

A consistent finding of all analyses of the demographic factors affecting the persistence and/or extinction of piping plover populations (Melvin and Gibbs 1994, Plissner and Haig 2000) is that vulnerability to extinction is greatly increased by even small declines in survival rates. Since piping plovers spend 55 to 80 percent of their annual cycle associated with wintering areas, factors that affect their well-being on the wintering grounds could substantially affect their survival and recovery (Service 1996). Between 2007 and 2008, the overall estimate of Atlantic Coast breeding pairs declined approximately 2 percent. Coast wide, 2008 productivity was slightly higher than in 2007, but remained below the long-term average. In 2010 Atlantic Coast piping plover population estimate was 1,782 pairs, more than double the 1986 estimate 790 pairs, increasing 86 percent between 1989 and 2010. In the Southern recovery unit, net growth was 54 percent between 1989 and 2010, with most of the increase occurring in 2003 to 2005. Annual productivity estimates were at their lowest in 2009 due to storm events, but rebounded in 2010, but remained low in New York (Service 2011). The overall population on the U.S. Northern Great Plains remained relatively stable from 2007 to 2008. Adult numbers were down more than 10 percent in Nebraska in 2008, and the Kansas and Minnesota populations appear nearly extirpated. The 2009 reports from the Missouri River system and U.S. alkali lakes indicate a sharply declining net trend, with decreases on the Missouri River system substantially exceeding a gain on the alkali lakes.

Status and Distribution

Reason for listing:

Threats to the piping plover include degradation, alteration or loss of wide, flat sparsely vegetated barrier beaches, spits, sandbars, and bayside flats preferred by the piping plover in its migrating and wintering range. Activities that contribute to habitat loss or degradation include beach front development, inlet and shoreline stabilization, inlet dredging, beach maintenance and nourishment activities, seawall installations, and mechanical beach grooming.

Range-wide Trend:

The coast of Texas is a major wintering area for piping plovers. They spend up to 55 to 80 percent of their annual cycle along the Texas coast and account for about 55 percent of the birds documented during the winter census (Nicholls and Baldassare 1990, Haig and Plissner 1993, Drake 1999a). Four range-wide International Piping Plover censuses (late January to early February) have been conducted at five-year intervals: 1991 (Haig and Plissner 1992), 1996 (Plissner and Haig 1997), 2001 (Ferland and Haig 2002), and 2006 (Elliott-Smith et al. 2009). The Texas population censuses resulted in 1,904 wintering piping plovers counted in 1991, 1,333 in 1996, 1,042 in 2001 and 2,090 in 2006 and a preliminary number of 2,145 in 2011. Between December 2, 2008 and March 13, 2009, seventy eight locations from Marco Island, Florida to Boca Chica beach in Texas were visited to located banded piping plovers. There were 397 banded piping plover observations with 295 of those observations in Texas. Banded piping plover observations by populations were, 170 from Great Plains Canada, 176 from Great Plains

United States, 29 unknown, 22 from the Great Lakes, and 0 were from Atlantic Canada or Atlantic United States (Maddock 2009).

Total piping plover numbers have fluctuated over time, with some areas experiencing increases and others decreases. Regional and local fluctuations may reflect the quantity and quality of suitable foraging and roosting habitat, which vary over time in response to natural coastal formation processes as well as anthropogenic habitat changes (e.g., inlet relocation, dredging of shoals and spits). Fluctuations may also represent localized weather conditions (especially wind) during surveys, or unequal survey coverage. For example, airboats facilitated first-time surveys of several central Texas sites in 2006 (Cobb *in* Elliott-Smith et al. 2009). Changes in wintering numbers may also be influenced by growth or decline in the particular breeding populations that concentrate their wintering distribution in a given area. Conservation efforts at some locations have likely resulted in the enhancement of wintering habitat. The increased numbers of birds counted in Texas in 2006, may reflect a shift of birds away from areas such as the Chandeleur Islands in Louisiana that were negatively impacted by Hurricane Katrina in 2005 (Cobb 2006). Further surveys of piping plover use of seasonally emergent habitats (e.g., seagrass beds, mudflats, oyster reefs) within bays lying between the mainland and barrier islands in Texas are also needed.

Critical Habitat

Critical habitat for the Great Lakes piping plover breeding population was designated May 7, 2001 (66 FR 22938), and critical habitat for the northern Great Plains breeding population was designated September 11, 2002 (67 FR 57637). Critical habitat on the wintering grounds was designated July 10, 2001 (66 FR 36038). That designation included 142 areas totaling 173,807 acres along the coasts of North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, and Texas. The Service re-designated critical habitat in Texas and North Carolina in 2009. North Carolina acreage decreased from 21,280 acres to 19,707 acres. Texas critical habitat increased in acreage from 71,053 to 155,332 acres yielding a total wintering critical habitat acreage of 256,513 acres. These units are believed to contain the essential physical and biological elements necessary for maintaining the natural processes that provide appropriate foraging, roosting, and sheltering habitat components.

The essential physical and biological elements or primary constituent elements (PCEs) for wintering ground critical habitat are: 1) Intertidal sand beaches including sand flats or mudflats between annual low tide and annual high tide with no or very sparse emergent vegetation for feeding, 2) Unvegetated or sparsely vegetated sand, mud, or algal flats above annual high tide for roosting with debris or detritus and micro-topographic relief offering refuge from high winds and cold weather, 3) Surf-cast algae for feeding, 4) Sparsely vegetated back beach above mean high tide seaward of the dune line, 5) Spits, especially sand, running into water for foraging and roosting. 6) Unvegetated beach washover areas with little or no topographic relief for feeding and roosting, 7) Natural conditions of sparse vegetation and little or no topographic relief mimicked in artificial habitat types (e.g. dredge spoil sites).

Portions of Critical Habitat Units TX-1 and TX-2 are within the action area (Figure 4).



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Northern Aplomado Falcon

The aplomado falcon was first collected in North America in 1852 (Service 1990b) and the northern aplomado falcon (falcon) is one of three subspecies of the aplomado falcon and the only subspecies recorded in the United States. The falcon was last seen in the American southwest in the 1950s. The falcon was listed as endangered on February 25, 1986 (51 FR 6690).

Description

The falcon is a medium sized raptor that is larger than a kestrel or merlin but smaller than the peregrine. Its total length is about 15 to 18 inches with a wingspan of about 32 to 36 inches. Adults are characterized by rust colored underparts, a gray back, a long-banded tail, and a distinctive facial pattern (Campbell 1995). Males and females are similar in appearance but the males are smaller than the females (Keddy-Hector 2000).

The falcons are permanent residents in Texas and their diet consists primarily of birds, supplemented by insects, small snakes, lizards and rodents (Keddy-Hector 2000). They are monogamous. They do not construct their own nests but instead use the stick platforms built by other birds, such as other raptors, crows and ravens. The nests generally average about 1 to 3 feet in diameter and are on tall yuccas 6-10 feet off the ground. The falcons are territorial during the breeding season and some pairs will stay near and defend the sites throughout the year. The falcons historically bred from late February to October, based on egg dates from March 3 to September 12 (Oberholser 1974, Lockwood and Freeman 2004), and lay eggs mid-March to the end of April (Pers. Comm., Paul Juergens, Peregrine Fund, 8/2013). They usually lay 2 to 3 eggs and both parents (mainly female) incubate for about 31 to 32 days. Young can fly at 4 to 5 weeks of age and may remain in the nest area for several weeks more to be fed by the adults. Outside the breeding season, the falcons are often seen in pairs, hunting, perching, and even feeding together (Service 1990b).

In South Texas habitat consists of coastal prairie, coastal savannahs, marshes and tidal flats, open grassland with scattered trees or with an understory of grasslands and shrubs (Campbell 1995). They are often seen perched in trees or on taller yuccas. Birds in southern Mexico occupy river floodplains and riparian woodlands. Falcons found in Arizona, New Mexico, Trans-Pecos Texas, and central plateau of Mexico inhabit semi-desert grassland with scattered mesquite and yucca (*Yucca spp.*). Foraging released falcons in south Texas used areas with 2.6 trees per hectare and dense, lightly grazed or ungrazed grasslands (Perez et al 1996).

Population Dynamics
Northern aplomado falcon's numbers went to zero in the United States with small numbers scattered throughout Mexico. Releases of young birds into the wild and the installation of nest boxes by The Peregrine Fund have increased nesting success in South Texas. The population status is stable to increasing at present in South Texas (Pers. Comm., Chris Perez, Biologist Laguna Atascosa NWR, 2013, BirdLife International 2013).

Status and Distribution
Reason for listing:
Habitat loss and pesticide contamination may have caused the aplomado falcon's disappearance from formerly occupied areas. Conversion of rangeland to cropland has also contributed to habitat loss. Brush encroachment resulting from uncontrolled livestock grazing and fire suppression altered grassland habitat. Continuous heavy grazing pressure reduces plant diversity and leads to declines in range condition and brush invasion reducing habitat for prey species.

Range-wide Trend:
Historically, aplomado falcons were fairly common along the southern Gulf Coast of Texas and in southwest Mexico; however it had been considered extirpated from the United States until implementation of recovery actions in themed-1990s. Conservation efforts since then have contributed to establishment of approximately 40 breeding pairs in the wild along the Texas Gulf Coast (New Mexico Avian Conservation Partners 2013).

Critical Habitat
No critical habitat is designated for this species.



Photo Credit: Frank Weaver,USFWS

Red knot

Description

The rufa red knot is a 9 to 11 inch long shorebird with a small head, small eyes, short neck, and a black bill that tapers from a stout base to a relatively fine tip. Legs are short and typically dark gray to black, but sometimes greenish in juveniles or older birds in nonbreeding or wintering plumage (Harrington 2001). In breeding plumage, the bird has a face, prominent stripe above the eye, and its breast, and upper belly are a rich rufous-red to a brick or salmon red. The feathers of the lower belly and under the tail are whitish with dark flecks. Upperparts are dark brown with white and rufous feather edges; outer primary feathers are dark brown to black (Harrington 2001; Davis 1983). Females are similar in color to males. Nonbreeding plumage is dusky gray above and whitish below. Juveniles resemble nonbreeding adults.

The red knot breeds in the central Canadian Arctic. Estimated survival rates are 80.5 to 92 percent, and few red knots live for more than about 7 years (Service 2013). Age of first breeding is uncertain but for most birds is probably at least 2 years (Harrington 2001).

The red knot is a specialized molluskivore, eating hard-shelled mollusks, sometimes supplemented with easily accessed softer invertebrate prey, such as shrimp- and crab-like organisms, marine worms, and horseshoe crab eggs (Piersma and van Gils 2011, Harrington 2001). The mollusk prey is swallowed whole and crushed in the gizzard, which is the largest (relative to body size) among any shorebird species, evaluated (Piersma and van Gils 2011). Foraging activity is largely dictated by tidal conditions, as red knots rarely wade in water more than 0.8 to 1.2 inches deep (Harrington 2001).

Red knots tend to migrate in single-species flocks with departures typically occurring in the few hours before twilight on sunny days. Size of the departing flocks tends to be large (greater than 50 birds) (Niles et al. 2008). Red knots are inferred to migrate during both night and day (Normandeau Associates, Inc. 2011).

Habitats used by red knots in migration and wintering areas are similar in character, generally coastal marine and estuarine (partially enclosed tidal area where fresh and salt water mixes)

habitats with large areas of exposed intertidal sediments. In North America, red knots are commonly found along sandy, gravel, or cobble beaches, tidal mudflats, salt marshes, shallow coastal impoundments and lagoons, and peat banks (Cohen et al. 2010a, Cohen et al. 2009, Niles et al. 2008, Harrington 2001, Truitt et al. 2001). In many wintering and stopover areas, quality high-tide roosting habitat (i.e., close to feeding areas, protected from predators, with sufficient space during the highest tides, free from excessive human disturbance) is limited (K. Kalasz, Pers. Com., November 26, 2012; L. Niles, Pers. Comm., November 19, 2012).

Along the Texas coast, red knots forage on beaches, oyster reefs, and exposed bay bottoms and roost on high sand flats, reefs, and other sites protected from high tides (Service 2011). In addition to using the Gulf beaches, red knots in Texas use extensive tidal flats on the bay sides of barrier islands (Newstead et al. in press).

Population Dynamics

Except for localized areas, there have been no long-term systematic surveys of red knots in Texas or Louisiana, and no information is available about the number of knots that winter in northeastern Mexico. From survey work in the 1970s, Morrison and Harrington (1992) reported peak winter counts of 120 red knots in Louisiana and 1,440 in Texas, although numbers in Texas between December and February were typically in the range of 100 to 300 birds. Records compiled by Skagen et al. (1999) give peak counts of 2,838 and 2,500 red knots along the coasts of Texas and Louisiana, respectively, between January and June over the period 1980 to 1996, but these figures could include spring migrants. Morrison et al. (2006) estimated only about 300 red knots wintering along the Texas coast, based on surveys in January 2003 (Niles et al. 2008). Higher counts of roughly 700 to 2,500 knots have recently been made on Padre Island, Texas during October, which could include wintering birds (Newstead et al. in press; Niles et al. 2009).

Foster et al. (2009) found a mean daily abundance of 61.8 red knots on Mustang Island, Texas, based on surveys every other day from 1979 to 2007. Similar winter counts (26 to 120 red knots) were reported by Dey et al. (2011a) for Mustang Island from 2005 to 2011. From 1979 to 2007, mean abundance of red knots on Mustang Island decreased 54 percent, but this may have been a localized response to increasing human disturbance, coastal development, and changing beach management practices (Newstead et al. in press; Foster et al. 2009) (i.e., it is possible these birds shifted elsewhere in the region).

At several key sites, the best available data show that numbers of red knots declined and remain low relative to counts from the 1980s, although the rate of decline appears to have leveled off since the late 2000s. There are no current estimates for the size of the Northwest Gulf of Mexico wintering group as a whole (Mexico to Louisiana). The best available current estimates for portions of this wintering region are about 2,000 in Texas (Niles 2012a), or about 3,000 in Texas and Louisiana, with about half in each State and movement between them (C. Hunter, Pers. Comm., Southern Regional Office of the Service, September 20, 2012).

Status and Distribution
Each year red knots make one of the longest distance migrations known in the animal kingdom, traveling up to 19,000 miles annually. The red knot breeds in the central Canadian Arctic and winters along the Atlantic and Gulf coasts of North America, in the Caribbean, and along the north and southeast coasts of South America including the island of Tierra del Fuego at the southern tip of Argentina and Chile. During both the northbound (spring) and southbound (fall) migrations, red knots use key staging and stopover areas to rest and feed.

Red knots wintering in Texas arrive in late July or August (Newstead et al. in press; Niles 2012a). Geolocator results show that knots wintering along the northwest Gulf of Mexico spent nearly the entire nonbreeding phase of their annual cycle (286 days, or 78 percent of the calendar year) on the Texas coast (Newstead et al. in press).

Red knots from different wintering areas appear to employ different migration strategies, including differences in timing, routes, and stopover areas. However, there is not full segregation of migration strategies, routes, or stopover areas among red knots from different wintering areas. Figure 10 shows known red knot stopover areas. Red knots wintering in Texas use a central, overland flyway through the Midwest. Birds flew 1,600 to 2,000 miles to the first stopover. All birds departed Texas in the second half of May, and spent an average of 13 to 22 days at the northbound stopover (Newstead et al. in press).

Reason for Listing:
The red knot is threatened due to loss of breeding and nonbreeding habitat from sea level rise, shoreline stabilization, and Arctic warming; reduced prey availability throughout the nonbreeding range; and increasing frequency and severity of asynchronies ("mismatches") in the timing of the birds' annual migratory cycle relative to favorable food and weather conditions. Secondary threats include hunting, predation, human disturbance, harmful algal blooms, oil spills, and wind energy development. All of these factors affect red knots across their current range (Service 2013).

Range-wide Trend:
In breeding habitats, red knots are thinly distributed across a huge and remote area of the Arctic. Despite some localized survey efforts, (e.g., Niles et al. 2008), there are no regional or comprehensive estimates of breeding abundance, density, or productivity (Niles et al. 2008). Few regular surveys are conducted in fall because southbound red knots tend to be less concentrated than during winter or spring. Some survey data are available for most wintering and spring stopover areas. For some areas, long-term data sets have been compiled using consistent survey methodology. Because there can be considerable annual fluctuations in red knot counts, longer-term trends are more meaningful. At several key sites, the best available data show that numbers of red knots declined and remain low relative to counts from the 1980s, although the rate of decline appears to have leveled off since the late 2000s.

Critical Habitat
The biological needs of the species and habitat characteristics where the species is located have been reviewed. There is sufficient biological and habitat information on the species to identify specific areas that may be essential to or for the species' conservation though we currently lack the economic information to perform the required analysis to determine the potential economic impacts of a critical habitat designation (77 FR 12955). We are in the process of gathering the necessary information to perform the economic analysis in the near future. Therefore, at this time we conclude that designation of critical habitat for the red knot is not determinable.

Environmental Baseline
Under section 7(a)(2) of the Act, when considering the effects of an action on Federally-listed species, the Service is required to take into consideration the environmental baseline. The environmental baseline includes past and ongoing natural factors and the past and present impacts of all Federal, State, or private actions and other human activities in the action area, including Federal projects in the action area that have already undergone section 7 consultation and the impacts of State or private actions which are contemporaneous with the consultation in process (50 CFR 402.02).

The SpaceX vertical launch and control center sites are in a sparsely populated coastal area off the Gulf of Mexico characterized clay lomas, wind-tidal flats and sand dunes. The land is primarily used for recreation (Boca Chica State Park, Lower Rio Grande Valley NWR, South Bay Preserve, Brazos Island State Park, Isla Blanca Park, Palmito Ranch Battlefield NHL). Surface waters near the launch and control center sites are South Bay, Laguna Madre, Rio Grande, and the Gulf of Mexico. The southern end of South Bay is approximately 0.5 mile north of the launch area and Boca Chica Bay is approximately 0.03 mile. Boca Chica Bay is a subdelta of the Rio Grande which is about 2 miles from the launch site. The property boundary of the vertical launch area is immediately adjacent to a critical dunes area and a portion of the property is designated as an undeveloped coastal barrier by the Coastal Barrier Resource Act. The vertical launch and control center areas are also located in Federal Emergency Management Agency (FEMA) designated zone A8 and V10 of the Flood Insurance Rate Map for Cameron County which is within the 100-year floodplain. V10 is designated as special hazard area which is subject to inundation by 1 percent annual chance flood events with additional hazards subject to erosion and overtopping from high tides and waves during storms. TxDOT owns and operates 200 feet on fee title ROW for SH4 from end of road at the coast to approximately 6 miles inland. The only water well is approximately 2 miles south of the vertical launch and control center areas.

Status of the Species within the Action Area

Ocelot and Jaguarundi

The ocelot and jaguarundi are treated together here, as in many publications (e.g., Service 1987; Service 1990), because, although very little is known about the ocelot, and even less about the jaguarundi, the two are thought to exhibit similar habitat preferences in South Texas. The cats

are believed to utilize tracts of brush habitat within the action area, particularly along the ditches or waterways as travel or dispersal corridors. The majority of the land within the action area is undeveloped. The area lies within the Tamaulipan Biotic Province as described by Blair (1950). The dominant landforms in the area include lomas (ridges or clay dunes) and tidal flats (Figure 11). The elevations of the lomas range from 5 to 30 feet above mean high tide and from 10 to about 250 acres in size (USDA 1977). The lomas are generally characterized by mixed thornshrub community and composed of dominant species such as Texas ebony (*Pithecellobium flexicaule*), honey mesquite, retama, brasil (*Condalia hookeri*), granjeno, lotebush, allthorn, acacias (*Acacia spp.*), and Spanish dagger (*Yucca treculeana*). The thornshrub on the lomas varies from dense thickets to nearly barren ground. The flats are broad, level and in some cases barren.

Blanton & Associates (1998) reported a young male ocelot trapped in the area in April 1998, approximately 3.5 miles west of the proposed control center area. The ocelot was captured on an unnamed loma located between SH4 and the Brownsville Ship Channel. The ocelot often traveled across extensive areas of open flats and the brush associated with the lomas along SH4 and the Service's Loma Ecological Preserve to move between lomas and north of the Brownsville Ship Channel settling into an area south of LANWR (Figure 12). A known ocelot road kill occurred approximately 2.3 miles north of SH4 in 1989.

Additional sightings of ocelots north of the action area include a 1970 sighting south-southwest of Laguna Larga, 2.5 miles north of SH48. An ocelot was killed on Farm to Market Road (FM) 510 in 1984, 1986, 1987, 1995, and two were reported killed in 2001 between the towns of Laguna Vista and Bayview, Texas. In 1989, a road-killed ocelot was found on SH48 near its intersection with San Martin Loma. The ocelot was not radio-collared, and its origin and landscape use were unknown. In 1992, an ocelot was also reported on SH48, 3 miles from Highway 100. Ocelots occur near the Holly Beach community just south of the known LANWR population of ocelots. Holly Beach and LANWR are located between 5 and 10 miles north of SH48, which is north of the action area.

A jaguarundi was killed on SH4 east of Brownsville in 1986. A cat resembling a jaguarundi was photographed in 1989 at the Audubon's Sabal Palm Sanctuary near Brownsville. The Sanctuary is located approximately 11 miles southwest of the recorded 1989 ocelot road kill found on SH48.

These documented sightings of cats and the presence of ocelots on established refuges indicate that habitat is available in the action area to support ocelots and jaguarundis. Many researchers (Ideker 1984, Tewes and Everett 1986, Tewes and Laack 1989) and the Service (1990) believe that the continued existence of the isolated ocelot and jaguarundi populations depends upon protecting travel corridors connecting the existing main coastal populations of cats to the interior subpopulations, as well as to suitable habitat that they may occupy in the future. Also, a known population of jaguarundis exists in the coastal state of Tamaulipas, Mexico, lending importance of maintaining a north/south travel corridor between the Mexico and Texas jaguarundi populations. The continued use of scarce, habitat fragments makes these cats highly vulnerable

to vehicle strikes, reduces genetic viability, and minimizes the likelihood of their survival and recovery in the wild.

Sea Turtles

The eastern boundary of the vertical launch area perimeter fence is over 500 feet west of and separated by dunes from sea turtle nesting areas. South Padre Island beach surveys have been conducted on a regular basis since 1978. Under permit from the Service, sea turtle surveys in the action area are conducted by STI April through August of each year. The surveys are conducted using all-terrain vehicles (ATV). Surveys begin at sunrise. Turtle eggs are relocated and incubated within a fenced off corral for protection. Between 1996 and 2012, a total of 189 sea turtles nests were documented as occurring on Boca Chica and South Padre Island. Within this time period a total of approximately 91 sea turtles, predominately Kemp's ridley, nested within the action area (Pers. Comm. Shaver, PAIS 2010) (Figure 13).

Although there have been sightings of post hatchlings and juveniles in Texas, only one hawksbill nest has been recorded on the Texas coast. Located in 1998, it contained 140 eggs and 132 hatchlings from the nest were later released into the Gulf of Mexico (Shaver, 1999b). It is possible that additional nests were undetected, especially when patrols were not conducted or were less comprehensive.

Piping Plover

In 2009, migratory and winter surveys for piping plovers were conducted within the Lower Laguna Madre region in south Texas and 801 piping plovers were observed during migratory surveys, while 881 were documented during wintering surveys. Numbers during the International Censuses at Boca Chica were 60 in 1991, 117 in 1996, 0 in 2001, and few in 2006. Maddock (2010) observed 239 piping plovers on the west and south sides of South Bay. This area within the action area is remote and expansive and piping plovers were seen between South Bay on the north side of the road, on the south side of the road, and Boca Chica beach. During a visit to the SpaceX site on December 11, 2012, Service biologist observed over 200 piping plovers in the flats along Highway 4, which is also designated critical habitat.

Critical Habitat

As shown in Figure 4, the action area is located within the 7,217-acre Critical Habitat Unit TX-1 South Bay and Boca Chica and a portion of TX-2, Queen Isabella Causeway. The boundaries of TX-1 are: starting at the Loma Ochoa, following the Brownsville Ship Channel to the northeast out into the Gulf of Mexico to Mean Lower Low Water (MLLW), then south along a line describing MLLW to the mouth of the Rio Grande, proceeding up the Rio Grande to Loma de Las Vacas, then from that point along a straight line north to Loma Ochoa. The unit does not include densely vegetated habitat within those boundaries. It includes wind tidal flats that are infrequently inundated by seasonal winds, and the tidal flats area known as South Bay. Beaches within the unit reach from the mouth of the Rio Grande northward to Brazos Santiago Pass, south of South Padre Island. The southern and western boundaries follow the change in habitat from wind tidal flat, preferred by the piping plover, to where densely vegetated habitat, not used

by the piping plover, begins and where the primary constituent elements for critical habitat no longer occur. The upland areas extend to where densely vegetated habitat, not used by the piping plover, begins and where the constituent elements no longer occur and include areas used for roosting by the piping plover.

Special management considerations or protections to ameliorate the threats of discharging fresh water across unvegetated tidal flats; activities associated with residential and commercial development; recreational disturbance of foraging and roosting plovers by humans, vehicles, and domestic animals; increased predation due to recreational use; and modification and loss of habitat due to beach cleaning and nourishment for recreational use have been implemented.

TX-2, Queen Isabella Causeway unit, is comprised of 6 acres in Cameron County. The area extends along the Laguna Madre west of the city of South Padre Island. The southern boundary is the Queen Isabella Sate Fishing Pier, and the northern boundary is at the shoreline due west of the end of Sunny Isles Street. The Queen Isabella Causeway bisects the shore but is not included in critical habitat. The eastern boundary is where the developed areas and/or dense vegetation begin, and the western boundary is the mean lower low water line (MLLW). This unit contains land known as wind tidal flats are infrequently inundated by seasonal wind-induced tide events.

Northern Aplomado Falcon

Suitable foraging habitat exists within the action area. Surveys conducted in 1993 to 2003 recorded aplomado falcons foraging and nesting in the action area. Currently 23 artificial nest platforms have been constructed within the survey area and the two closest platforms are 4.5 miles to the northwest and 9.3 miles west of the proposed control center area. The nearest known aplomado falcon territory is approximately 5-6 miles from the proposed SpaceX facility. Five aplomado falcon nestlings, a pair of adult falcons, and a female falcon were observed in 2011 and 2012 at two different nest structures. One structure was located approximately 4-5 miles northwest of the proposed SpaceX site and the other nest structure was along Highway 4, approximately 8 miles away (Pers. Comm., T. Anderson, Biologist, Ecological Services, 2013). However there is suitable habitat on the Mesa del Gavila (just northwest and north of the project site) and Loma de la Pita (south of the project site and other lomas (southwest and west) within 3 miles from the proposed facility. Although there is limited perching and nesting sites available within the control center and vertical launch areas, it is possible aplomado falcons may pass through the sites while moving to other areas of suitable habitat to the north and south.

Documented bird releases and monitoring by The Peregrine Fund confirm individuals and breeding pairs using coastal grasslands, coastal dunes, and tidal flats within the action area for feeding, breeding, and sheltering.

South Texas remains in drought conditions but prey such as small birds and insects still are readily available (Peregrine Fund 2012). However, brush encroachment by mesquite and huisache and development in the Laguna Atascosa NWR vicinity could result in the loss of suitable habitat. The Service has been working closely with The Peregrine Fund to clear

mesquite and huisache from grassland habitat in an established falcon territory on the Bahia Grande Unit, but this type of landscape improvement is difficult and a slow process. It is anticipated that such projects will help improve the falcon's survival.

Red Knot

Except for localized areas, there have been no long-term systematic surveys of red knots. Morrison et al. (2006) estimated only about 300 red knots wintering along the Texas coast, based on surveys in January 2003 (Niles et al. 2008). Higher counts of roughly 700 to 2,500 red knots have recently been made on Padre Island, Texas during October, which could include wintering birds (Newstead et al. in press; Niles et al. 2009). Foster et al. (2009) found a mean daily abundance of 61.8 red knots on Mustang Island, based on surveys every other day from 1979 to 2007. Similar winter counts (26 to 120 red knots) were reported by Dey et al. (2011a) for Mustang Island from 2005 to 2011. From 1979 to 2007, mean abundance of red knots on Mustang Island decreased 54 percent, but this may have been a localized response to increasing human disturbance, coastal development, and changing beach management practices (Newstead et al. in press; Foster et al. 2009) (i.e., it is possible these birds shifted elsewhere in the region).

There are no current estimates for the size of the Northwest Gulf of Mexico wintering group as a whole (Mexico to Louisiana). The best available current estimates for portions of this wintering region are about 2,000 in Texas (Niles 2012a), or about 3,000 in Texas and Louisiana, with about half in each State and movement between them (C. Hunter Pers. Comm. September 20, 2012). During the migration period, although foraging red knots can be found widely distributed in small numbers within suitable habitats, birds tend to concentrate in those areas where abundant food resources are consistently available from year to year (Fraser et al. 2010; Cohen et al. 2010a, Niles et al. 2008, Smith et al. 2008; Karpanty et al. 2006, Botton et al. 1994).

Because wintering and migratory red knots concentrate in areas with abundant primary food sources, during winter and migration red knots will travel along the Northwest Gulf of Mexico. The size of red knot groups near the project site can be as large as several hundred individuals representing 20 to 50 percent of the Northwest Gulf of Mexico population.

Several areas in Texas have been identified as important wintering and migration stop over areas. These areas are important because they meet most of the habitat characteristics needed by red knots and have consistent red knot observations over several years. One of the important areas is the Boca Chica area adjacent to the project area (Figure 14).

Factors affecting species environment and designated critical habitat within the action area

Land Ownership

The majority of the land in the action area is in private, state, or federal ownership or management. Those include private homes in Boca Chica Village, Brownsville Navigation District, TPWD and Service NWR lands, and U.S. Border Patrol bridges and stations. Future land use in the project area is expected to be driven by the goals, objectives and mandates of these landowners and may have a direct relationship on the effectiveness of any structural

conservation measures. The management or activities may negatively or beneficially affect the species environment within the action area.

Brush clearing continues to be major limiting factor for feline populations in the Lower Rio Grande Valley (Collins 1984; Rappole 1986). The ocelot and jaguarundi also depend on densely vegetated travel corridors along resacas, ramaderos, and between brush tracts (Rappole 1988). Such corridors facilitate dispersal through an otherwise cleared landscape. Vegetation removal associated with "clean farming" and water storage, delivery, and drainage has negatively affected felid populations by preventing travel between remnant brush tracts.

Habitat Acquisition and Management

The South Texas Refuges Complex is situated in southernmost Texas, and is made up of three refuges, Santa Ana, Laguna Atascosa, and the Lower Rio Grande Valley. Laguna Atascosa Refuge is located within the action area. A wide array of wildlife species and large numbers of individuals flourish in the extant diverse habitat of the Lower Rio Grande Valley, due in part to warm climate year-round, moderate amounts of precipitation, and the Rio Grande flowing into the Gulf of Mexico. This wildlife and habitat diversity is economically important to the international border region as approximately 200,000 tourists annually spend approximately $150 million. Because approximately 95 percent of the vegetation in the Lower Rio Grande Valley has been cleared or altered, NWRs, state parks and wildlife areas, properties purchased for conservation by nonprofit organizations, and some private holdings, are important links in the efforts to protect the tremendous biodiversity and related economics of the region. The Service established the South Texas Refuge Complex to preserve and manage remnants of these communities and attempt restoration of adjacent disturbed lands.

The Service is continuing to acquire and enhance native Tamaulipan brushland around Laguna Atascosa Refuge to promote movements of endangered cats between known and suspected areas of occupation. The resource protection and management strategy consists of four integrated approaches to address complex resource needs. They include: concentration of biotic community needs; maintenance of a wildlife habitat corridor; safeguarding of anchor units of large size; and protection of strategically placed management units of smaller size.

The Mexican Government and a number of interested Mexican and U.S. conservation organizations are focusing their attention on the ecologically valuable areas to the south of the project, including the Laguna Madre of Tamaulipas, Mexico and the Sierra de los Picachos, Nuevo Leon, Mexico. The Service's Lower Rio Grande/Rio Bravo Binational Ecosystem Team has been working with Mexico to establish a wildlife corridor along the Rio Grande within the action area and in Tamaulipas between Falcon Dam and the Laguna Madre to connect important ecologically valuable areas along both sides of the U.S./Mexico border. They are also working to connect these acres to the large blocks of intact habitat on the Laguna Atascosa NWR and on South Texas ranches to the north.

The use of corridors is becoming prevalent in reserve design (Noss 1987) in an attempt to maintain or restore natural landscape connectivity. Increased connectivity, along with increased

effective habitat area, counteracts habitat fragmentation (Noss 1987). Corridors facilitate gene flow and dispersal of individual animals (Soule and Simberoff 1986). Life histories of wide-ranging animals suggest that maintenance or restoration of landscape connectivity is a good management strategy (Noss 1987). A network of refuges connected by corridors may allow the persistence of far-ranging species that need more resources than are found in one refuge site.

Potential disadvantages of corridors, such as human disturbance, can be avoided by enlarging corridor width (Noss 1987). Necessary width depends on habitat structure and quality within the corridor, the surrounding habitat, human use patterns, and the particular species that are expected to use it (Noss 1987). The ideal corridor width along the Rio Grande would be wide enough for target species to access sufficient food, water, and cover. In this way, genetic exchange could occur along the corridor, and populations could be maintained even though density at any particular place in the corridor might be low.

International Boundary and Water Commission (IBWC) Activities
Through a Biological Opinion (BO) and memorandum of understanding (MOU) between the Service and IBWC, the IBWC agreed to provide a 33-foot wide corridor in the Rio Grande Floodway and the Off-River Floodway System. The vegetated corridor was to be adjacent to the Rio Grande or the 75-foot mowed areas and could contain segments of less-than-mature/climax vegetation not less than 3-feet in height (e.g., native grasses, sunflower, some cactus species), only if these segments were not so long as to prevent the cats from utilizing the mature/climax vegetation corridor or the larger dense brush habitat "islands". The IBWC developed a plan to insure a viable ocelot/jaguarundi travel corridor to benefit both cat species by helping to avoid genetic isolation of populations and promoting their dispersal into suitable habitat.

The significance of this corridor is further enhanced by its connectivity to other narrow vegetation corridors associated with waterways such as irrigation canals and drainage ditches. However, in places along the river, the 33-foot-wide corridor contains only sparse vegetation less than 3 feet tall. Also, in some areas, such as near and beneath the Gateway Bridge at Brownsville, the corridor is largely in private ownership, and, while the USIBWC possesses easements allowing it to mow the vegetation in the corridor, it has not acquired permission from the landowners to plant vegetation. The only area at this time where the 33-foot wide corridor has been established is on the Service's refuge lands.

It is important to note the 33-foot-wide corridor is not the sole avenue for ocelot/jaguarundi movement in the action area. In many places along the river there are much wider, moderately to densely-vegetated patches of habitat on both public and private lands which augment the nominal cat corridor. These patches provide potential home range habitat, as well as travel routes. Even where the floodway narrows there is additional good cover from the river's normal edge to the top of the adjacent river channel banks. Although IBWC mows the area within 75 feet of the river once a year, this riparian zone is covered by a nearly continuous patch of Carrizo cane, a combination of common and giant reed (*Phragmites communis* and *Arundo donax*, respectively) that regrows after mowing and fires from extensive rhizomes at a phenomenal rate, returning within weeks to the density associated with optimal ocelot habitat. Owing to its

density and resilience, as well as its remoteness from the flood levee where most of the roads, human activity, and floodlights are located, this carrizo zone an important travel corridor. An incidental take statement has been issued by the Service for one ocelot and one jaguarundi for the life of the project (20 years) in the 2003 BO prepared for the IBWC.

U.S. Border Patrol (USBP) Activities
Current and past USBP activities have affected the species habitat. Portable and permanent lighting incorrectly positioned illuminates brush vegetation and causes the species to avoid such areas. Clearing of brushland for patrol roads, drag roads, and construction of ports of entry (POEs) has resulted in fragmentation and loss of habitat. Multiple roads between the flood levee and the river further fragment the habitat. There are a number of roads traversing the Lower Rio Grande Valley NWR tracts. Brush habitat along the toe of the levee is fragmented due to USBP vehicles going down the south side of the levee toward the river and cutting through the wildlife corridor. Development around the ports of entries also resulted in loss, avoidance or fragmentation of habitat. The construction of 56 miles of border fence/wall in Cameron and Hidalgo counties has impacted private landowners, TPWD, and NWR land. The Service issued an incidental take statement for one ocelot and one jaguarundi for the life of the project (20 years) in the 2003 BO prepared for the USBP Operation Rio Grande.

U.S. Department of Agriculture Animal and Plant Health Inspection Service (APHIS) Activities
The APHIS Cattle Fever Tick Eradication Program's Tick Control Barrier in Maverick, Starr, Webb, and Zapata counties, Texas plans to enhance the eradication effort against cattle fever ticks in South Texas. The proposed action includes installation of approximately 70 miles of non-contiguous game fencing along Highway 83 from Roma, in Starr County to the beach area in Cameron County, under agreements for cost-sharing with landowners. Recurrent cattle fever tick outbreaks are increasing in locations either within the Permanent Tick Quarantine Zone or outside of the zone in the cattle fever tick-free area of South Texas. The proposed fence would also help prevent re-infestation of areas where the pest has been or is being eliminated. APHIS is currently writing a biological assessment on the project's effects to the endangered ocelot and jaguarundi and is expected to request formal consultation with the Service.

The Service also issued a BO in August 2013, for APHIS's *Biological Assessment for the U.S. Department of Agriculture, Animal and Health Inspection Service, Veterinary Services Cattle Fever Tick Eradication Program Cooperative Agreement for Surveys for Tick Vectors of Equine Piroplasmosis in Wildlife in South Texas.* APHIS will survey for the host range and geographic distribution of the tick *Amblyomma cajennense* in Texas that may serve as vectors of equine piroplasmosis. Surveys are to be conducted in Cameron County, which is in the action area. An incidental take statement was issued for one ocelot and/or jaguarundi because of potential trapping and vehicle mortality and one northern aplomado falcon from harm and harassment due to trapping and mist netting activities.

U.S. Army Corps of Engineers (USACE) Activities
USACE permits some nourishment activities that can widen beaches, change sediments and stratigraphy, alter coastal processes, plug dune gaps, and remove overwash areas. Tractor tilling

or scraping used to clean area beaches has increased and can artificially steepen beaches, destabilize dunes, and change sediment distribution patterns. This can alter the turtle nesting areas, disrupt or impact deposited nests and nesting sea turtles and cause hatchling mortality, as well as change roosting and sheltering areas used by plovers. Both nourishment and scraping activities can bury and suffocate benthic fauna consumed by shorebirds and prolong benthic recruitment or re-establishment. Artificial dune systems are constructed and maintained to protect beachfront structures. Development and excessive recreational use of beaches and flats, such as walking jogging, walking pets unleashed and operating vehicles increases potential impacts to species utilizing these habitats. Such activities could result in a loss of habitat, interference in nesting for sea turtles, disorientation of adult sea turtles and hatchlings from artificial lighting on the beach.

The Service issued a BO for the issuance of a USACE Department of the Army permit and a Service's Refuge Special Use Permit for beach maintenance activities on 6.22 miles of beach on South Padre Island and 7.48 miles of beach at Boca Chica by the Cameron County Parks and Recreation and the Cameron County Public Works Departments. Incidental take was issued for three adult Kemp's ridley sea turtles and three nests per year, including all hatchlings and/or eggs (up to approximately 200 eggs), one adult loggerhead sea turtle and 1 nest per year, including all hatchlings and/or eggs (up to approximately 200 eggs) and one adult green sea turtle and 1 nest per year, including all hatchlings and/or eggs (up to approximately 200 eggs).

Weather

Hurricanes generally produce damaging winds, storm tides and surges, and rain and can result in severe erosion of the beach and dune systems. Hurricanes and other storms can result in the direct loss of sea turtle nests, either by washing away of nests by wave action or inundation or "drowning" of the eggs or hatchlings developing within the nest or indirectly through erosion of nesting habitat. Depending on their frequency and severity, storms can affect sea turtles on either a short-term (nests lost for one season and/or temporary loss of nesting habitat) or long-term basis (habitat unable to recover).

Drought

Drought is of concern in Texas and the wildlife management community. The statewide average annual precipitation in Texas is 27.95 inches. In 2011, Texas received 11.27 inches of precipitation or about 40 percent of the normal annual precipitation. That year, 97 percent of the state was considered to be in extreme to exceptional drought and experienced substantial stream flow declines (Winters 2013). The U. S. Season Drought Outlook report (October 17, 2013 to January 31 2014) forecasts the drought will persist or intensify within the action area. Precipitation deficits and low stream flows could impact listed species within the action area through habitat alterations, loss of wetlands, and changes in water depth, salinity, and temperature.

Climate Change and Sea Level Rise

According to the Intergovernmental Panel on Climate Change Report (IPCC 2007), warming of the earth's climate is unequivocal, as is now evident from observations of increases in average

global air and ocean temperatures, widespread melting of snow and ice, and rising sea level. The IPCC Report (2007) describes changes in natural ecosystems with potential wide-spread effects on many organisms, including marine mammals, reptiles, and migratory birds. Average temperature is predicted to rise from 36°F to 41°F for North America by the end of this century (IPCC 2007). Species live within a narrow temperature range; changes in marine systems are associated with rising water temperatures, as well as related changes in ice cover, salinity, oxygen levels, and circulation (Sea Turtle Conservancy 2010). Ocean acidification resulting from massive amounts of carbon dioxide and pollutants released into the air can have adverse impacts species which use calcium carbonate to build shells and reefs such as sea turtles (Sea Turtle Conservancy 2010). Also, sea turtles exhibit temperature dependent sex determination and rapidly increasing global temperatures yield warmer incubation temperatures and highly female-biased sex ratios (Glenn and Mrosovsky 2004, Hawkes et al. 2009).

One of the most certain consequences of climate change is rising sea levels (Titus and Narayanan 1995). Montagna et al (2009) reports tide-gauge records in South Texas, including the effects of land subsidence, show relative sea level rising at a rate of 0.18 inches/year at Rockport since 1948, 0.08 inches/year at Port Mansfield since 1963, and 0.14 inches/year at South Padre Island since 1958. Rockport is approximately 200 miles north, Port Mansfield approximately 80 miles north, and South Padre Island approximately 40 miles north of the project area. Modeled projections in the IPCC (2007) report indicate that significant portions of the Texas coastline will be inundated and a major redistribution of coastal habitats is likely. After adding estimates for local land subsidence, the amount of projected relative sea-level rise by the year 2100 is 0.66 to 2.00 feet at Port Mansfield and 1.12 to 2.46 feet at South Padre Island (Montagna et al. 2009). In areas with low-lying beaches where sand depth and longshore transport of sand is a limiting factor, the sea would inundate sea turtle nesting sites and decrease available nesting habitat (Fish et al. 2005; Baker et al. 2006). The loss of habitat as a result of climate change could be accelerated due to a combination of other environmental and oceanographic changes such as an increase in the frequency of storms and/or changes in prevailing currents, both of which could lead to increased beach loss via erosion (Baker et al. 2006). On some undeveloped beaches, shoreline migration would have limited effects on the suitability of nesting habitat. Bruun (1962) stated that during a sea level rise; a typical beach profile would maintain its configuration but will be translated landward and upward. However, along developed coastlines, and especially in areas where erosion control structures have been constructed to limit shoreline movement, rising sea levels would cause severe effects. Erosion control structures can result in the permanent loss of dry nesting beach or deter nesting sea turtles from reaching suitable nesting sites (National Research Council 1990). Nesting females may deposit eggs seaward of the erosion control structures potentially subjecting them to repeated tidal inundation. The demand for both nourishment and the placement of hardened structures on the beach as management options for beach erosion are likely to increase in the future in the face of projected sea level rise and more intense storm activity associated with global climate change. Increasing storms and rising sea levels could damage or destroy sea turtle nests and nesting habitat, and temperature changes could skew sex ratios. In regard to piping plovers, increased storms and rising sea levels could damage, destroy, or otherwise alter foraging and roosting habitat.

All of these actions or factors may have adverse effects on ocelots, jaguarundis, northern aplomado falcons, sea turtles and wintering non-breeding red knots, piping plovers and plover critical habitat by destroying, diminishing, or altering the habitats on which they depend.

Effects of the Action
Under section 7(a)(2) "effects of the action" refers to the direct and indirect effects of an action on a species or critical habitat, together with the effects of other activities that are interrelated and interdependent with that action. The effects of the proposed action are added to the environmental baseline to determine the future baseline that serves as the basis for the determination in this BCO. The impacts discussed below are the Service's evaluation of the direct and indirect effects of the proposed action. Indirect effects are those caused by the proposed action that occur later in time, but are still reasonably certain to occur (50 CFR 402.02).

Interrelated and interdependent actions
Interdependent actions are defined as "actions having no independent utility apart for the proposed action," while interrelated actions are defined as "actions that are part of a larger action and depend upon the larger action for their justification" (50 CFR §402.02). The Service has determined that there are no interrelated or interdependent actions apart from the action under consideration.

Beneficial effects
Beneficial effects are those effects of the proposed action that are completely positive, without any adverse effects to the listed species or its critical habitat. The proposed action will not result in beneficial effects to the ocelot, jaguarundi, sea turtles, piping plovers or its critical habitat, northern aplomado falcons, or red knots.

Direct effects
Loss of Habitat
The proposed SpaceX vertical launch and control center areas are composed of approximately 56.5 acres of which 25.43 acres are jurisdictional wetlands and 31.07 acres are uplands. Only 20 acres of the 56.5-acre vertical launch area will be fenced and developed. The vertical launch area consists of wetlands and tidal flats that are inundated in high and spring tides, and fill from and drain to the southern portion of the site. The area also has emergent high marsh and scrub shrub. The construction of the vertical launch and control center areas will result in the direct removal of 15.74 acres of upland habitat and 3.34 acres of wetland habitat by placing fill directly into wetlands and water. In addition, construction will cut off the tidal influence, indirectly impacting 2.85 acres of wetland. The indirect impacts are comprised of 2.54 acres of high marsh vegetated wetlands and 0.31 acre of unvegetated wetland salt flats.

Approximately 4.22 acres of floodplain will be filled in Zone V10 in the vertical launch area and approximately 4.37 acres in Zone A8 in the western portion to elevate various components of the vertical launch area out of the floodplain. Construction of the control center area will impact approximately 12.4 acres in Zone A8. Typical impacts from floodplain development and filling

include increased flood levels because floodwaters have been obstructed or diverted to other areas. Stormwater discharges will also increase from new impervious surfaces.

Invasive species may be introduced by construction and operation activities of the two sites and will degrade habitat by displacing native species. Launch failures could result in the spread of debris and/or fires from explosions removing habitat. Spills of hazardous materials could occur during transportation or flood events and adversely impact soil, surface water and ground water adjacent or downgradient from the vertical launch and control centers. Emergency cleanup of debris or spills could result in removal or degradation of habitat.

Piping Plover, Piping Plover Critical Habitat and Red Knot: Unvegetated flats and depressional wetlands that occur within piping plover Critical Habitat Unit TX-1 are considered important habitat components that support foraging, roosting and sheltering piping plovers. Approximately 0.70 acre of unvegetated flats and depressional wetlands habitat occurs within the vertical launch area footprint and would be removed. Also, 0.31 acre of tidal flat would be cut off from tidal influence. Critical habitat could also be lost by stormwater runoff from impervious surfaces that would cause vegetation to grow within the wind-tidal flats or reduce available piping plover food and roosting habitat. Critical Habitat Unit TX-2 is also within the action area; however, no direct loss of habitat will occur as no construction is planned in this unit.

Ocelot and Jaguarundi: Ocelots and jaguarundi have been documented crossing areas of less than optimal habitat. The loss of 31.07 acres of upland habitat will be removed for the cats to travel through the area and fragment areas that could be acquired for the north-south travel corridor.

Aplomado falcon: The control center area and the vertical launch area are not suitable coastal prairie habitat but, falcons have been seen flying through these areas while foraging in nearby upland coastal prairie habitat. Other areas within the action area that may be suitable for reintroductions and/or establishment of nest boxes for recovery will be eliminated.

The Spill Prevention, Control and Countermeasure Plan (SPCCP), Hazardous Material Management Program (HMMP) and conservation measures to avoid and minimize erosion and sedimentation and to control the spread of invasive species will be implemented to help reduce potential adverse impacts.

Human Disturbance

Boca Chica beach is currently used by the public for recreational activities. The project will increase disturbance from human presence from pre-, during, post-construction and operational activities and the species may be displaced causing them to expend additional energy. The disturbance may occur through interruption of normal behavior via flushing. The disturbance is likely to be temporary and once the disturbance is removed normal behavior should resume.

Ocelot and Jaguarundi: Although not documented for the ocelot and jaguarundi, several responses to human disturbance can be expected in felines. For example, Florida panthers

shifted their habitat use area in response to hunters although no changes related to energy intakes (activity rates, movement rates or predation success) were noted (Janis and Clark 2002). In another study, lynxes were found to have a median tolerance limit to approaching humans of 164 feet and they tolerated a closer approach by humans when in denser habitats than in more open areas (Sunde et al 1998 as cited by Tempel et al 2006). In general, typical wildlife responses to human disturbance may be fleeing, increased vigilance, and changes in habitat selection (Frid and Dill 2002).

Northern Aplomado Falcon: Human presence and disturbance could also displace adult aplomado falcons from preferred nesting habitats. Disturbance during nesting may cause the adult to leave the nest, exposing eggs or small young to inclement weather or predators Disturbance may also reduce foraging efficiency and feeding time. Lighting and water towers could attract raptors or other migratory birds to the vertical launch area for perching. Nest building and perching will be discouraged by the use of visual fright devices and monopole technology. Human disturbance or noise from pre-launch operations would likely cause them to take flight prior to launch.

Piping Plovers and Red Knots: Zonick and Ryan (1996) found that in Texas, human disturbance decreases the amount of undisturbed habitat and appears to limit local piping plover abundance. Piping plovers and red knots will likely be flushed from the area expending energy and interrupting foraging or roosting. This is expected to be a temporary disturbance.

Sea Turtles: Sea turtles reaching nesting beaches may return to the water, "false crawl", and not lay eggs due to human or pet disturbance. Hatchlings could get disoriented, dehydrated or incur possible injury. Species which prey on sea turtle nests or young turtles, such as coyotes (*Canis latrans*), raccoons (*Procyon lotor*), skunks (*Mephitis mephitis)* and fire ants *(Solenopsis invicta),* may be attracted to the area by the garbage and may increase in number as a result of the increased food resources provided by the garbage.

Noise

Presently noise levels in the vertical launch and control center areas are around 43 dBA which represents a quiet suburban and rural setting. Construction activities that would increase noise levels include construction equipment operating at the sites and construction/delivery vehicles traveling to and from the sites and the use of an impact pile driver. Construction activities could create noise levels that range from 73 to 101 dBA (L_{max}) at 50 feet from the activities. Pile driving could result in 101 dBA at a distance of 50 feet from the pile (DOT). The human limit under the Occupational Safety and Health Administration (OSHA) guidelines is 115 dBA. In addition, generators are expected to be used as emergency power and supplemental power during the final stages of the launch schedule. It is anticipated that the generators could be used continuously for the final 48-hours prior to launch.

Ignition of rockets or static tests will create instantaneous noise. A Falcon 9 rocket launched from the launch pad will produce a noise level of 130 dBA at 0.2 mile, attenuating to 105 dBA at approximately 4 miles and 89 dBA at 20 miles. Noise levels from the Falcon Heavy would reach

135 dBA at 0.2 mile attenuating to 105 dBA at 6 miles and 94 dB at 20 miles. Up to a maximum of 12 launch operations are planned per year, including mission rehearsals and static tests. Noise levels are expected to last for 30 to 60 seconds during a launch and static test.

The primary impact associated with vehicle launches and noise is the startle effect. Noise can cause stress in animals and the range of autonomic responses to noise could range from no reaction to alerting, disruption of feeding and/or breeding and flight. The responses are also hard to predict because disturbance may depend on species, frequency, duration and intensity of noise. For the proposed project, the most severe noise likely to be encountered by species that occur within the action area is that from launches and associated activities, construction, pile driving and motor vehicles.

Piping Plovers and Red Knot: Birds demonstrate startle effects exposed to a sound pressure level (SPL) of 108 dBA (Burger 1981). Noise levels exceeding that level will occur a maximum of 12 times a year (launches and static test) within 3-6 miles of the launch pad. High-noise events may cause birds to engage in escape or avoidance behavior and may flush and expend energy that may affect survival or growth, or spend less time engaged in necessary activities like feeding and preening (NoiseQuest 2013). Monitoring of snowy plovers at Vandenberg Air Force Base showed them to crouch and observe objects such as helicopters or launch vehicles that mimic avian predators, or flush at launch but soon return to normal behavior (FAA 2013). Piping plovers are expected to have a startle response that interferes with normal behaviors such as feeding or roosting. Laboratory findings show that if a bird is exposed to continuous noise level above 110 dBA SPL, hearing will likely be damaged (Dooling and Popper 2007). However, highway noise above 93 dBA SPL might mask important communication signals used by birds, and possibly lead to behavioral or physiological effects (Dooling and Popper 2007). Piping plovers in Critical Habitat Unit TX-2 will not be directly affected by construction, but may be impacted by noise generated by a launch of the Falcon Heavy. However, a maximum of two Falcon Heavy launches are proposed in a 12-month period and may result in minimal temporary impacts from startle effects.

Northern Aplomado Falcon: The falcon does nest within the action area. The closest known active nest is within 5 miles of the site and would experience approximately 105 dB noise level. Although, the sound level at 105 dBA is half that at 108 dBA that demonstrates a startle effect, it is possible that both chicks and adults would have a similar reaction. Ellis et al (1991) looked at effects of low-level military jet aircraft and mid-to high-altitude sonic booms on nesting peregrine falcons. The peregrine falcons demonstrated crouching, or rare flushing from the perch or nest. Incubating or brooding adults never burst from the nest. Jet passes and sonic booms often caused noticeable alarm. Adult aplomado falcons could flush from the nest leaving chicks exposed to predators. They could also experience reduced communication ranges, interference with predator/prey detection, or habitat avoidance in the action area. More intense impacts may include behavioral change, disorientation, or hearing loss if within closer range of the launch pad at the time of ignition of rockets. Ellis et al (1991) also noticed negative responses became rarer and potentially became habituated to the noises or types of noises that will occur and stop exhibiting the startle response.

Ocelots and Jaguarundi: There are no known studies that specifically address the effects of noise on ocelots or jaguarundis, in fact, information about the effect of noise on felines is lacking. Studies of terrestrial mammals have shown that noise levels of 120 dBA can damage mammal's ears. Levels at 95 dBA can cause temporary loss of hearing sensitivity. Noise from aircraft has affected other large carnivores by causing changes in home ranges, foraging patterns, and breeding behavior (NoiseQuest 2013). Wolves were frightened by low-altitude flight that were 25 to 1,000 feet of the ground but were found to adapt later (Dufour 1980). A negative effect of running and avoidance behavior is increased energy use. The cats use the lomas scattered throughout the action area to cross expansive tidal flats. It is reasonable to assume that the cats could display a range of responses to noise; they could have no reaction, become alert, stop foraging, alter travel routes, or become startled and flee the area, potentially exposing them to vehicular mortality.

Sea Turtles: Noise may cause sea turtles reaching nesting beaches to startle and return to the water, "false crawl", and not lay eggs. The National Aviation Service conducted a study in 1990, on the impacts of the Zakynthos, Greece airport on nesting sea turtles. It revealed the disturbance of the low flying jets over loggerhead sea turtle nesting beaches caused females to return to the sea without successful laying (Euroturtle 2013). Given the distance between the launch pads and potential sea turtle nesting habitat is approximately 0.18 mile; noise levels at the nesting beach could reach 130 to 135 dB and could have an effect on sea turtles.

Vibration

Some energy from rocket launches and static test will manifest as vibration in the ground near the launch pad. Vibration may be significant from rocket launches and engine tests. Effects from vibrations are likely to be confined to additive disturbance to species in that they may cease normal behaviors. Noise that induces structural vibration damage to 1 in 100 buildings or structures within areas exposed to unweighted nose levels of 119 dB or greater, which occurs 3.4 miles from the vertical launch area for the Falcon 9 and 6 miles for the Falcon Heavy (FAA 2013). The closest house is 1.8 miles; therefore, one could assume that vibration could be felt at Boca Chica beach, approximately 800 to 900 feet, from the launch pad.

Ocelot, Jaguarundi, Northern Aplomado Falcon, Piping Plover and Red Knot: Ground vibrations could result from a launch or static test, pile driving, or vehicular motion during construction and operations. Species reactions could vary depending on their proximity to the launch site or construction/operation activities. These species may experience some startle effect and/or habitat avoidance. Impacts should be short term and normal behavior would resume minutes afterwards.

Sea Turtles: Vibrations caused by moving maintenance vehicles and/or equipment, launches, and pile driving near the beach could frighten nesting turtles, causing them to false crawl (NMFS and Service 1991a, 1991b, 1992; Ernest et al. 1998). Vibrations could also harm incubating eggs, but this is difficult to assess because scientific data are lacking to fully understand the level of impact on sea turtles from traffic vibrations or noise. The closest nesting sea turtle habitat to the

proposed launch pad is approximately 800-900 feet, and as shown above vibration appears it could be felt up to 3.4 miles from the launch area therefore, vibration caused from rocket launches could cause nesting turtles to abandon their nesting attempt and potentially harm incubating eggs.

Vehicle Collisions

Vehicles associated with construction will be ongoing daily for 24 months, including several weeks of night construction. Security patrols and transportation of rockets, equipment and fuels will be ongoing for the life of the project. Construction will increase traffic by approximately 107 vehicles per day from 190 vehicles currently traveling within the Lower Rio Grande Valley NWR corridor and 95 currently traveling within the corridor providing access to Boca Chica Beach and the vertical launch area.

Ocelot and Jaguarundi: Data indicates that vehicular collisions are a significant source of ocelot mortality, with 44 percent (12 of 27) of known ocelot mortalities from 1982 to 1996 likely being vehicle related (Hewitt et al. 1998) and 45 percent of the total ocelot mortality documented in South Texas between 1983 and 2002 likely being vehicle related (Haines et al. 2005). Peak ocelot activity is around sunset and sunrise with continued activity during the night hours. Ocelots have been seen to cross paved linear structures such as roads and have been documented on SH4 and will be subject to increased road mortality due to the increase in traffic. The posting of wildlife crossing signs by TxDOT is likely to reduce speeds of oncoming motorists, thereby reducing the potential for a cat to be struck.

Sea Turtles: Operation of security vehicles on the beach can crush nesting turtles, stranded turtles, hatchlings, and eggs (Mann 1977; NMFS and Service 1991a, 1991b, 1992, 1993; Ernest et al. 1998). Adult loggerhead and green sea turtles nest at night and most female Kemp's ridley nest during daylight hours and may be caught in the morning hours on the beach at some stage of nesting: oviposition, covering the nest, or exiting and returning to the ocean. Hatchlings may also emerge at night or early in the morning from any nests missed by the daily sea turtle patrols. Post hatchlings are commonly stranded in sargassum washed in by late summer and fall storm events (these post-hatchlings are often referred to as washbacks) (Carr and Meylan 1980). Post-hatchling washbacks are often found dead or in a weakened state; however, efforts are made to revive or maintain live post hatchlings for subsequent release when ocean conditions are calmer. Because of the size and increase in vehicular traffic from recreational use and security sweep activities in some areas, live post hatchlings on the beach during the day are vulnerable to being run over.

Vehicle collisions with sea turtle hatchlings during the daytime have been recorded. Beach visitors found *in situ* nest hatching on Boca Chica Beach and attempted to provide safe passage but some hatchlings were killed by passing vehicles (Pers. Comm., D. Shaver, PAIS 2006). There was also a report of a stranded turtle being hit by a vehicle on South Padre Island (Pers. Comm., D. Shaver, NPS 2007).

Piping Plovers and Red Knot: Driving is allowed in many areas of the wintering grounds from the mean low tide line to the line of vegetation on the shore. Increased vehicular access due to recreation or security patrols may increase ruts or berms. Vehicles driving on the beach could potentially cause injury to plovers that may be resting in ruts, or next to a berm, especially during inclement weather, and/or expose critical habitat to further erosion and removal of organic matter and food sources. Direct mortality from construction equipment may occur if plovers and red knots do not disperse prior to equipment or vehicular use.

Northern Aplomado Falcon: Air and vehicular travel kills approximately 2 million birds each year (IMBD 2000). Although possible, there has not been any documented vehicular mortality of the northern aplomado falcon within the action area. Increased traffic from construction activities may displace foraging aplomado falcons.

Educating construction and SpaceX employees on the potential of vehicle collisions and reduced speeds along SH4 will help minimize impacts.

Lighting

Lighting emissions are light sources that illuminate an area in the surrounding environment. Sources of light emissions include launch site lighting, employee/customer parking lighting, airborne and ground-based aircraft operations and roadway lighting. Glare is light emission being redirected off of a reflective surface such as windows glass in facility. There are no state or local regulations that govern visual resources and light emissions in Texas.

Sea Turtles: Anthropogenic light sources have had documented negative effects on sea turtles. Adult females looking for nesting beaches seek dark stretches of suitable shoreline. Unshielded lights can deter females from crawling onto a beach to nest. At hatching, juveniles emerge and seek the nearest available light source, which on an undeveloped beach is the horizon over the ocean. Lights shining in the vicinity of the nest can disorient emerging hatchlings, leading them away from the ocean and leaving them more vulnerable to predation, desiccation, or crushing by vehicles. Hatchlings that have reached the surf can also become disoriented by lighting, and have been documented to leave the surf (NMFS and Service 2007a). Some of these behavioral effects on adult turtle and disorientation of young turtles are expected to occur.

Some structures within the launch complex, use amber LEDs or low pressure sodium bulbs for exterior night lighting. Most of these facilities are not located immediately adjacent to the beach, which limits the potential effects on listed species However they do contribute to elevated levels of ambient light and are some of the only lights on barrier islands within the action area. Such night lighting can negatively impact nesting sea turtles.

Implementing the Lighting Management Plan and doing regular inspections will help reduce the effects these lights have on turtles, but some adverse effects to sea turtles, either in the form of hatchling disorientations or reducing the likelihood of nesting may occur when launches occur within sea turtle nesting season.

Ocelot and Jaguarund: Thee species may avoid lit areas and seek other north-south travel corridors through the lomas expending energy and increasing the potential for vehicular mortality.

Northern Aplomado Falcon, Piping Plover and Red Knot: Some birds may be attracted to light, especially during overcast nights, causing them to be disoriented and collide with buildings or other structures (FAA 2013). To minimize collisions with the four lightning towers and the water tower these structures will be lit in accordance with the Federal Communications Commission's (FCC) communication tower siting, construction, operation and decommission guidelines.

Lighting effects are reduced by complying with lighting policy for minimizing disorienting effects on migratory birds and the Light Management Plan, along with surveys, and raptor protection measures for utility upgrades and designated FCR.

Reduced Dispersal, Fragmentation and Isolation

Most biologists agree that habitat fragmentation is a major cause of reduced biodiversity (Noss et al 2001). Habitat fragmentation is the separation of a landscape into various land uses (development, agriculture, etc...) resulting in numerous small disjointed habitat patches left for use by wildlife.

Ocelot, Jaguarundi: The vertical launch and control center areas are located within the Rio Grande Valley Wildlife Corridor which comprises a north-south coastal corridor on the eastern boundary of the Rio Grande delta that supports rangeland, wetland, and uplands that may be suitable ocelot and jaguarundi movement. Fragmentation eliminates areas needed for breeding, feeding, and sheltering for species like the ocelot and jaguarundi that require large, unbroken blocks of habitat. Fragmentation can also isolate cats from travel corridors and reduce dispersal for breeding. In a small population, such as the ocelot and jaguarundi in South Texas, inbreeding can reduce fitness of individuals and loss of genetic variability can reduce the ability of an animal to adapt to a changing environment (Lande 1988). Dispersal of cats may be temporarily impacted by proposed actions if the disturbance is such that the cats would return to Mexico and attempt to return at a later time to seek a new corridor. It is also possible cats may not return to the U.S. and potentially reduce the opportunities to increase or improve the genetic viability in Texas populations. The project may preclude north-south movement.

Educating construction employees and contractors will help reduce speeds, avoid unauthorized disturbance of habitat and illegal dumping in the lomas and other important habitat during construction.

Northern Aplomado Falcon, Piping Plover, Red Knot: Additionally, the small habitat patches resulting from fragmentation often do not provide the food and cover resources for many species. This can result in an increased risk of death by predation if the animal has to venture beyond the cover of the patch to find new food resources, or starvation.

Sea Turtles: Lighting, vehicular collisions and or beach impacts will potentially cause adult females to false crawl or hatchlings may become disoriented, trapped in ruts, or be run over and reduce nesting success and dispersal.

Indirect effects
Indirect effects are those effects that are caused by or will result from the proposed action and are later in time, but are still reasonably certain to occur.

Habitat Conversion
Emissions from the SpaceX Merlin 1D engine has been characterized as comprising CO_2, CO, water vapor, nitrogen oxide (NO_x), and carbon particulates. Most CO emitted by the liquid fuel engines is oxidized to CO_2 during afterburning in the exhaust plume. The exhaust cloud (Figure 17) that would form near the launch pad at lift-off as result of the exhaust plume and evaporation and subsequent condensation of deluge water may impact surface waters, tidal flats and vegetation (FAA 2013). Water vapor could reach unvegetated areas. SpaceX states that at the launch site, the deluge water system would generate a vapor cloud that would travel approximately 600 feet from the launch pad toward the east in the direction of the flame duct exit. Low wind conditions, required for a launch, may disperse the vapor cloud approximately 200 feet to the northwest under prevailing southeast winds (Pers. Comm. S. Davis, SpaceX 2013). Portions of the deluge water would also be entrained in the exhaust and would follow that exhaust cloud over the Gulf of Mexico. Schmalzewr et al (1998) monitored the effects of Delta, Atlas, and Titan launches from Cape Canaveral Air Station. The principal effluences from solid rocket motors were hydrogen chloride, aluminum oxide, water, hydrogen, carbon monoxide and carbon dioxide. The exhaust plume mixed with the deluge water created a launch ground cloud. The fall out or rain out from this cloud produced localized effects from acid or particular deposition causing damage to plants and animals exposed to it. Because the Falcon 9 and Falcon Heavy launch vehicles use only LOX and RP-1 propellants, SpaceX states the exhaust cloud would consist of steam only and would not contain any hazardous materials. However, the water in the ground cloud could lead to vegetation changes as seen in various shuttle launches. Changes included loss of sensitive species, loss of plant community structure, reduction in total cover and replacement of some native species with weed species. The heat and moisture from the exhaust cloud, which will extend beyond the fence line, may cause these same alterations to the plant community, cause wind-tidal flats to vegetate, as well as impact surface-dwelling invertebrates.

Piping Plover, Piping Plover Critical Habitat and Red Knot: Using estimates SpaceX provided it is possible, depending on wind conditions that approximately an additional 8.66 acres of piping plover critical habitat in TX-1 may potentially be lost through conversion into vegetated wetlands (Figure 15).

Ocelot and Jaguarundi: Lomas used by the cats to transient through the area may experience loss of vegetation or conversion to non-native species.

Northern Aplomado Falcon: Coastal prairie grasslands could experience changes in species composition or abundance; including increased woody species thereby, reducing the foraging habitat for the falcon.

A monitoring plan to document any vegetation changes and implementation of appropriate corrective actions will help reduce impacts to habitat.

Monitoring

While the intent of conducting frequent surveys, implementing area closures and posting signage, and similar actions is to reduce or avoid impacts to listed species by detecting them early, these activities in themselves, because they result in increased human activity within the beach habitats, result in some adverse effects to listed species. Plovers being monitored are generally disturbed to some degree during monitoring and during efforts to locate sea turtle nests and this disturbance, while limited may increase the likelihood of nest predation. Observers may also inadvertently crush sea turtle nests or plovers while accessing areas to conduct monitoring or management.

Cumulative Impacts

Cumulative impacts include the effects of future State, local, or private actions that are reasonably certain to occur in the action area considered in this BCO. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. Past and present federal actions in the vicinity of the proposed action are discussed under the Environmental Baseline section. Currently, no active oil and gas leases occur on or adjacent to proposed launch control sites but there are two oil and gas leases two miles offshore. There are no existing wind farms in the vicinity of the vertical launch site; however Baryonyx has two leases off the gulf coast in the vicinity of the Rio Grande Valley. The South Padre Island Second Access, the Rio Grande Wind farm Project-Baryonxy Corporation the Palmito Ranch Battlefield Viewing Platform, and the Port of Brownsville Liquefied Natural Gas (LNG) Facility are not discussed because they are federal actions and will require separate consultation.

The proposed rail line from Port of Brownsville to Brownsville/South Padre Island International Airport is being assessed for viability. No environmental documentation has been prepared but land use will convert to transportation ROW and potentially result in future increase in development within the action area. STARGATE is a project the University of Texas-Brownsville (UTB) Center for Advance Radio Astronomy has proposed. It involves construction of a radio frequency technology facility that would provide students access to satellite and spacecraft tracking equipment. The facility is expected to be located in the vicinity of the SpaceX control center area, although UTB has not yet acquired land for the facility. Funding is being proposed and explored and in discussions with SpaceX over potential Memorandum of Understanding. The project could result in cumulative impacts to visual resources and light emission.

Oil and gas development in the Rio Grande Valley and the rapid economic expansion of the large

metropolitan areas, Harlingen, Brownsville, and Matamoros, with the continuing influx of immigrants, retirees, and increased tourism will likely continue to result in the loss of brushlands, and coastal grasslands. As remaining small islands of suitable habitat and the corridor to connect them are developed and brush encroachment reduces plant diversity for prey species, ocelots, jaguarundis, and aplomados recovery alternatives are limited. Road expansions to accommodate the Rio Grande Valley development and road network, and border crossings will likely increase loss and fragmentation of habitat corridors and increased road mortality for the cats. Encroachment from urban development and colonias that bring increased noise, light, fencing, and human disturbance will also likely result in the loss of habitat and avoidance of areas or corridors by the endangered ocelot, jaguarundi, northern aplomado falcon in the wild, piping plover, red knot and sea turtles across their listed range.

The Service is continually working with private and state entities to review proposed projects, offer technical assistance and provide recommendations on avoidance/minimization measures and reintroduction and restoration measures to protect the listed species in this BO, and their habitats. By continued cooperative efforts to replace, secure, and improve such habitats and connect optimal habitat that exists on NWR and private lands, the Service does not believe that the cumulative effects are likely to jeopardize the continued existence of the ocelot, jaguarundi, northern aplomado falcon, piping plover, red knot, and nesting sea turtles.

IV. Conclusion

After reviewing the current status of the ocelot, jaguarundi, northern aplomado falcon, piping plover, and five species of sea turtles, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the project, as proposed is not likely to jeopardize the continued existence of the listed species. It is also the Service's biological opinion that the project as proposed is not likely to significantly destroy or adversely modify piping plover critical habitat.

After reviewing the current status of the red knot, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is the Service's opinion that the action as proposed, is not likely to jeopardize the continued existence of the proposed red knot.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered or threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.

Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of the agency action is not considered to be prohibited taking under the Act, provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are non-discretionary, and must be undertaken by the FAA so that they become binding conditions of the project in order for the exemption in section 7(o)(2) to apply. The FAA has a continuing duty to regulate the activity covered by this incidental take statement. If the FAA (1) fails to assume and implement the terms and conditions or (2) fails to require any agent acting on behalf of FAA to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to any contracting document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the FAA must report the progress of the action and its impacts on the species to the Service as specified in the incidental take statement (50 CFR 402.14(i)(3)).

Amount or Extent of Take Anticipated

The Service anticipates incidental take of an ocelot and jaguarundi in the form of harm and harassment will be difficult to detect because 1) the species is wide-ranging, 2) elusive, 3) nocturnal, and 4) finding a dead or impaired specimen that has resulted from impaired essential behavioral patterns like breeding, feeding or sheltering is unlikely. The take of an ocelot or jaguarundi, however, can be reasonably anticipated by increased risk of injury by road mortality, and/or by prevented dispersal of cats into otherwise suitable habitat. Therefore, the Service anticipates:

1) 2 endangered cats (ocelots and/or jaguarundi) would be taken in the form of harm and harassment, due to the construction and operations and/or injury or mortality due to a vehicular collision, noise and human disturbance within the project area for the life of the project.

2) Sea turtle nesting habitat along 7.53 miles of beachfront will be disturbed by vehicular traffic associated with security activities; however, incidental take of sea turtles will be difficult to detect for the following reasons:
   - the loggerhead, green, leatherback and hawksbill turtles nest primarily at night and although the Kemp's ridley primarily nest during the day, some have been known to nest at night
   - all nests are not located because a) natural factors, such as rainfall, wind, and tides may obscure crawls; and b) human-caused factors, such as pedestrian and vehicular traffic, may obscure crawls, and result in nests being destroyed because they were missed during a nesting survey and egg relocation program;
   - the total number of hatchlings per undiscovered nest is unknown;
   - the reduction in percent hatching and emerging success per relocated nest over the natural nest site is unknown; and
   - an unknown number of females may avoid the project beach and be forced to nest in a less than optimal area.

However, take of these species can be anticipated because:

- sea turtles nest within the beach portion of the action area;
- project security patrols and monitoring will likely occur along the beach area during a portion of the nesting season.

Take is expected to be in the form of harassment, injury, and/or death from:

- destruction of all nests that may be constructed and eggs that may be deposited from March 15 through October 1 and missed by a nest survey and egg relocation program within the boundaries of the beach portion of the action area;
- injury or death from vehicles and/or equipment driving over an adult sea turtle, hatchling, stranded or post-hatchling washback, sea turtles from an undetected, unmarked/unprotected sea turtle nest, and
- harassment in the form of disturbing or interfering with female turtles attempting to nest during security patrols or monitoring; behavior modification of nesting females resulting in false crawls or situations where they choose marginal or unsuitable nesting areas to deposit eggs.

As stated previously, approximately 91 sea turtle nests have been recorded along South Padre Island and Boca Chica beaches to the Rio Grande. The Service anticipates the proposed project could potentially "take" a maximum of 91 nesting sea turtles prior to any avoidance and minimization measures being implemented. Implementation of avoidance and minimization measures further reduces the estimated number of sea turtles that could be taken. The Kemp's ridley is the most frequently documented sea turtle occurring in the action area and the loggerhead is a very infrequent second. Thus, the potential for FAA/SpaceX related activities interacting with Kemp's ridley adults, hatchlings or eggs would be greater, thus the number of Kemp's ridley adults, hatchlings and eggs at risk of "take" would also be greater.

Therefore, the Service anticipates that despite avoidance and minimization measures implemented through the term of this BCO (2025) a risk still exists, although minimal, that adult sea turtles could be struck by vehicles and nests could go undetected by the egg relocation program surveys within the proposed action area and:

- 3 adult Kemp's ridley sea turtles and 3 nests per year, including all hatchlings and/or eggs (up to approximately 200 eggs) could be taken.
- 1 adult loggerhead sea turtle and 1 nest per year, including all hatchlings and/or eggs (up to approximately 200 eggs) could be taken.
- 1 adult green sea turtle and 1 nest per year, including all hatchlings and/or eggs (up to approximately 200 eggs) could be taken.
- 1 adult leatherback sea turtle and 1 nest per year, including all hatchlings and/or eggs (up to approximately 200 eggs) could be taken.

- 1 adult hawksbill sea turtle and 1 nest per year, including all hatchlings and/or eggs (up to approximately 200 eggs) could be taken.

If the agreed upon avoidance and minimization measures are to be deviated from or if the level of take is reached for any one of the species, FAA and SpaceX must contact the Service's Coastal Ecological Services Field Office immediately to review the circumstances and revisit the take analysis. Although incidental take is anticipated for three Kemp's ridley nests per year, if one nest is taken the Service also would appreciate the opportunity to review the circumstances and the avoidance and minimization measures.

3) 1 northern aplomado falcon to be taken by harm or harassment due to noise and human disturbance through the term of this BCO (2025).

4) Incidental take of piping plovers will be difficult to detect for the following reasons: a) harassment to the level of harm may only be apparent on the breeding grounds the following year; and b) dead plovers may be carried away by waves or predators. The level of take of this species can be anticipated by the proposed activities because: a) piping plovers migrate to and winter in the action area; b) increased levels of construction and operational disturbance is expected. Take is expected in the form of harm and harassment due to decreased fitness and survivorship of wintering plovers due to loss and degradation of foraging and roosting habitat and decreased fitness and survivorship of plovers attempting to migrate to breeding grounds due to loss and degradation of foraging and roosting habitat. Therefore, the Service anticipates direct and indirect take of an unspecified number of piping plovers.

5) The direct and indirect loss of 6.18 acres from construction and the conversion of 8.66 acres of occupied piping plover critical habitat in Critical Habitat Unit TX-1, for a total take of 14.84 acres of piping plover critical habitat.

Effect of Take

Ocelot, Jaguarundi, Northern Apolmado Falcon, Piping Plover, Sea Turtles

In the accompanying biological and conference opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to these species. The action area encompasses a relatively small portion of the rangewide habitat of each of the species addressed in this opinion and small portion of each species' population and altered a minimal amount of critical habitat. The proposed action includes a variety of protective measures that are intended to minimize incidental take and alteration of critical habitat. For these reasons, the effect of the take anticipated in this BCO is not expected to significantly affect the species considered.

Red Knot

After reviewing the current status of the red knot, the environmental baseline for the action area the effects of the proposed issuance of a launch permit and the cumulative effects, it is the Service's Conference Opinion that the project, as proposed, is not likely to jeopardize the

continued existence of the proposed red knot. Critical habitat has not been proposed for this species.

Migratory Birds
The Service will not refer the incidental take of any migratory bird or bald eagle for prosecution under the Migratory Bird Treaty Act of 1918, as amended (16 USC 703-712), or the Bald and Golden Eagle Protection Act of 1940, as amended (16 USC 668-668d), if such take is in compliance with the terms and conditions specified herein.

REASONABLE AND PRUDENT MEASURES
As part of the project description, the FAA/SpaceX has agreed on voluntarily measures to avoid and minimize impacts to the ocelot, jaguarundi, falcon, piping plover, red knot and sea turtles. The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize the impact of incidental take on these species and assist the Service in improving methods to minimize impacts of incidental take.

1. Coordinate efforts with the Service's ocelot/jaguarundi lead biologist to protect and preserve ocelot and jaguarundi habitat.
2. Establish a protocol to notify the Service of direct take of an ocelot, jaguarundi, or falcon.
3. Coordinate efforts to increase northern aplomado nest sites.
4. Coordinate efforts with refuge staff to reduce impacts to refuge lands.
5. Submit a detailed Security Plan.
6. Submit a detailed Sea Turtle Monitoring Plan.
7. Submit a detailed Bird Monitoring Plan.
8. Submit a detailed Vegetation Monitoring Plan.
9. Submit a detailed Stormwater Monitoring Plan.
10. Submit a detailed Light Monitoring Plan.
11. Reduce noise related to generator use during construction or operation.
12. Reduce impacts to piping plover habitat during security patrols.
13. Submit annual reports to the Service.
14. Coordinate decommissioning of the site with the Service.

The prohibitions against taking the red knot found in section 9 of the Act do not apply until the species is listed. However, the Service advises the FAA/SpaceX to consider implementing the following reasonable and prudent measures. If this conference opinion is adopted as a biological opinion following a listing or designation, these measures, with their implementing terms and conditions, will be nondiscretionary.

Terms and Conditions
In order to be exempt from the prohibitions of section 9 of the Act, the FAA/SpaceX must comply with the following terms and conditions, which implement the reasonable and prudent measures, described above and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

1. In coordination with the ocelot/jaguarundi biologist, FAA/SpaceX will identify reasonable measures to protect and/or preserve suitable habitat within the Rio Grande Wildlife Corridor.

2. In the event that activities result in the direct take (killing, harming, or maiming) of an ocelot, jaguarundi, aplomado falcon, piping plover, red knot, and/or nesting sea turtles, the person(s) responsible for monitoring shall notify the Service at (361) 994-9005 immediately. A standard methodology for handling dead or injured species found during the project is to be established in coordination with the Service. This methodology shall be directed at determining the cause of death and ensuring that all data is recorded. The finder should ensure that the specimen and related evidence is not disturbed.

3. In coordination with private organizations (e.g., The Peregrine Fund) or state and federal agencies, assist efforts to increase releases (i.e., hack sites) or nest boxes in suitable northern aplomado falcon habitat.

4. In coordination with refuge staff, identify further options that would assist in protecting refuge lands and species habitats from impacts that may result from the public intrusions prior to closures. For example, vehicle barriers, in the form of short, spaced posts, sufficiently close together to prevent a truck or ATV from entering, but wide enough apart to allow for terrestrial animals to pass. This could be done alongside SH4 or other identified roads where the footprint is already disturbed.

5. A detailed Security Plan is to be developed to fully describe agreements and plans with local authorities whose support is needed to ensure public safety during launch procedures, locations of checkpoints and roadblocks, who will secure those areas, exact type of unmanned and manned aerial and ground vehicles to be used to perform sweeps and if necessary in the future, a location on private land for public viewing.

6. Because FAA/SpaceX will perform security sweeps on a 7.53-mile stretch of beach prior to launches during the sea turtle season (March 15 to October 1) a detailed Sea Turtle Monitoring plan is to be developed. The Service approved plan will describe how the surveys will be done, when it will be done and by whom.

7. Develop a bird monitoring plan for pre, during and post construction. Plan should include the piping plover, red knot, and northern aplomado falcon, and describe how where, how, when and who will be performing the surveys. It should also provide similar information for surveys to be performed during launch operations.

8. Develop a vegetation plan to monitor changes in piping plover critical habitat adjacent to the vertical launch area. Figure 15 depicts the 8.66 acres of piping plover critical habitat that will be impacted by the water vapor ground cloud extending a maximum distance of 600 feet beyond the fenceline. Take has been issued for the loss of this habitat. An additional 1000 foot radius encompasses an additional 23.51 acres that may be subject to

additional changes but the Service has not issued take for (Figure 16). The detailed vegetation plan should outline how the 23.51 acres will be monitored and action to be taken if changes begin to occur.

9. To protect surrounding sensitive habitat and waterways, FAA/SpaceX should develop a detailed Stormwater monitoring plan that is coordinated with the Service, EPA and TCEQ to ensure compliance with protective surface water and sediment criteria (i.e. TRRP 24 Residential Surface Water and Sediment PCL and EPA Water Quality Criteria for surface water and sediment). The plan should include sampling contingencies for normal site operations, spills or emergency releases due to impending tropical storms or other events. The plan should be scalable, allowing for annual review by FAA/SpaceX, the Service, EPA and TCEQ. The initial plan should conduct sampling monthly for the first year to establish a baseline. At the end to the first year, sampling would be conducted in conjunction with major site activities (i.e. vehicle launch) where a discharge may occur or at a frequency determined by the concerned agencies and FAA/SpaceX. Sampling for emergency release or spill events would be conducted as needed and independent of established or routine monitoring. FAA/SpaceX should consult with the TCEQ and EPA on specific ecological sediment, storm and surface water criteria. Since the surrounding area is adjacent to NWR lands and has endangered species habitat, residential/ecological standards should be used to determine protective thresholds and sampling protocols for both water and sediment samples. At no time should industrial standards be applied to offsite discharges in ecologically sensitive areas. Sampling of both sediment and surface water is to beginning immediately upon discovery of a release of 0.1 gallons or more of any substance classified as a Resource Conservation and Recovery Act (RCRA) hazardous waste or when 25 gallons or more of a substance not meeting the classification of a RCRA hazardous waste. For development of this plan and discussion RCRA hazardous waste includes those substance defined as characteristically hazardous as specified in 40 CFR Part 261 Subpart C. All emergency or spill response samples are to be collected immediately upon discovery and that analysis would be conducted after the event. All samples should be conveyed to an appropriate laboratory for analysis within the samples specified holding time and with all appropriate preservation and chains of custody.

10. To minimize impacts to nesting sea turtle from lighting impacts submit a detailed Light Monitoring Plan that describes how FAA/SpaceX will ensure lighting is not occurring on the beach. The plan should describe how a census of number, type, and locations of lights visible from the beach. Lighting inspections should occur on the beach in front of the vertical launch area. A set of daytime and nighttime lighting inspections should be done before nesting before the nesting season and three to seven additional nighttime inspections during the nesting-hatching season are recommended.

11. The Draft Closure Plan and all monitoring plans are to be submitted to the Service for review 60 days after issuance of the Final BO. The final plans will be submitted to the Service within 30 days after receipt of Service review comments on the draft plans, and

any further coordination between the Service and FAA/SpaceX regarding the plans and their implementation. If additional time is needed please coordinate with the Service.

12. To reduce noise impacts from generators that may be used during construction or operations all generators are to be in baffle boxes (a sound-resistant box that is placed over or around a generator), have an attached muffler, or use other noise-abatement methods in accordance with industry standards.

13. To reduce impacts to piping plovers and red knots security patrol vehicles or other necessary equipment on the beach will be driven above the "wet line" to minimize disturbance of birds and protect feeding and roosting areas.

14. FAA/SpaceX is to submit an annual summary report to the Service's Coastal Ecological Services Field Office by December 31st of each year. The FAA/SpaceX summary report should include monitoring reports, measures implemented during project activities, success of such measures, incidences, and any recommendations on improvements to those measures. Reports should be sent to: U.S. Fish and Wildlife Service, Coastal Ecological Services Field Office, ATTN: Field Supervisor, c/o TAMU-CC, 6300 Ocean Drive, Campus Box 338, Corpus Christi, Texas 78412.

15. Take is not authorized beyond 2025. In the event activities continue beyond 2025, the FAA should consult with the Service 6 months prior to the expiration of this BCO.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal action agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or develop information.

For the benefit of ocelot, jaguarundi, and falcon the Service recommends the following:

1. Locate areas where there are opportunities to present or establish Service-approved workshops, signage, or other opportunities for each species in counties where study will be conducted.

2. Work with the Service to design and fund a research program to determine the population of ocelots and jaguarundis and prey species available to the cats in the south Texas counties.

3. Promote progressive range management techniques for the falcon on large expanses of grassland and coastal prairie habitat with long term cooperative arrangements such as leases, exchanges, purchases, and conservation education.

In order for the Service to remain informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, we requests notification of the implementation of any conservation recommendations.

REINITIATION NOTICE

This concludes formal consultation and conference on the action(s) outlined in the request. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

You may ask the Service to confirm the conference opinion as a biological opinion issued through formal consultation if the red knot is listed or critical habitat is designated. The request must be in writing. If the Service reviews the proposed action and finds that there have been no significant changes in the action as planned or in the information used during the conference, the Service will confirm the conference opinion as the biological opinion on the project and no further section 7 consultation will be necessary.

After listing of the red knot as endangered/threatened and/or designation of critical habitat for and any subsequent adoption of this conference opinion, the FAA shall request reinitiation of consultation if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect the species or critical habitat in a manner or to an extent not considered in this conference opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the species or critical habitat that was not considered in this conference opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action.

The incidental take statement provided in this Conference Opinion does not become effective until the red knot is listed and the Conference Opinion is adopted as the BO issued through formal consultation. At that time, the project will be reviewed to determine whether any take of the red knot and/or their habitat has occurred. Modifications of the opinion and incidental take statement may be appropriate to reflect that take. No take of the red knot may occur between the listing of the red knot and the adoption of the Conference Opinion through formal consultation, or the completion of a subsequent formal consultation.

As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in

a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take should cease pending reinitiation.

If you or your staff has any questions concerning this opinion, please contact Mary Orms at (361) 994-9005 or via email at mary_orms@fws.gov .

Sincerely yours,

for Edith Erfling
Field Supervisor

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Appendix A. Consultation History

October 10, 2012 – The Service participated in a meeting with FAA, SpaceX and consultants and refuge staff to discuss project and information needs.

October 31, 2012 – The Service provided consultants for SpaceX information on aplomado falcon sightings, nest structures, cat trappings and sightings along SH4.

November 27, 2012 – Consultant for SpaceX requested information on red knots and the Service provided information.

December 4, 2012 – The Service discussed surveys for aplomado falcons. Consultant emailed and stated that he would put forth pre- and post-construction surveys and potentially pre-launch as part of the mitigation plan like the piping plovers.

April 20, 2012 - The FAA sent a letter requesting concurrence or revision of a species list and an invitation to participate in a pre-scoping meeting to be held May 15, 2012 in Brownsville, TX.

May 4, 2012 – The Service responded with revisions to the species list.

May 15, 2012 - Representatives from the Service's Ecological Services Field Office and Lower Rio Grande Valley National Wildlife Refuge attended an agency-only pre-scoping meeting and site visit to the proposed Control Center and Vertical Launch sites.

September 2012 - The Service received a Draft Final BA from FAA for review and comment.

October 10, 2012 - A meeting was held with the Service, FAA and Cardno TEC to discuss the Draft Final BA.

November 13, 2012 - The Service provided formal comments on the Draft Final BA to FAA.

January 4, 2013 – FAA sent a letter with a January 2013 BA for initiation of consultation.

February 26, 2013 – The Service participated in a meeting with FAA, BEDC, USBP, NPS, NWR, TPWD, Cameron County Law Enforcement, and a private security company. Items discussed were launch viewing areas, preparation of various plans, perch deterrents, wildlife crossings, monitoring and sea turtle impacts.

March 1, 2013 – Letter from the Service to FAA providing comments on the Final BA submitted with an initiation request, requested revision of BA.

March 11, 2013 – The FAA requested additional information, 2012 Candidate Notice of Review, 2012 Species Assessment for Sprague's pipit and Survey guidelines for winter piping plovers.

March 21, 2013 – The Service received a letter from FAA regarding Section 4(f) determination. The FAA determined that because of the short-term and intermittent nature of the noise generated from launches, the proposed action would not substantially diminish the attributes (i.e., quite setting that contribute to the enjoyment of the NWR or the significance of the NHL. Therefore, the FAA/AST determined that the operational activities would not constitute a constructive use of the NHL or the NWR.

April 15, 2013 – FAA distributed an email stating that the DEIS had been released and available for review. There would be an agency hearing on May 7, 2013 in the morning and a public meeting that night.

April 20, 2012 - The FAA sent a letter requesting concurrence or revision of a species list and an invitation to participate in a pre-scoping meeting to be held May 15, 2012 in Brownsville, TX.

May 20, 2013 – FAA provided the Service a summary from the May 7, 2013 meeting with various agencies, Service included, to discuss and/or clarify the proposed project.

May 23, 2013 – FAA distributed the May 2013 draft Hurricane Preparation Plan to the Service.

May 30, 2013 - The Service provided scoping comments to FAA.

April 12, 2013 – FAA letter to the Service announcing the availability of the DEIS for review and enclosed a revised Final BA. FAA requested initiation of formal consultation on the piping plover, northern aplomado falcon, jaguarundi, ocelot, and 5 sea turtle species.

April 29, 2013 - The Service initiated formal consultation, provided concurrence regarding FAA's effect determination for the West Indian manatee.

May 30, 2013 – FAA provide the Service the draft Hurricane Plan for review.

June 4, 2013 – The Service received a copy of the Department of Interior's, June 3, 2013, letter providing comments on FAA's DEIS. The Service also was provided a copy of TPWD's and EPA's comments on the DEIS.

June 5, 2013 – FAA distributed the Spill Prevention, Control & Countermeasures Plan and the Storm Water Pollution Prevention Plan (Operations) to the Service.

June 11, 2013 – EPA provided the Service information related to NOx and Sox on terrestrial and aquatic ecosystems.

June 13, 2013 – FAA provided the Construction SWPPP for review.

July 1, 2013 – The Service received an email from FAA stating that SpaceX was willing to increase the launch day land closure area and move the soft checkpoint to the area west of the

U.S. Customs and Border Protection checkpoint along SH4 to help alleviate potential impacts to NWR and NHL lands from launch spectators. If something happens in the future where SpaceX want to open up discussion to change the closure area for some reason then they would reinitiate consultation to seek an amendment to the BO.

July 16, 2013 – The Service received a copy of Sierra Club's providing comments on FAA's DEIS.

July 17, 213 – FAA distributed the Hazardous Materials Emergency Response Plan to the Service.

July 19, 2013 – The Service received a copy an email from Magic Valley Electric Coop to SpaceX that the utilities lines would remain the same after the upgrade. However, to help alleviate concerns TxDOT, TPWD and the Service had the, the 2.18 miles of line that would provide electricity to SpaceX will be underground.

July 22, 2013 - Conference call with the National Park Service and the Refuge to discuss lighting, FAA was informed of the meeting.

July 24 2013 – After conference call FAA was informed verbally that the Service would be needing an extension of time to review all the plans, and provide them comments to respond to and in additional some plans were still not received.

July 29, 2013 – FAA emailed a letter to the Service acknowledging the extension and providing us with additional information. FAA provided a copy of the SpaceX Draft Security Plan for our review

August 16, 2013 – The NPS provided the Service with their comments on the SpaceX lighting plan.

August 27, 2013 – FAA letter to the Service agreeing to an extension of formal consultation. The Service was to provide a letter providing the additional information requested.

September 5, 2013 – Senator Cruz's office called for an update. The Service also received an email from the Refuge that they had met with Magic Valley Electric Coop and SpaceX to discuss the electric upgrade and cable.

September 6, 2013 - FAA and the Service discussed the August 27, 2013, letter regarding the date of expected BO, outstanding plans we had still not received. The documents included the Long-term wildlife monitoring plan, the Programmatic Agreement with the National Parks Service addressing the effects of the project on Nationa Park Service properties (Palmito Ranch Battlefield NHL and viewshed), the facility closure and site restoration plan, and catastrophic launch failure response plan.

September 11, 2013 – Refuge staff and the Service's ES office met to discuss their 4(f) concerns.

September 17, 2013 – The Service provided FAA comments on all SpaceX plans (Hurricane, Storwater, Security, Hazardous Waste Management, SPCC,…). The Service also coordinated with the NPS regarding the cypress pilings. Cardnotec also sent an email stating they were unsuccessful at obtaining information on aplomado falcon hack sites.

September 18, 2013 – The NPS provided the Service with a copy of the MOA between NPS, FAA, State Historic Aviation Administration, NPS, TPWD, Council on Historic Preservation and SpaceX in Cameron County.

September 19, 2013 – The Service provided FAA comments on all plans, Hurricane Plan, Stormwater (Construction), Stormwater (Operation), SWCPP, Security, Hazardous Waste Management, Emergency Response Plan.

September 23, 2013 – SpaceX provided an email with 7 revised plans and response to the Service's comments on the plans. The plans were South Texas Security Plan, Commercial Launch Site Lighting Plan, Commercial Site Spill Prevention Plan, Hazmat Emergency Response Plan, Hurricane Plan and South Texas Emergency Action Plan.

September 25, 2013 – Teleconference to discuss issues or needs for the BO.

September 26, 2013 – The Service sent an email to FAA and SpaceX as a follow-up to the September 25, 2013 discussion regarding storm water and habitat monitoring. The Service provided clarification and supplemental information. The Service recommended a stormwater discharge monitoring plan. The plan was to be developed in coordination with the Service, EPA and TECEQ to ensure compliance. The plan was to include sampling contingencies for normal site operations, spills or emergency releases. The Service recommended residential/ecological standards be used to determine protective thresholds and sampling protocols of both water and sediment. At no time were industrial standards to be applied to offsite discharges. The Service concurred with SpaceX recommendation for frequency and necessity of spill response sampling and that sampling was to begin immediately upon discovery of a release of 0.1 gallons or more of any substance classified as RCRA hazardous waste or when 25 gallons or more of a substance no meeting the classification of RCRA hazardous waste.

October 10, 2012 - A meeting was held with the Service, FAA and Cardno TEC to discuss the Draft Final BA.

November 6, 2013 – Conference call with FAA and SpaceX. Service requested clarification on timing of construction. SpaceX stated construction would take 24 months; there would be night construction during pile driving and pouring of concrete which would last for about 1-2 weeks each. We also discussed the possibility of SpaceX working with The Peregrine Fund to install more nest boxes for the falcon and they were amenable to the idea as a conservation measure.

We also discussed the vapor cloud as a rocket lifts offs. It does contain water and does vaporize in the air and our concerns for potential vegetation changes.

November 7, 2013 – In an email SpaceX clarified there would be no water piped from Brownsville to the Launch Control Center. There will be no physical water connection between the city along SH4 to the Launch Control Center. All project water would either be privately brought in from trucks or extracted from a privately held on-site ground well and intra-site piping ("water distribution system").

November 12, 2013 – The Service received an email from Chris Perez, Refuge staff that the Peregrine Fund did not install any nest structures or release sites within three mile radius of the proposed site. However, as part of the recovery program, next year they were planning to set up release sites exactly 3 miles from the proposed SpaceX site in suitable habitat. He also stated that based on the ongoing monitoring and numbers of territories, they were leaning more towards the status of the falcon as table, but that habitat loss is an emergent threat.

November 20, 2013 – FAA provided the Service information on the deluge water as requested. "The deluge water from the pad and flame duct would be captured and not released into the nearby tidal flat. Based on SpaceX's past experience with Falcon 9 launches, the deluge water system would generate a vapor cloud that would travel approximately 600 feet from the launch pad toward the east in the direction of the flame duct. Low wind conditions, required for the launch, may disperse the vapor cloud approximately 200 feet to the cloud and would follow the exhaust cloud over the Gulf of Mexico."

November 27, 2013 – SpaceX provided information on a sample drone that might be used to do security sweeps.

December 3, 2013 – Draft BCO issued to FAA.

December 9, 2013 – Comments on the Draft BCO

December 11, 2013 – The Service participated in a conference call was with FAA and SpaceX to discuss and clarify comments. The description of Term and Condition number 6 regarding sea turtle patrols was to be revised by FAA/SpaceX and sent back for the Service to review and approve.

December 12, 2013 – FAA revised Term and Condition number 6 for the Service' and also requested the opportunity to read through the final document a final time, prior to the Service signing on December 13th. FAA in their email indicated they had spoken to SpaceX and SpaceX was agreeable to pushing the BO signing date to December 17th to allow a final review of the language.

December 17, 2013 – Further discussions over sea turtle monitoring (Term and Condition 6) resulted in a decision to defer the details to a Service approved Sea Turtle Monitoring Plan.

December 18, 2013 – Final BCO signed and forwarded to FAA.

Figure 1. Launch Site Location, Cameron County, Texas.



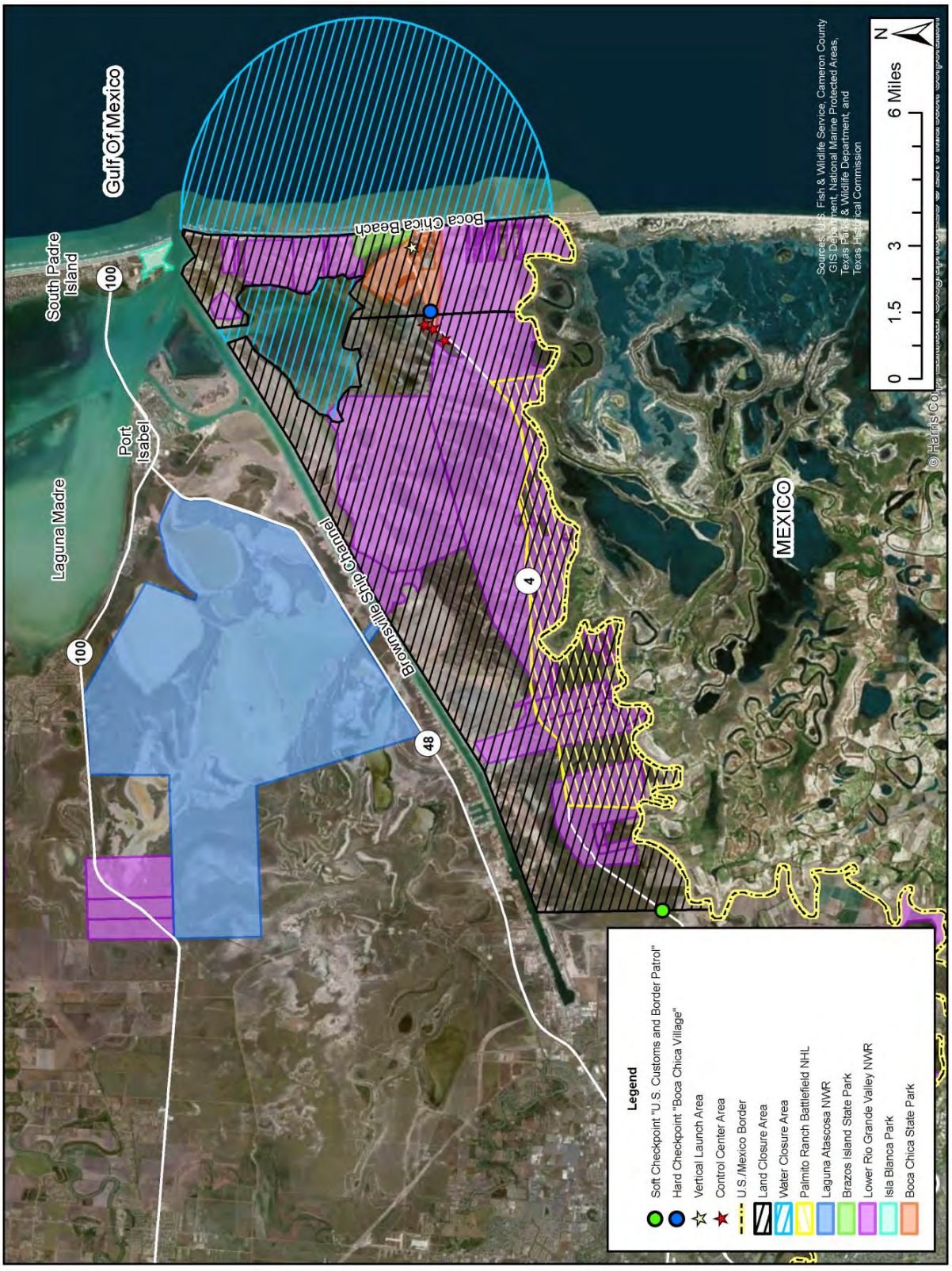


Figure 2. Project site location and surrounding areas

Figure 3.Action Area

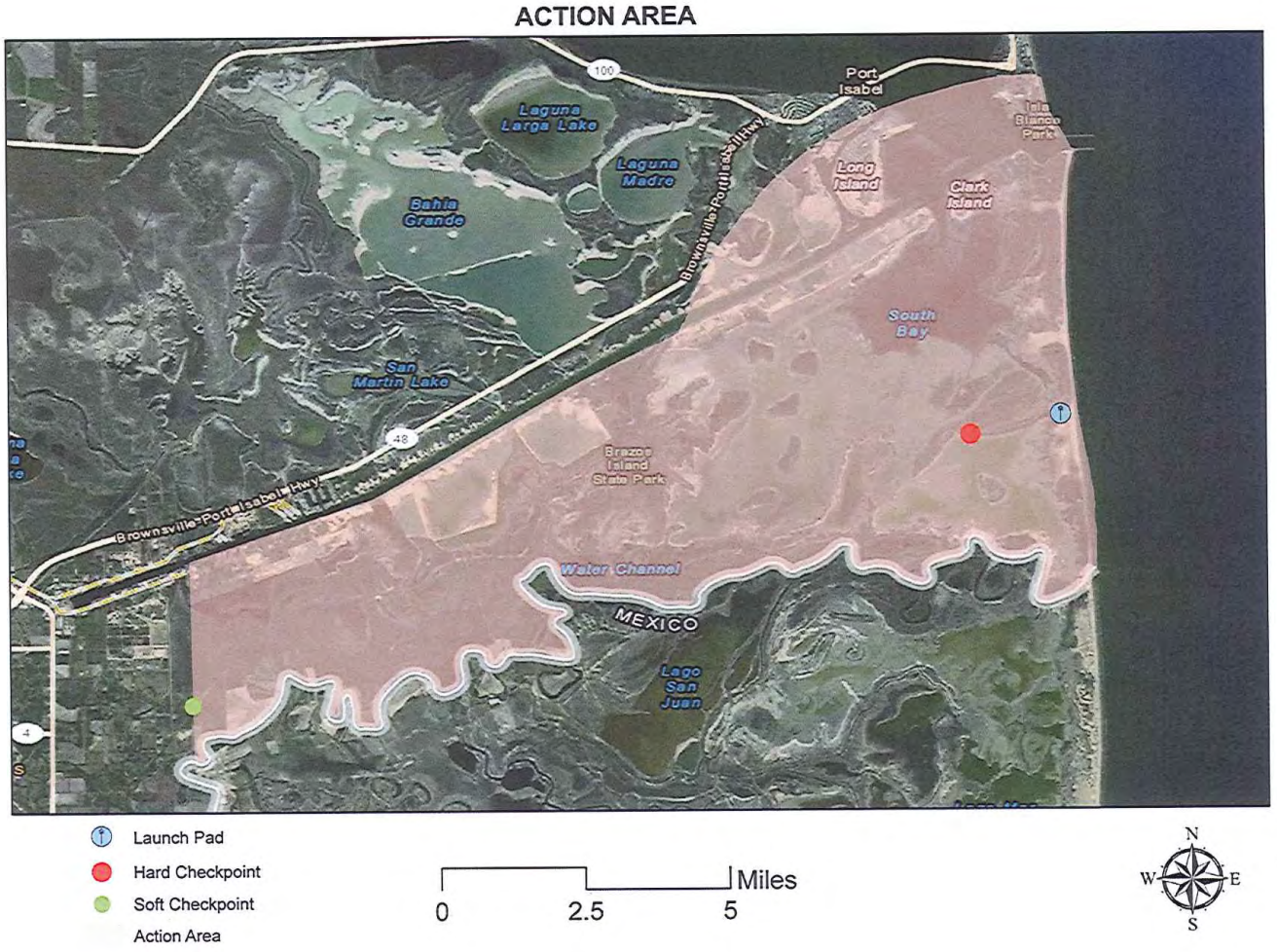
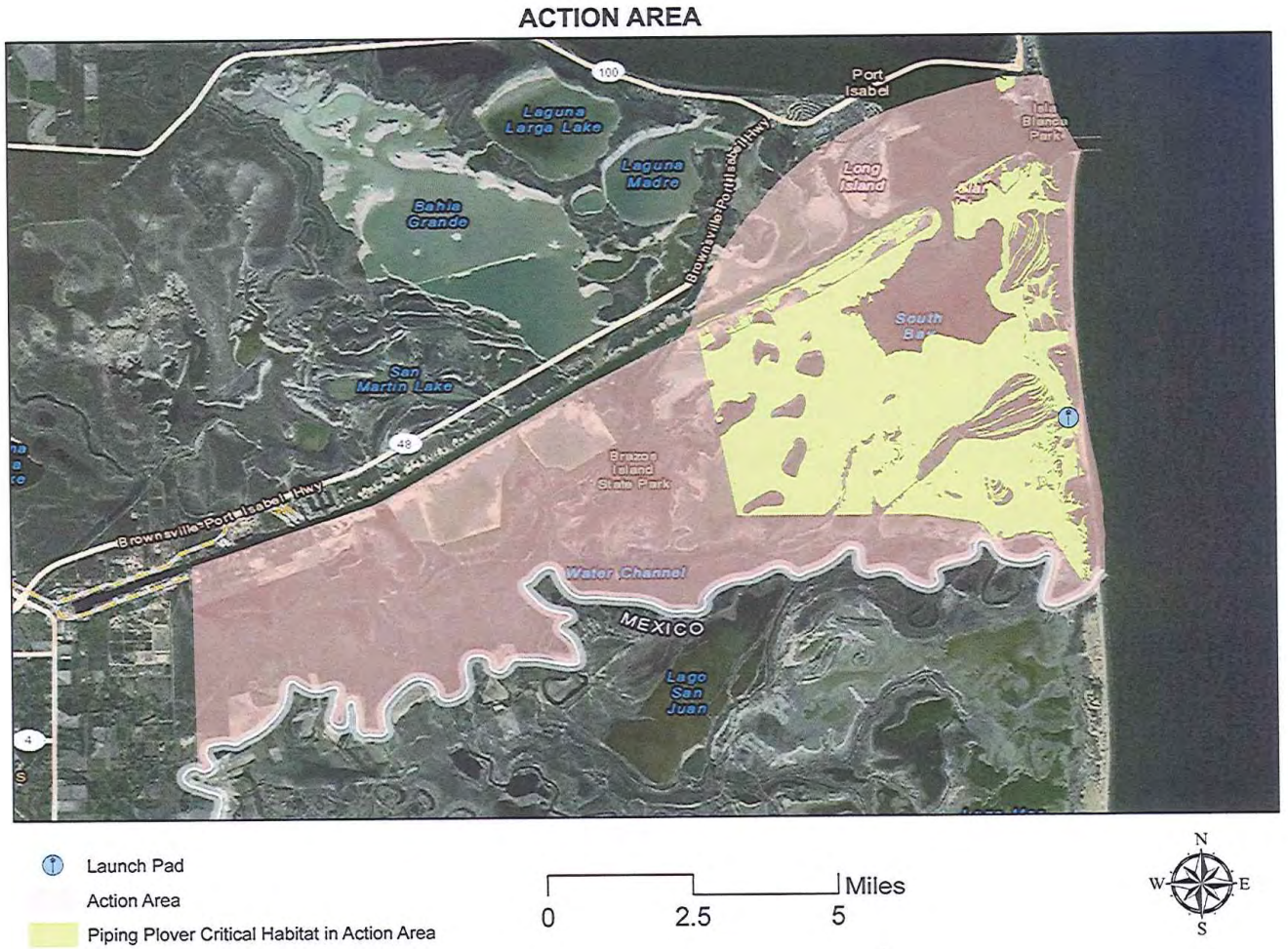


Figure 4. Piping Plover Critical Habitat inside of Action Area.



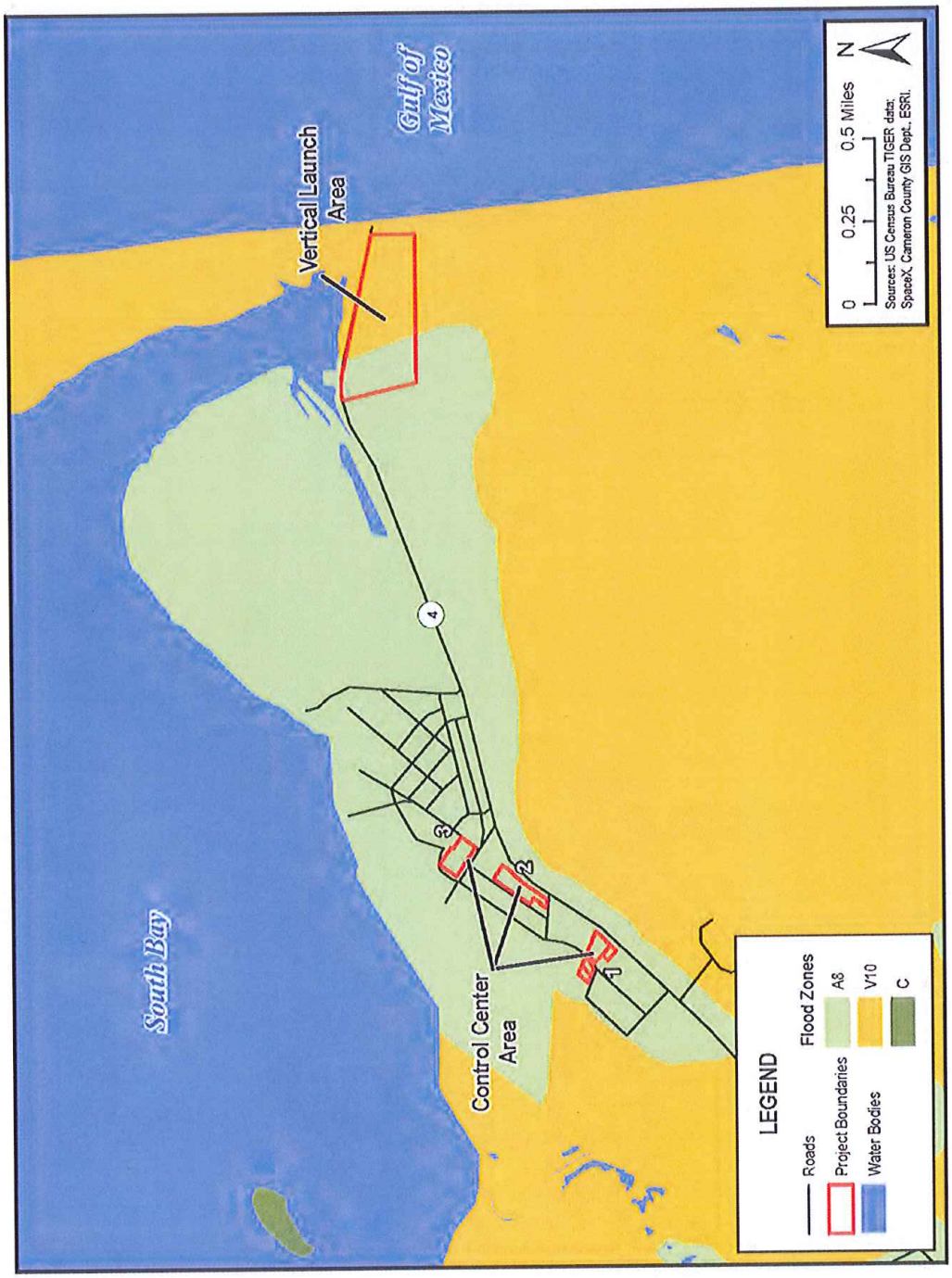


Figure 5. Space X facilities.

Figure 6. Facilities within the vertical launch area.

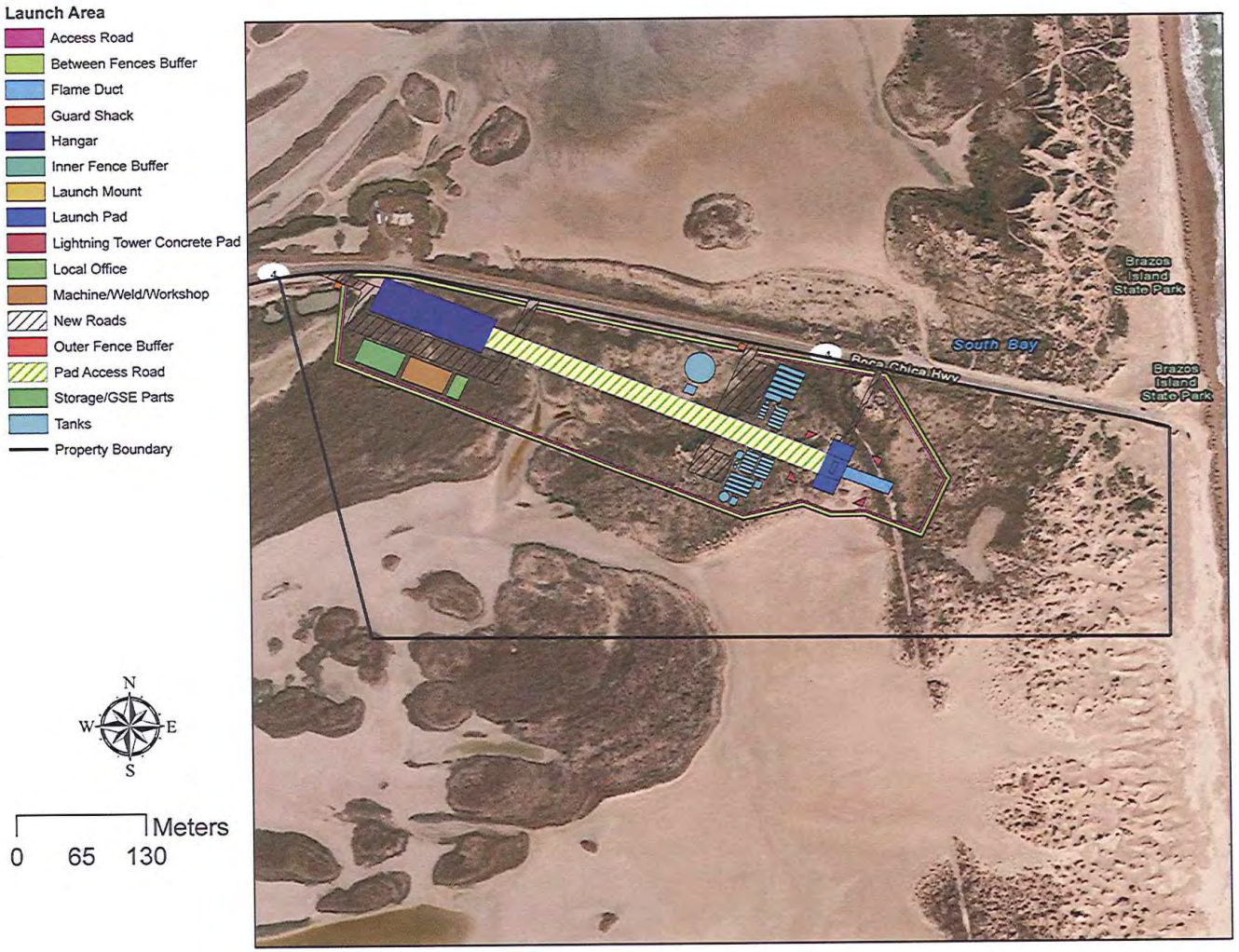


Figure 7. Control center area.

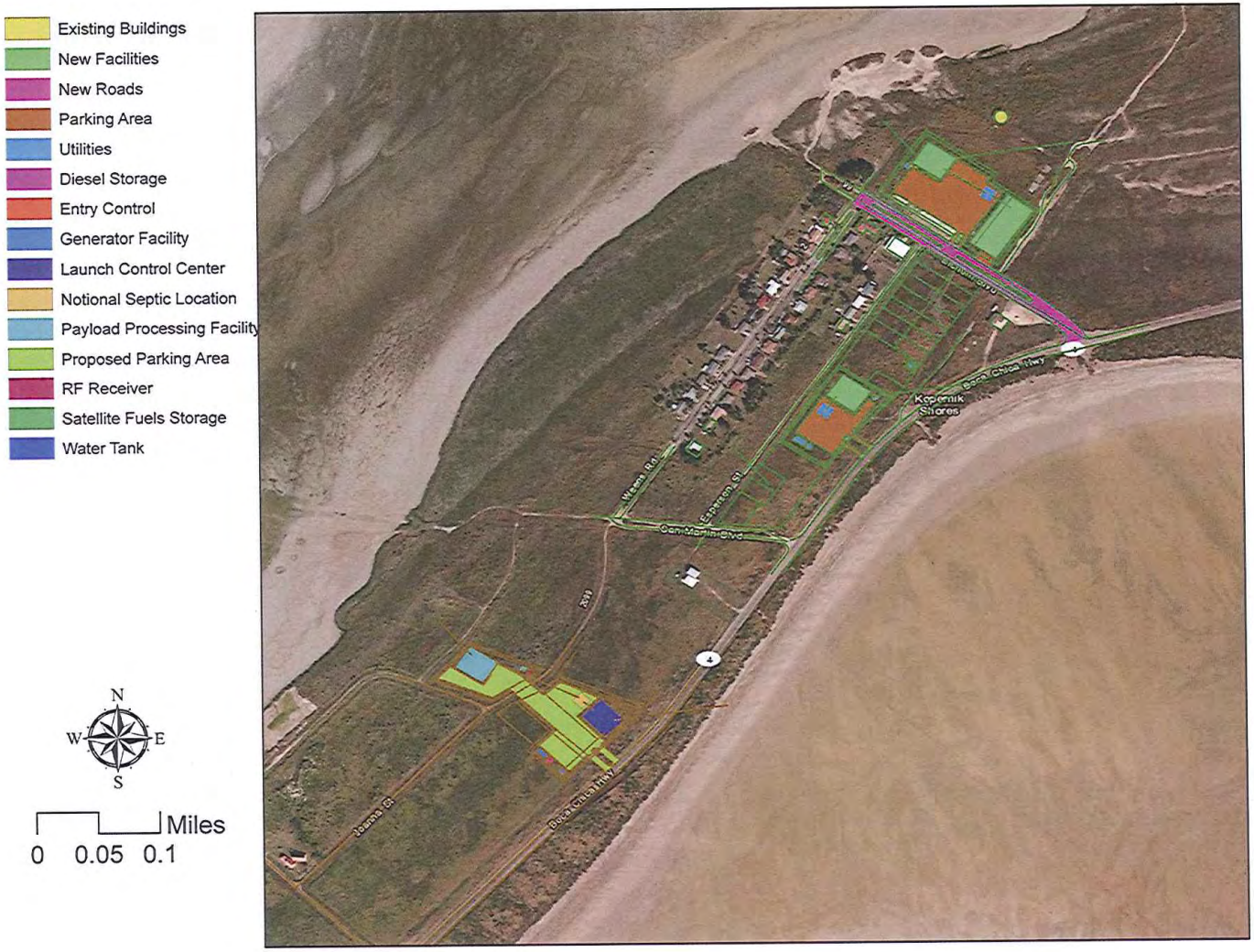


Figure 8. Launch Vehicles (A. Falcon Heavy), (B. Falcon 9).

A.

B.

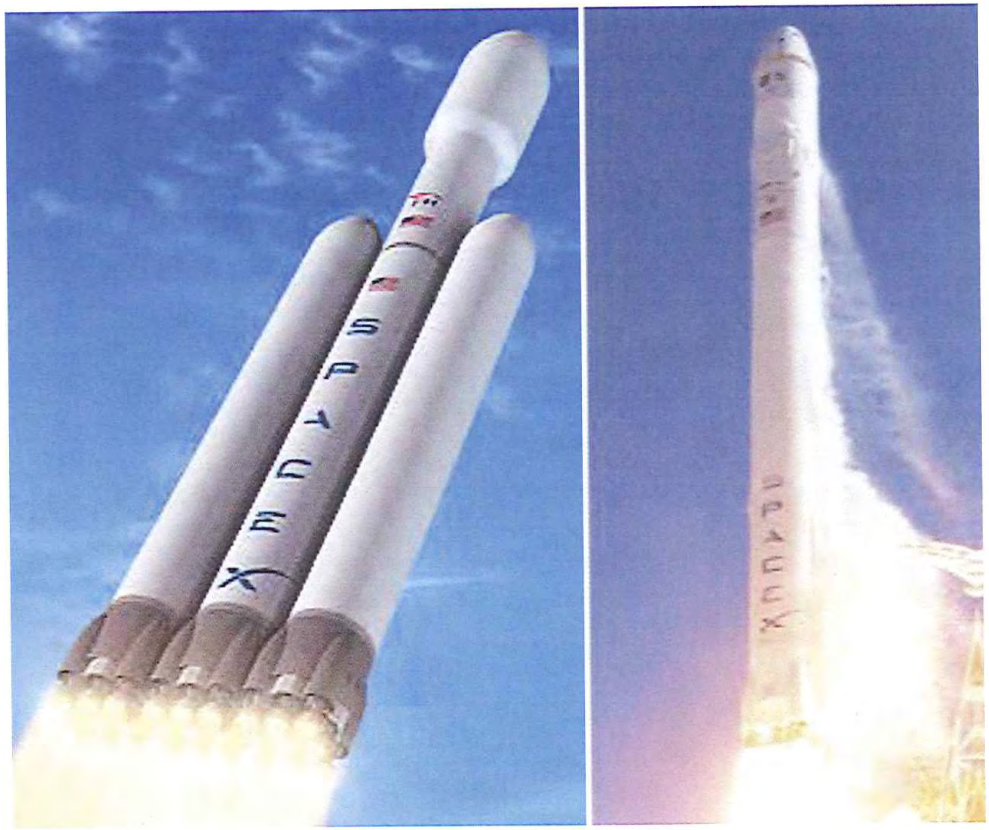


Figure 9. Day closure area.

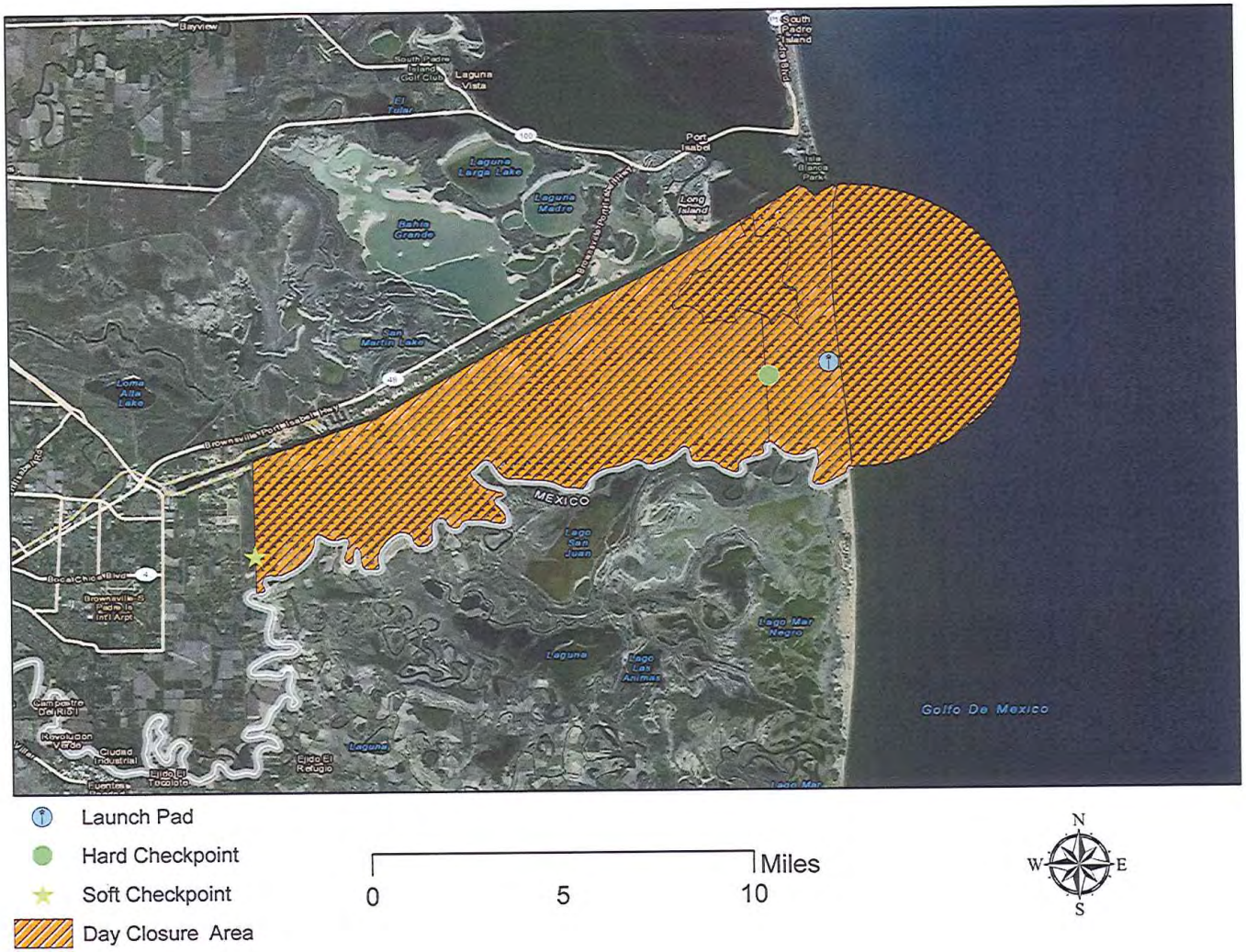


Figure 10. **Known red knot migration stopover areas.** Well-known stopover areas are shown on this map for reference. However, large and small groups of red knots, sometimes numbering in the thousands, occur in suitable habitats all along the Atlantic, Caribbean, and Gulf coasts.

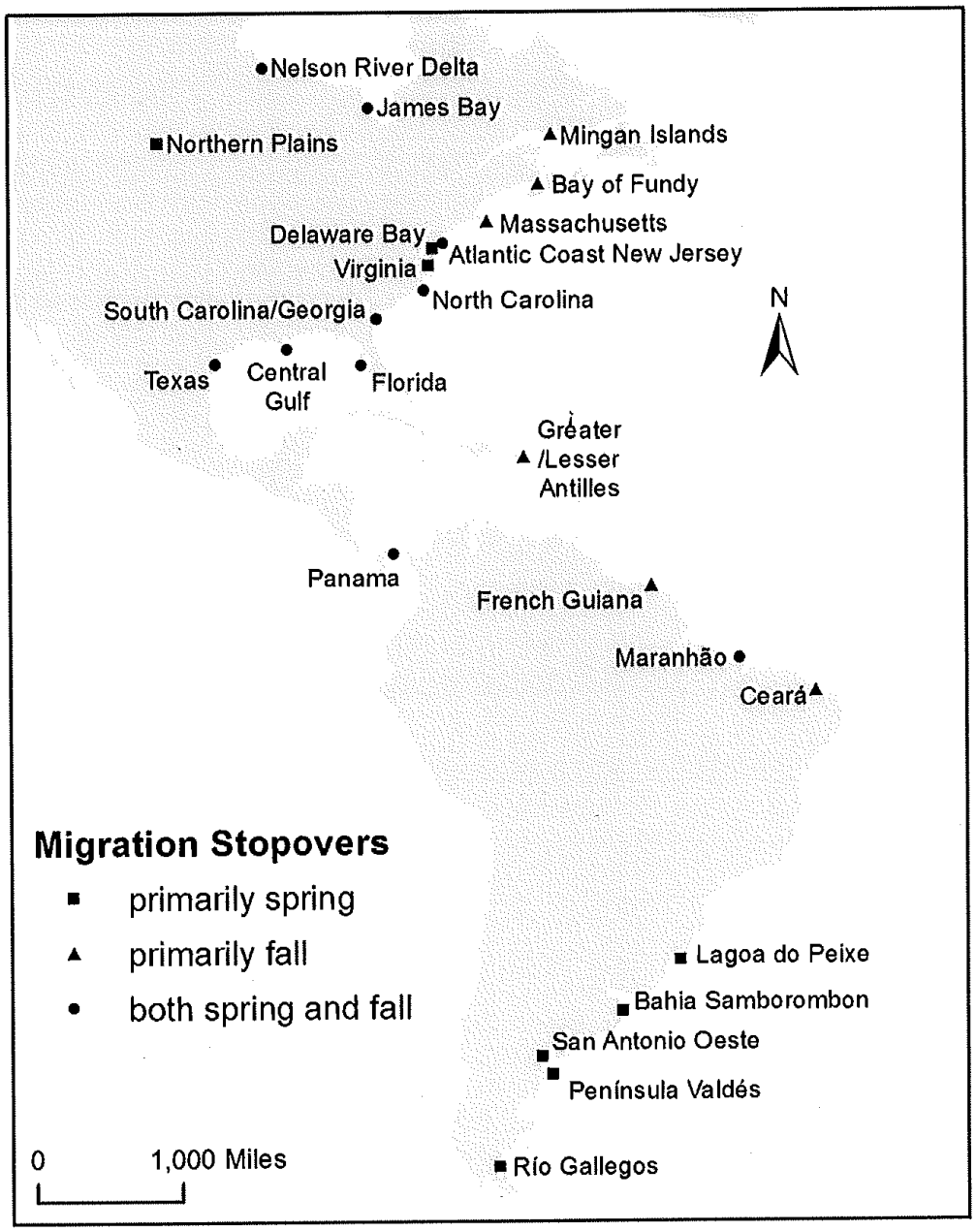


Figure 11. Lomas in the Bahia Grande area

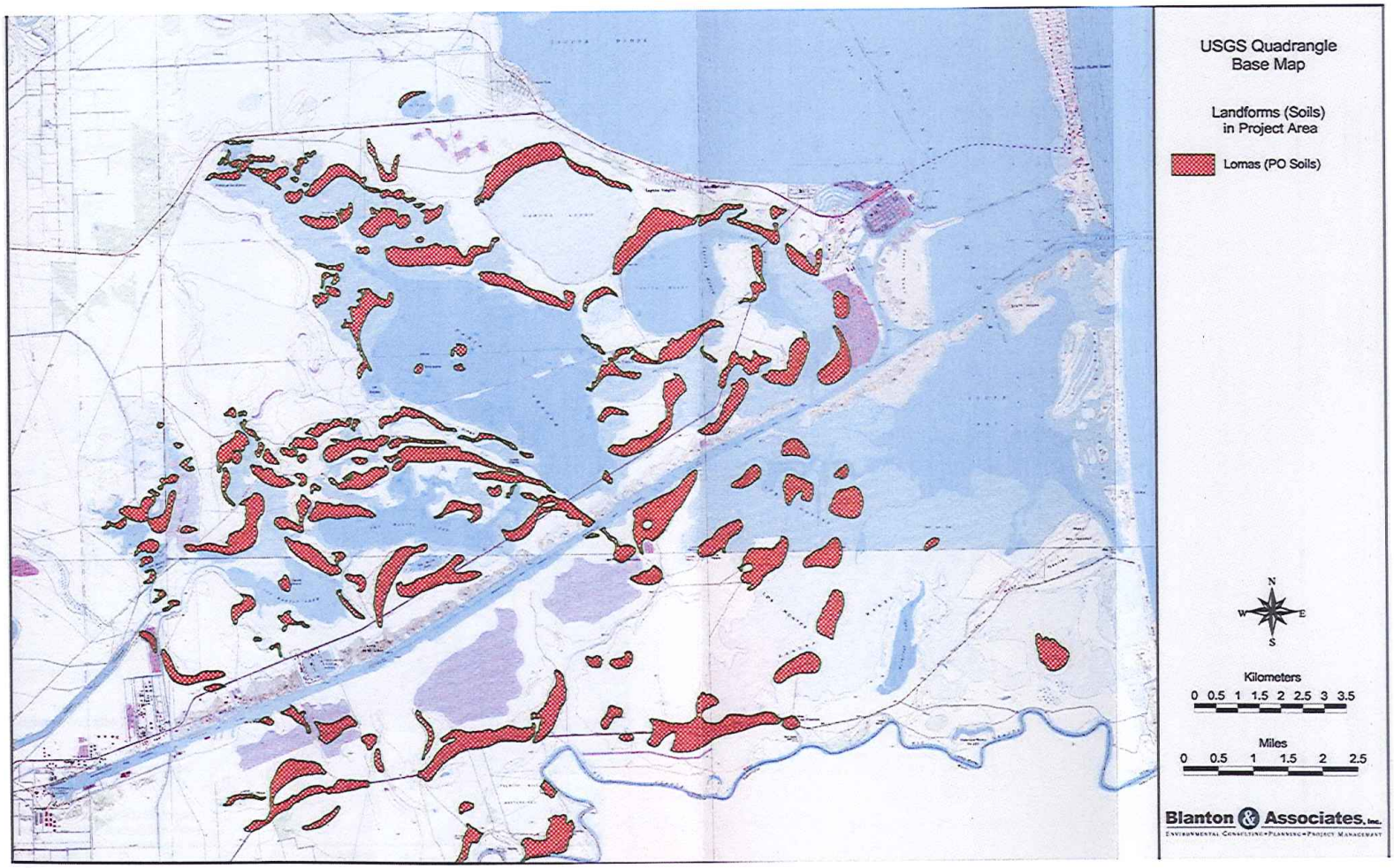


Figure 12. Rio Grande wildlife cooridor.

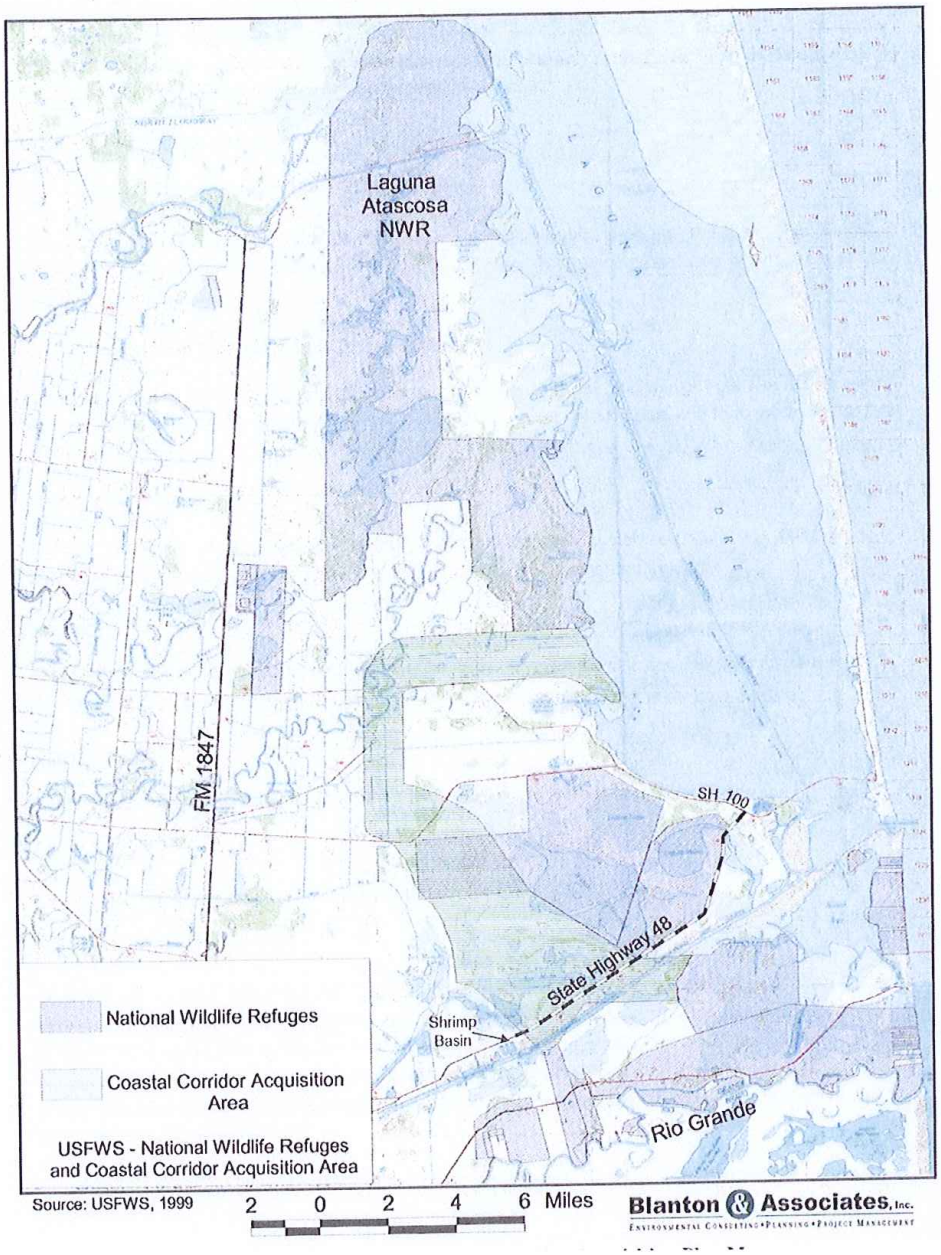


Figure 13. Nesting sea turtles in the action area.

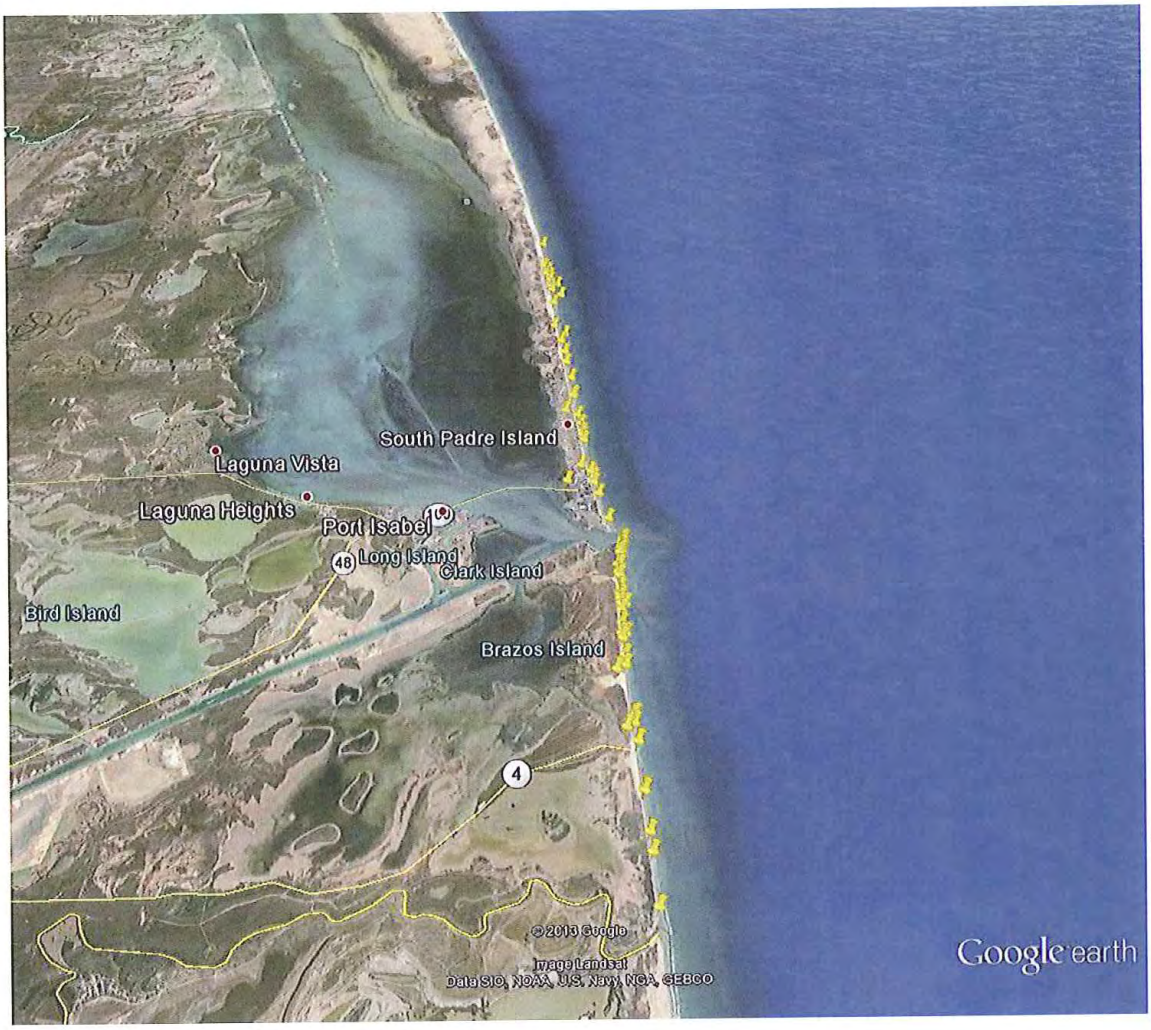


Figure 14. Red knot observations near the project location.

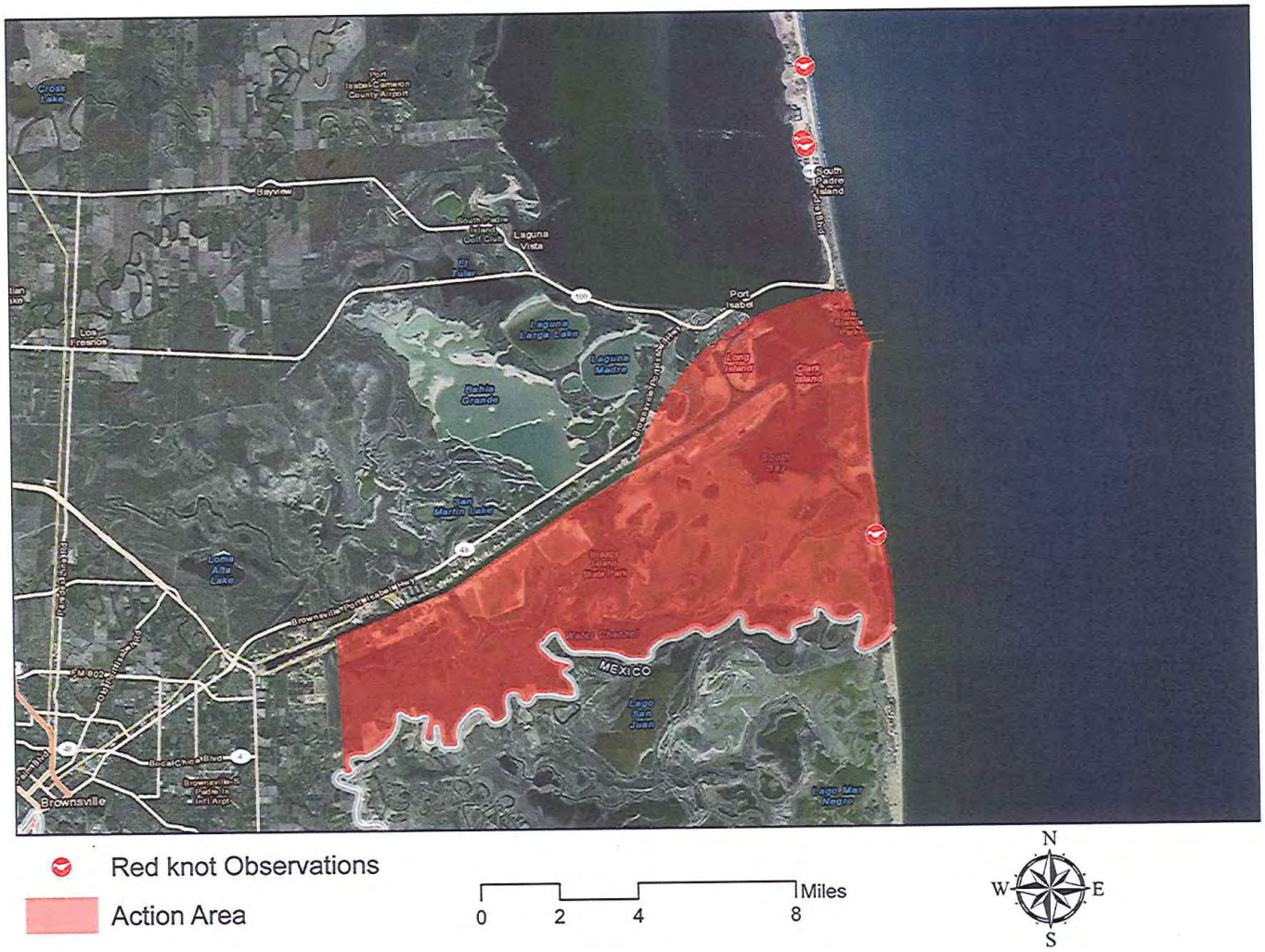


Figure 15. Potential piping plover critical habitat vegetation conversion.

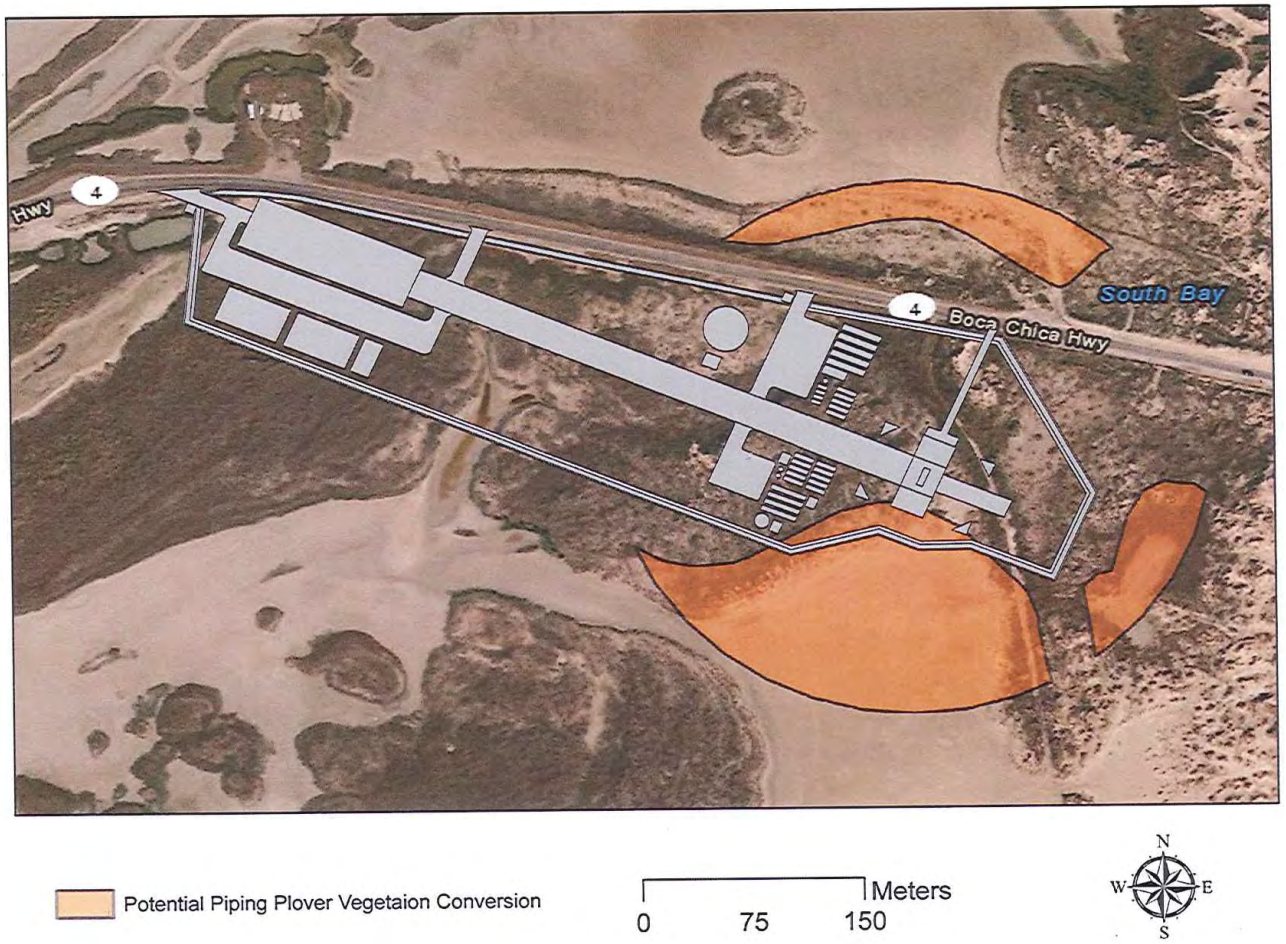


Figure 16. Authorized take for piping plover critical habitat, and 1,000 foot vegetation monitoring area.

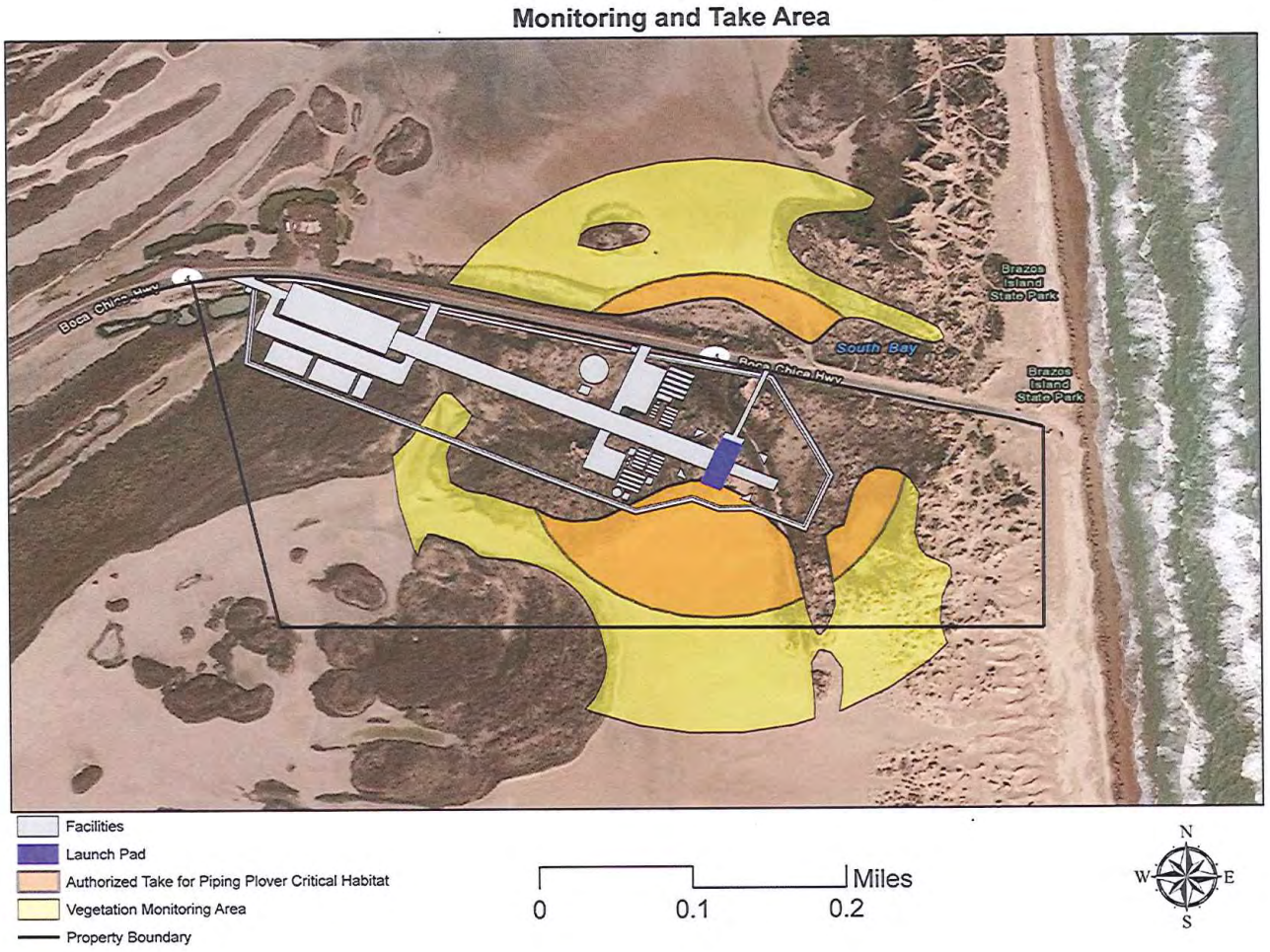


Figure 17. Vapor cloud resulting from launch.



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
c/o TAMU-CC, Campus Box 338
6300 Ocean Drive
Corpus Christi, Texas 78412

February 4, 2013

Stacey M. Zee
Commercial Space Transportation, AST-100
Federal Aviation Administration
800 Independence Ave, SW
Suite 325
Washington, DC 20591

Consultation Number 02ETCC00-2012-I-0186

Dear Ms. Zee:

The U.S. Fish and Wildlife Service (Service) has reviewed Preliminary Draft Environmental Impact Statement (PDEIS), Version 4, SpaceX Texas Launch Site, Volume I, Executive Summary and Chapters 1-14, January 2013, Prepared by Federal Aviation Administration (FAA), Office of Commercial Space Transportation, Washington, DC. Service comments on the PDEIS follow.

Additionally, the Service has received your letter, dated January 4, 2013, requesting initiation of Formal Section 7 Consultation for the Proposed Issuance of Launch Licenses and/or Experimental Permits for the Proposed SpaceX Texas Launch Site, Cameron County, Texas. The Service is in the process of reviewing the Final Biological Assessment (BA), Potential Effects on USFWS-Listed Species for the Issuance of Launch Licenses and/or Experimental permits for the Proposed SpaceX Texas Launch Site, Cameron County, Texas which was included in the PDEIS Volume II, Appendix G. The Service's comments on the BA will be provided in a separate letter to FAA. General comments, however, regarding the impact of the proposed project on federally listed threatened and endangered species, as addressed in the PDEIS are included in this letter.

GENERAL COMMENTS:

The primary adjacent land manager, the National Wildlife Refuge System (NWR), and the effects that the proposed project will have on refuge property are scarcely addressed throughout the PDEIS. Impacts of the project on resources managed by the NWR, both habitat and wildlife, need to be more fully and directly addressed. For example, references in the PDEIS regarding the management of launch-watching visitors make note of coordination only with Texas Department of Transportation (TXDOT) and area law enforcement entities although, NWR-managed lands would be most impacted. Exhibit 2-1 clearly depicts the presence of the NWR-managed lands which are located almost continually on both sides of State Highway 4 (SH 4)

from the proposed facility west for approximately 14 miles. Furthermore, the PDEIS does not demonstrate that the writers understand the nature of the landscape of the area proposed for SpaceX Texas and the long-lasting impacts that a single impact can cause. In the semi-arid environment of the area, damage to the land from a single all-terrain vehicle track scouring vegetation or rutting unvegetated tidal flats can persist for many years and set up a chain reaction of changes to the landscape.

Although the PDEIS dedicates several pages in the first chapter documenting public involvement and support for the project, any attempt to assess the numbers of and impacts from launch-watching visitors is absent from the PDEIS. Throughout the document, reference is repeatedly made to "educate the public on safe and appropriate launch viewing locations". However, SH 4, a two-lane roadway with approximately 15-foot-wide adjoining right-of-ways (ROWs) can not provide parking areas for the public without incurring unsafe traffic conditions. Furthermore, the damage that would accrue to the ROW areas if used in this manner would be significant and long-lasting. A specific viewing area will need to be identified and the location coordinated with area land-owners and managers, such as the NWR, Texas General Land Office (TGLO), Texas Parks and Wildlife (TPWD), TXDOT and private property owners. Specifying a safe viewing area will not be enough, however, as access off-road to state and federally-managed lands could occur along with the associated damage to the landscape in this scenario. Project developers should be fully engaged in the identification of an appropriate viewing area as well in the protection of surrounding areas from the damaging effects of off-road-vehicle (ORV) traffic.

The Service is concerned that the PDEIS also does not address the impacts of project operations, particularly during launch events, on security needs of U.S. Customs and Border Patrol (CBP). The international border at the Rio Grande is less than 3 miles away from the launch site and within the launch day closure area as depicted in Exhibit 2-1. The CBP may need to develop additional measures to offset hindrance of CBP to patrol the lower portions of the Rio Grande when normal beach and other access options are not available because of launch activities. These security needs could result in impacts to NWR-managed lands that would require consultation with the Service. The Service recommends that FAA engage with CBP and the NWR in direct discussions regarding changes in security needs for the proposed closure area.

Throughout the PDEIS the term region of influence (ROI) is employed to describe the effects of various components of the proposed project. The geographic assignment of the ROI for these components varies with the type of action, and the PDEIS does not include a map for each of the referenced ROIs and its associated action. The Service recommends that the PDEIS be revised to identify the boundaries of the largest ROI for the project. It is the Service's assessment this would be, at a minimum, along a north-south line from the Brownsville Channel to the Rio Grande that begins at the location of the selected visitor viewing area, and extends east into the Gulf of Mexico at least the distance of the proposed water closure area although, the anticipated splash-down zone for the launch vehicle components would be better. Within the broadest ROI, the effects of other actions that are smaller ROIs, caused by the project should then be geographically identified, so that the Service can better provide our comment and assessment on FAA's determination of the impacts of the project actions.

Given the location of the proposed SpaceX Texas Launch Site, the development of a hurricane planning and response plan is vital. The PDEIS notes various actions with regards to handling hazardous materials related to construction transportation, operations, and accidental spills but these same response actions may differ dramatically in the event of a tropical storm or hurricane event threatening the lower Texas Coast. Additionally, as NWR-managed, and State-owned lands are immediately adjacent to the proposed facilities, at a minimum, representatives from these entities will need to be fully aware of SpaceX Texas' hurricane planning and response plan.

The Service is aware that technological advances related to space launch activities are continually advancing. In the PDEIS, it is noted - that SpaceX has utilized and subsequently decommissioned the Omelek Island used for launch of the Falcon 1 vehicle. Because of the remoteness and wildlife value of the proposed site, the Service recommends that the project proponent address the expected life of the project, that is, how many years that SpaceX would anticipate utilizing the proposed site. Additionally, the Service recommends that subsequent drafts of the EIS include at least preliminary plans for the removal and restoration of the site following decommissioning and closure of the site.

The Service is very concerned with regard to some of the actions already taken by SpaceX relative to the Texas Launch Site project. According to the **NEPA (40CFR 1500-1508) and Part 58**, the responsible entity is required to ensure that environmental information is available before decisions are made and before actions are taken. In order to achieve this objective, Part 58 prohibits the commitments or expenditures of funds until the environmental review process has been completed.

> Grantees may not spend either public or private funds, or execute a legally binding agreement for property acquisition, rehabilitation, conversion, repair or construction pertaining to a specific site until environmental clearance has been achieved.
>
> Grantees any and all actions that would preclude the selection of alternative choices before a final decision is made –that decision been based upon an understanding of the environmental consequences and actions that can protect, restore, and enhance the human environment (i.e., the natural, physical, social, and economic environment).
>
> Activities that have physical impacts or which limit the choice of alternatives cannot be undertaken, even with the grantee or other project participant's own funds, prior to obtaining environmental clearance.

For the purpose of environmental review process, "commitment of funds" includes:

> Execution of a legally binding agreement (such as a property purchase or construction contract as an example.

Not only is there a lack of viable alternatives, but the project proponents (Space X) have already violated **NEPA's Section 1506.1** (Limitations on Actions during the NEPA process). In a newspaper article in the Brownsville Herald on November 24, 2012 it stated: SpaceX continues to invest in Cameron County, buying more property as well as options it holds on other lands, as

the time nears to unveil the results of the environmental impact study. See the attached news article.

Section 1506.1 (in part) states the following:

1506.1 (a) Until an agency issues a record of decision as provided in Sec. **1505.2** (except as provided in paragraph (c) of this section), no action concerning the proposal shall be taken which would:

1. Have an adverse environmental iinpact; or
2. Limit the choice of reasonable alternatives.

(b) If any agency (e.g., the FAA) is considering an application from a non-Federal entity, and is aware that the applicant is about to take an action within the agency's jurisdiction that would meet either of the criteria in paragraph (a) of this section, then the agency shall promptly notify the applicant that the agency will take appropriate action to insure that the objectives and procedures of NEPA are achieved....

Space X has been buying up land in anticipation of the building the project at the Boca Chica location without adequately analyzing other viable alternatives, and have been committing resources to that site. The Service believes this action clearly limits the availability of alternatives and appears to violate the spirit and intent of NEPA.

FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES

Although the Service is currently engaged in our review of the BA for the proposed project, within the PDEIS document, a number of references and comments are made regarding Federally listed threatened and endangered species and the associated effects and impacts of the project to which the Service would like to address some general comments.

With regard to federally listed, nesting sea turtles, the PDEIS focuses primarily on the impacts of light from the facility. In some portions of the document, note is made that efforts will be made to keep lighting below the level of the dunes between the proposed facility and the gulf beaches. Elsewhere in the PDEIS, note is made that come construction work, such as pouring of concrete for the site's facilities, may need to occur at night. Additionally, lighting for security and safety needs will also be present. The Service expects that lighting needs and requirements for construction and operation are discussed in detail in the BA and include a proposal by SpaceX on how lighting associated with both construction and operation activities can be accomplished in an acceptable manner. Furthermore, other issues related to nesting sea turtles, such as allowing beach patrols to survey for nesting activities that occurred during a closure time, prior to re-opening the beach to the public, will need to be addressed as will training of SpaceX security personnel regarding nesting sea turtles.

With regard to federally listed ocelots and jaguarondis, as noted above, the Service is very concerned about the increase in traffic on SH 4 during construction, from operations personnel, and related to the launch-viewing public. The posting of signs to "Watch out for ocelots and

jaguarondis" will not be enough to avoid vehicle-wildlife strikes, including possible listed cats, given the estimated increase in traffic from the facility alone along the narrow roadway that is SH 4. Unfortunately, despite the acknowledgement of public support and enthusiasm for the project, the PDEIS does not attempt to estimate the increase in traffic that could occur from the launch-viewing public, draft a plan to direct and manage that traffic, or include suggestions on how to contain that traffic to authorized locations to avoid secondary impacts to the landscape.

With regards to piping plovers and piping plover critical habitat (CH), the PDEIS primarily addresses the direct effects to piping plover CH from construction of the proposed facility. It was not evident in the PDEIS that tidal flats within the fence boundary were included. Although in Chapter 4 note is made of the startle effects of noise on wildlife such as birds, the acoustic effects of a launch event on avian species that might be utilizing tidal flats and other habitats within the fence boundary is not mentioned. Additionally, the project proponent's Stormwater Pollution and Prevention Plan (SWPPP) will need to include not only the effects of erosion and sediment control but also how the SWPPP would prevent the introduction of vegetation into unvegetated tidal flats including piping plover CH.

With regard to the federally listed aplomado falcon, the PDEIS notes that within the footprint of the proposed facility, there are no existing perches for the aplomado falcon. The PDEIS does acknowledge that the facility could create perching opportunities; however, the document only discusses perches and perch-discouraging devices relative to the facility's tall structures, such as the water tower and the lightning towers but not other components such as the buildings and fences. An analysis of all components of the facility with regards to raptor use should be analyzed. Additionally, an assessment should be made of the potential of the facility, if constructed, to attract species such as swallows, which could in turn attract foraging raptors.

SPECIFIC COMMENTS:

The Service's specific comments on the PDEIS can be found in the attached excel spread sheet format that was provided by FAA. The structure of the PDEIS is such that many phrases and references are repeated throughout the document; therefore, the Service requests that where we have submitted a comment or suggested change, it be applied to the relevant sections throughout the document.

The Service appreciates the opportunity for continued coordination on the proposed SpaceX Texas project. If you have any comments or questions, please contact Pat Clements (pat_clements@fws.gov) or Ernesto Reyes (ernesto_reyes@fws.gov).

Sincerely,

for Allan M. Strand
Field Supervisor

Encl: News article - Valley Morning Star, "SpaceX acquires more properties", Nov. 24, 2012
SpaceX EIS PDEIS v4 Comment Matrix CCESFO

Comment No.	Page	Line No.	Comments	Reviewer/ Organization
1	Abstract & ES-3	17 in Abstract & 19 on ES-3	Statement that project will be occurring on undeveloped property is misleading. Although the proposed launch site is undeveloped, the proposed control center is immediately adjacent to (and would impact) a small residential community. Also, what about recreational development - albeit minimal, there is all-weather road access, trash pick up, beach maintenance, security patrols by county sheriff and DHS.	CCESFO
2	ES-3	20 to 21	Additional ROW may need to be acquired if TXDOT has restrictions or agreements with utilities currently located in the SH 4 ROW. In this case, impacts to areas adjacent to the ROW in the event that new easements will be needed. NWR manages the property on both sides of SH 4 almost continually for 14 miles west of the proposed project site.	CCESFO
3	ES-3	16-21	The Service recommends that note is made of the distance of proposed site from international border with Mexico, that is, approximately 2.92 miles.	CCESFO
4	ES-3	26 to 27	Note is made of the potential for impacts to hunting and fishing; however, wildlife watching and nature tourism, including bird watching, are important recreational activities for the Rio Grande valley, including the proposed project area. The Service recommends that the PDEIS include an assessment of the impacts of the proposed project on this sector of the local economy. As well as a more intentional review of area avian species, particularly those drawing birders to the area, that will be affected by the project. Regional bird lists would provide a good basis for investigating the range of birds that will be impacted by the presence and operation of SpaceX Texas should it be constructed.	CCESFO

Comment No.	Page	Line No.	Comments	Reviewer/ Organization
5	ES-3	28-29	The Service recommends deletion of sentence "The rest of the property would remain open space". This sentence implies that area outside of the 20-acre launch site proper would be undamaged when, in fact, the paragraph goes on to state that all of the area within the fences of the 56.5 acre site would be impacted in some way.	CCESFO
6	ES-3 -ES-4	35-39 & 1-3	This list should be revised to include lightning towers as these structures could impact avian species, including federally listed aplomado falcon and piping plover.	CCESFO
7	ES-4	27	Note made here that construction of control facility would involve leveling to of the land; however, on page 3-55, line 2, the statement is made that both launch facility and control facility are located in the 100 year flood plan. Note is made under activities for the launch site (page ES-3, line 30) that fill would be required to avoid frequent flooding of the site. The description of the control facility should be revised to note how flooding would be moderated. Elevating the control facility with fill would adversely affect the existing adjacent residential structures.	CCESFO
8	ES-5	4 to 6	Although the PDEIS states that "Space X would also coordinate with U.S. Border Patrol and Cameron County and state of Texas law enforcement to limit public access at two pre-defined checkpoints on State Highway 4 for up to 15 hours on launch day". The Service has a concern and questions how are access to side roads by spectators would be controlled. Furthermore, spectators going through Refuge and private land, would have off-road impacts to sensitive areas and nesting Aplomado falcons as an example.	CCESFO
9	ES-5	22-23	The PDEIS is not clear in defining the effects of the referenced increase in the numbers of workers to 150 by 2022. With the increase of workers will there need to be an expansion of the facilities, or will the initial construction be at a level to accommodate the maximum number of workers? What additional infrastructure will be needed and what are the expected impacts?	CCESFO

Comment No.	Page	Line No.	Comments	Reviewer/ Organization
10	ES-6 & ES-7	36-38 & 1-15	This section should also include consultation under Sec 7 of the Endangered Species Act.	CCESFO
11	ES-8	Table ES.6-1	**Compatible Land Use:** Under Construction impacts & Operations & Coastal Resources the determination is made that there will be "no significant impacts". The PDEIS does not include a definition for "coastal resources" nor an explanatory bases for this determination on what? Therefore, absent a completed consultation a permit from the USACE and other leases and/or concurrences from other coastal resource managers, including the NWR, the assessment of no significant impacts is premature at best.	CCESFO
12	ES-8	Table 6-1	**Compatible Land Use:** For Operations: The Service does not agree with the assessment of "no significant impacts" There will be significant impacts to the management of surrounding NWR and State Park lands due to the closures and activities associated with the launch, to the disruption, and possibly take of migratory birds, nests, eggs, and fledglings, as well as other coastal species, impacts to wetlands and development within the floodplain.	CCESFO
13	ES-8	Table 6-1	**Section 4(f) properties states:** The Service recommends that a determination is completed prior to finalizing the DEIS in order to determine if mitigation will be needed and to select appropriate mitigation.	CCESFO

Comment No.	Page	Line No.	Comments	Reviewer/ Organization
14	ES-8	Table ES.6-1	**Noise:** Impacts to wildlife - particularly nesting birds and sea turtles that are nesting or are in the nearshore waters should also be referenced in this section.	CCESFO
15	ES-9	Table 6-1	**Visual Resources and Light Emissions, under Operations.** There will also be visual impacts from lighting at night surrounding the facilities and security fence that could alter activities of wildlife or attract wildlife such as nighthawks to the vicinity.	CCESFO
16	ES-9	Table ES.6-1	The PDEIS does not define how, or if, impacts to Palmito Ranch Battlefield NHL would be mitigated. The Service requests additional information regarding mitigation to the this NHL.	CCESFO
17	ES-11	Table 6-1	**Biological Resources (Including Fish, Wildlife, and Plants, under Operations.** The Service does not agree with the no significant impacts assessment for this category, particularly with regards to operations of the proposed facility. The location that is selected for launch-watching public will be one of the critical factors in the final determination of the significance of the operations to Biological Resources. Utilizing the shoulders of SH 4 for parking, because they are narrow, will present a human and traffic safety issue, as well as danger to wildlife, particularly if large numbers of spectators want to be present. As noted elsewhere, for approximately 14 miles west of the launch facility, the property on both sides of the road is almost entirely under the management of the NWR. The determination needs to be made as soon as possible regarding where spectators will be during the launch viewing. How many vehicles can be accommodated and how will the areas around the viewing site and areas off-road up to the checkpoint will be protected during the closure periods.	

Comment No.	Page	Line No.	Comments	Reviewer/ Organization
18	ES-18	Table ES.8.1	**Compatible Land Use:** An additional measure that the Service recommends with regard to beach measures is participation in - or coordination of turtle patrols during sea turtle nesting season including the period following the closure events and before the public is allowed to return to the Gulf beaches.	CCESFO
19	ES-18	Table 8.1	**Noise:** Monitoring should include a plan or study that assesses the impacts of a launch even on wildlife, particularly nesting avian species and sea turtles	CCESFO
20	ES-18	Table 8.1	**Visual Resources and Light Resources.** The PDEIS is not clear in explaining how the project proponents plan to minimize the use of security and safety lighting. How will sufficient lighting for safe working conditions and security be accomplished by directing, shielding, or positioning the lighting of the facilities to the extent possible accomplish this without having impacts to sea turtles? The Service requests a draft plan, including drawings of proposed lighting fixtures and positioning to start assessing affects to wildlife resources. Elsewhere in the PDEIS note was made that lights would be below height of dunes - Is this is a mitigation measure that should be included in this section?	CCESFO

Comment No.	Page	Line No.	Comments	Reviewer/ Organization
21	ES-19	Table 8.1	**Water Resources:** The Service is concerned that no mention is made of monitoring vegetation encroachment as a result of operations - on unvegetated tidal flats, including piping plover critical habitat.	CCESFO
22	ES-20	Table 8.1	**Biological Resources, Wildlife states:** "Space X employees and construction personnel would be educated on the potential for vehicle collisions with wildlife and encouraged to reduce their speeds along State Highway (SH) 4 between the vertical launch and the control center". **Comment:** The Service does not agree that educating construction personnel on the potential for vehicle collisions with wildlife will be sufficient. Ocelot/jaguarundi habitat is located along both sides of SH 4 travelling between FM 511 and the launch facilities and much of the area is NWR-managed lands. The issues related to increase in traffic, during construction, related to operations, and resulting from spectator presence will need more deliberate assessment than posting signs can accomplish. Specifically, what needs to be done related to increase traffic, traffic speed, and the enforcement of selected actions.	CCESFO
23	ES-20	Table 8.1	**Biological Resources, Wildlife:** The statement is made here and elsewhere in the document that "Space X would coordinate with TxDOT to maintain clear shoulders on the road edges to allow drivers to easily see foxes along the road edge and reduce incidents of road kill". The Service is does not understand why the authors of the PDEIS selected foxes to reference in this section. More realistically, the concern is for ocelots, jaguarundi, white-tailed deer and nilgai along the narrow shoulders of SH 4 and crossing the roadway. An assessment should be made, in light of the anticipated significant increase in traffic that would occur as a result of the project, of the need for appropriately sited wildlife crossings and fencing to afford some protection to wildlife in the areas along SH 4.	CCESFO

Comment No.	Page	Line No.	Comments	Reviewer/ Organization
24	ES-20	Table 8.1	**Biological Resources, Wildlife, Item 1):** With regard to the reference SWPPP, as noted in comments above, the Service is concerned about stormwater and other runoff flowing into currently unvegetated tidal flats and causing vegetation expansion/encroachment into Piping Plover Critical Habitat.	CCESFO
25	ES-20	Table 8.1	**Biological Resources, Wildlife, Item 4):** Education of public regarding safe places to watch launch is not sufficient. The Service expects SpaceX to do more than educate the public, the Service expects SpaceX to participate in securing areas for public access and to secure other areas from public access and the resulting damage that would accrue to the landscape.	CCESFO
26	ES-21	Table 8.1	**Biological Resources, Wildlife, Item 5):** The Service recommends that explanation be provided with regard to the management goal of monitoring for piping plover and aplomado falcons. Simply identifying the presence/absence of these listed species, with out a related response/management action would not avoid harassment and/or take. Additional actions should be identified and implemented as a result of consultation with the Service.	CCESFO
27	CH.1-1	3 to 4	As the PDEIS repeatedly highlights that the options available for analysis are the preferred Cameron County site and the no-build alternative, the project proponent should be more forthright in seeking project aspects which would support their selected alternative rather than minimizing impacts of the project on fish and wildlife resources, including endangered species and impacts to National Wildlife Refuge property.	CCESFO
28	CH.1-4	13	The Omelek Island, an existing facility, is not discussed under the alternatives options although it appears that infrastructure is already in place that could be upgraded to accomplish the proposed additional work.	CCESFO
29	CH.1-5	6 to 23	This section should be revised to include consultation under section 7 of the Endangered Species Act.	CCESFO

Comment No.	Page	Line No.	Comments	Reviewer/ Organization
30	CH.2-7	11 to 20 & 30 to 35	CBP will need to be included in coordination for closure of area during launch activities. The Service remains concerned that the project proponent is focusing only on access via SH 4 and Boca Chica Beach although there is considerable vulnerable area south of SH 4 that could be accessed from points before the established checkpoints.	CCESFO
31	CH.2-9	7 to 9	During sea turtle nesting season, (March 15-October 1) sea turtle nesting monitoring needs to be conducted while ATV's are patrolling the beach areas. Additionally, night patrols should be avoided due to light and noise disturbance while turtles are coming in to nest. This could impact sea turtles nest recovery when nests surveys could not be conducted due to beach closure.	CCESFO
32	CH.2-13	14 to 26	The Service requests additional information regarding the amount of water that would be vaporized and expelled, and the fate of that water vapor. The Service is concerned about the re-deposition of water from the Deluge Water System onto unvegetated tidal flats.	CCESFO
33	Ch. 2-14	20-23	The Service would like to be briefed regarding at what point the decision would be made to truck potable water to the facility (and the associated traffic needs) or that a well would be used to provide deluge water.	CCESFO
34	CH.2-14	31 to 36	Given the remoteness of the proposed project site and the open landscape, the Service is concerned about the minimal security that is being proposed as the site could be accessed via ATV's from off-road areas and the habitat and landscape could suffer significant damage in such an event.`	CCESFO
35	Ch. 2-14-15	`37-38 & 15`	The PDEIS needs to include a description of the habitat that would be located between the two fence lines. As generally depicted in Exhibit 2-2, the security fence would cross some wetland areas. Are these areas proposed to be filled? If not, what impacts could accrue to wildlife, including shorebirds, that might forage between the fencelines, particularly during a launch event?	CCESFO

Comment No.	Page	Line No.	Comments	Reviewer/ Organization
36	Ch. 2-16	10 to 12	Will the RF antenna dishes provide raptor perches or will they be design to discourage bird perching. The Service would like to receive additional information regarding the proposed design.	CCESFO
37	Ch. 3-3	16-22	The Service would like to be briefed on the discussions with TGLO regarding beach closures during launch events.	CCESFO
38	Ch. 3-7	Exhibit 3.1.1	The Service recommends that this exhibit identify State-owned submerged lands.	CCESFO
39	Ch. 3-10	3 to 11	The Service recommends that the PDEIS include a discussion of how accommodation of launch-viewing spectators will not impact NWR-managed lands.	CCESFO
40	Ch. 3-13	3 to 6	In this section and throughout the PDEIS, the impacts of noise on wildlife, including avian species and sea turtles is poorly addressed.	CCESFO
41	Ch. 3-43	Exhibit 3.7-1	Although the title of the exhibit is "Surface Waters in the ROI" the depiction is of federal and state-owned lands, not surface waters. The Service recommends that this map be revised to depict the intended resource.	CCESFO
42	Ch. 3-49	17 to 18	Will the presence of brine in the groundwater affect the usefulness of well water for the deluge system? Will SpaceX Texas need to determine the salinity level to assess if it could adversely affect the launch vehicles and components?	CCESFO
43	Ch. 3-59	1 to 5	The Service recommends that the ROI for biological resources include, at a minimum, areas that would be utilized by launch-viewing spectators. Additionally, the ROI should encompass habitat that could be affected or altered by runoff from the facilities. As noted elsewhere, the actual impacts associated with the operation of SpaceX Texas, if constructed, would extend far beyond the footprint of the proposed sites.	CCESFO

Comment No.	Page	Line No.	Comments	Reviewer/ Organization
44	Ch. 3-62 to 63	Table 3.8-1	A notation is made of 'O', 'P', or 'U' in the column identifying the likely occurrence of the species in this table. The Service requests information regarding how these designations were assigned. With regard to the avian species listed, Service staff have observed in the immediate project vicinity northern aplomado falcons, red knots, peregrine falcons, and reddish egrets. Additionally, some individuals of red knots are known to stay year round on the lower coast, not just during the winter.	CCESFO
45	Ch. 3-64	10 to 12	Does the 0.7 acres of piping plover critical habitat that is referenced include all of the unvegetated tidal flats within the security fencelines? The Service is concerned that piping plovers, and other shorebirds, that could be foraging on tidal flats within the fenceline could be affected by noise, startle response, and flying into the fence. Several species of shorebirds tend to flush low and along the ground.	CCESFO
46	Ch. 3-66	21 to 26	The PDEIS should identify and assess the effect of the perching structures for aplomado falcons that would be added to the landscape as a result of the construction of SpaceX Texas.	CCESFO
47	Ch. 3-70	5 to 6	As noted above, the PDEIS needs to be revised to note that although most red knots are found during the winter months, individuals of this species are know to remain on the lower Texas coast year-round	CCESFO
48	Ch. 4-2	19 to 22	This section should be revised to include and address the expected growth induced impacts resulting from launch-viewing spectators.	CCESFO
49	Ch. 4-3	27 to 29	If hydraulic studies indicated the need to elevate the proposed facilities, then additional impacts would occur to surrounding areas from runoff and water diversion around the elevated areas	CCESFO
50	Ch. 4-4	26 to 28	This section should be revised to note that an amendment of the Texas Open Beaches Act will be needed during launch events.	CCESFO
51	Ch. 4-5	6 to 15	The Service requests additional information regarding the amount of and fate of water that would be converted to water vapor from the deluge activities associated with a launch event.	CCESFO

Comment No.	Page	Line No.	Comments	Reviewer/ Organization
52	Ch. 4-5	28 to 37	This section should be revised to include an estimate of spectators at a launch event and the associated impacts of the spectators on the area resources.	CCESFO
56	Ch. 4-8	22 to 28	The Service requests the locations envisioned for the referenced food services and lodging facilities noted in this section. As noted elsewhere, most of the land on both sides of SH 4 for approximately 14 miles west of the proposed facility is NWR-managed land.	CCESFO
54	Ch. 4-9	27 to 32	The semi-arid nature of the landscape around the proposed facility is such that even short term impacts will leave long-term scars and damage.	CCESFO
55	Ch. 4-9	33 to 34	The Service asks, what about the impacts to nesting sea turtles if nests go undetected because turtle patrols are excluded?	CCESFO
56	Ch. 4-9	35 to 36	As noted elsewhere, the Service requests that an analysis of runoff from the site be conducted to determine the extent of induced vegetation encroachment into unvegetated tidal flats, including piping plover critical habitat.	CCESFO
57	Ch. 4-11	31 to 32	The PDEIS has not provided sufficient information for the Service to agree that the impacts from construction would be temporary.	CCESFO
58	Ch. 4-12	33 to 34	The Service does not agree that closures every month would be an unsubstantial lessening of use or enjoyment. These monthly closures will have impacts for the public in accessing these public lands for the enjoyment of hunting, fishing, ecotourism, and recreational access to the beach, monitoring and management of sea turtle nesting detection, bird surveys, and other management operations.	CCESFO
59	Ch. 4-13	7 to 9	The PDEIS has not provided sufficient information for the Service to agree that impact of noise during launches would be short-term on birds nesting in the project vicinity.	CCESFO

Comment No.	Page	Line No.	Comments	Reviewer/ Organization
60	Ch. 4-15	8 to 10	Since the PDEIS notes elsewhere that reduced traffic speeds could be required for SpaceX construction and operations vehicles, the assessment of noise impacts should be conducted for slower-moving vehicles. The number of vehicles referenced for construction and operation if traveling at 50 mph would be involved in wildlife-vehicle collisions.	CCESFO
61	Ch. 4-28	9 to 10	As described here, lighting of the launch area and interior facilities will likely transmit light over the sand dunes and potential affect sea turtle orientation when they hatch.	CCESFO
62	Ch. 4-38	30 to 34	The Service is interested in receiving a copy of the SWPPP that addresses not only erosion and sedimentation effects, but alteration of the vegetation (on non-vegetation) land cover on adjacent areas.	CCESFO
63	Ch. 4-56	17	The Service recommends this be revised to read "The proposed vertical launch and control center areas do not have suitable denning habitat for the jaguarundi and ocelot".	CCESFO
64	Ch. 4-59	3 to 11	The PDEIS should incorporate the presence of the facility structures, and use as perches, into its analysis of effects.	CCESFO
65	Ch. 4-62	4 to 7	Jaguarundis are active both in daytime and at night, the Service does not agree with the statement that this species is "primarily diurnal". Also, since some work and associated traffic and activities would be conducted at night, the PDEIS should develop best management practices specifically for night travel.	CCESFO
66	Ch. 4-73	27 to 30	The Service recommends that the NWR be included in the notification loop in the event of a failure on the launch pad as refuge-managed resources are likely to be impacted in the event	CCESFO
67	Ch. 4-79	28 to 33	This statement is contrary to notations elsewhere in the PDEIS that work would be focused during daylight hours to minimize light pollution and associated adverse effects to nesting sea turtles.	CCESFO
68	Ch. 4-81	4 to 6	What about the employees of the NWR system and Customs and Border Patrol that would be excluded from assigned work or patrol areas?	CCESFO
69	Ch. 4-85	34 to 36	The NWR staff should be included as well in this coordination of road closure.	CCESFO

Comment No.	Page	Line No.	Comments	Reviewer/ Organization
70	Ch. 4-90	24 to 27	The Service could not tell from the way that traffic numbers were presented in the PDEIS if this additional traffic load was included in the numbers being used for calculation of the increase in traffic on SH 4. The Service requests additional information regarding what kind actions/work is associated with the traffic load referenced in the PDEIS.	CCESFO
71	Ch. 4-93	3 to 7	Throughout the PDEIS, the impact that would result from the crowds of people showing up to view the launch is not addressed. A specified parking location needs to be identified as well as plans to address the problem of spectators driving off of SH 4 onto, and damaging, the Refuge, state-owned lands, and private lands such as those owned by the Port of Brownsville. Impacts to areas such as mudflats would be severe and long lasting, as would the damaging effects of associated impacts from littering. A plan for enforcement of the use of assigned spectator viewing area should also be included in the PDEIS.	CCESFO

United States Department of the Interior

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March 1, 2013

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Consultation No. 02ETCC00-2012-I-0186

Dear Ms. Zee:

This letter acknowledges the U.S. Fish and Wildlife Service's (Service) receipt of your January 4, 2013, letter requesting initiation of formal section 7 consultation under the Endangered Species Act. The Service has reviewed the accompanying "*Final Biological Assessment Potential Effects on USFWS-Listed Species from the Issuance of Launch Licenses and/or Experimental Permits for the Proposed SpaceX Texas Launch Site, Cameron County, Texas*" (BA) that was prepared to analyze the potential impacts of Federal Aviation Administration (FAA) Office of Commercial Space Transportation's (AST) actions on listed species and critical habitat and is providing the following comments and require the following information to complete the initiation package.

General Comments:
If a project could impact a listed species, the regulatory determination is "may affect, is likely to adversely affect. The reasons outlined are all impacts that reach a level of a "may affect". We understand SpaceX is making that determination for various species, but please reword.

To properly assess impacts to species, the Service needs a proposed Closure Plan for Launch dates including checkpoints, potential parking and viewing locations and, a Spill Plan that also addresses issues outlined in our November 13, 2012. We also request refined maps and figures depicting construction plans, lighting, vegetative cover, and piping plover critical habitat within the action area as well as inside the facility and locations of informative signs along State Highway 4. Monitoring plans for tracking potential induced vegetative changes as a result from construction activities, fencing, security, stormwater discharge and launch activities including a pre-, during, and post construction presence/absence surveys to be conducted needs to be developed and provided for review. Final plans should be available for review and final comment prior to construction.

We recommend further coordination with the City of Brownsville, South Padre Island, the Refuge, Customs and Border Patrol (CBP), Texas Parks and Wildlife (TXPW), Texas General Land Office (TGLO), Texas Department of Transportation (TxDOT), U.S. Coast Guard (USCG), Padre Island National Seashore (PINS), U.S. Army Corps of Engineers (USACE), Environmental Protection Agency (EPA), and local and State law enforcement to identify launch day procedures, closures, spectator viewing locations, sea turtle patrols, lighting, wetland impacts, and contaminant and runoff issues.

Specific Comments
Page 1-3 to 1-5 FAA has made a "no effect" determination for the South Texas ambrosia (*Ambrosia cheiranthifolia*), Texas ayenia (*Ayenia limitaris*), red-crowned parrot (*Amazona viridigenalis*) and the Sprague's pipit (*Anthus spragueii*), based on lack of suitable habitat within the action area. The Service does not provide concurrences on "no effect" determinations.

The Service also recommends FAA reconsider conservation needs for the candidate Sprague's pipit. Migration and wintering ecology are poorly known, but wintering Sprague's pipits can be found in both densely and sparsely vegetated grasslands. This species tends to avoid areas with too much shrub encroachment and they may also be found near or on trails and roads or near water. With the possibility of it becoming listed and the proposed facility site in suitable habitat, further consideration is recommended.

Pg 1-5 1.32 Critical habitat. We recommend a summarized description of the critical habitat unit and its constituent elements.

Pg 2-4 2.1.1.2 First and Second Stages "Thrust on lift-off is approximately 3.9 million lbs. of force."
What is the range of impact and is the cone of effect straight down?

Pg. 2-5 Table 2-1 What is the purpose of this chart?
Are these being compared to the Falcon because in the future some of these may fly out of the Space X facility?

Pg. 2-5 "A reusable suborbital launch vehicle could consist of a Falcon 9 Stage 1 tank with a maximum propellant…"
Is this a variety of the Falcon 9?

Pg. 2-6 The Dragon is equipped with an electronic locator beacon that allows a prepositioned salvage vessel to recovery it. Is the Falcon 9 and other rockets equipped with such a device that would allow a more timely recovery?

Pg. 2-6 "The support would consist of a truck to deliver a crane and four delivery trucks for delivery of the first state, second stage, interstage, and payload. In addition, fuel and helium trucks would make weekly deliveries."
If there is only going to be one launch monthly what is the purpose of delivering fuel and helium weekly, thus increasing traffic coming in and out of the facility?

Pg. 2-8 2.1.1.5 Pre-Launch Activities, "…Two dress rehearsals (usually within 32 days of launch) are typical. Wet dress rehearsals would require restricted access in the immediate vicinity of the vertical launch area and control center area during rehearsal. Closure of the nearby beaches would not be necessary for these rehearsals."
What would the closure area be?

"…Approximately 2 weeks in advance of the launch, the County Commissioner's Court would be notified…also coordinate with Secretariat of Communications and transportation-Mexico…U.S. Coast Guard…"
Because the Lower Rio Grande Valley National Wildlife Refuge (NWR) owns property on both sides of Hwy 4, it is important they be included in that coordination.

Pg. 2.8, Launch Day Activities, "…surveillance of areas within the vicinity of the vertical launch area to ensure public safety…"

Is this surveillance only within the sites perimeter between the two fences or does it extend further outside the fence line? How will this be accomplished?

Pg. 2-9 "…checkpoints include a hard checkpoint, which is a "no pass"…The second checkpoint would be a soft checkpoint, on State Highway 4 just east of Massey Way, …"
Checkpoints should be well coordinated with the City, County and federal and state agencies and preferably located at or near the spectator viewing areas.

Pg. 2-9 "…The USCG could conduct boat patrols to sweep the offshore area…A final sweep of the closure areas by helicopter could also be implemented…After launch, SpaceX and FAA would notify law enforcement when the area is safe…The checkpoints would be raised and the public areas would be re-opened."
Nesting sea turtle season is March 15th to October 1st. Beaches are patrolled by certified sea turtle patrollers for tracks and nests. Once located the nest are removed and transported to a facility for incubation. The Service recommends prior to launches, sea turtle patrollers be allowed to sweep the beach for signs of nesting sea turtles and allowed time to remove the eggs. Prior to reopening the beach, sea turtle patrollers should do a sweep of the beach and no one should be allowed to enter the area until the sea turtle patrollers have completed the search and have notified authorities it is clear for entrance. Sea turtle patrols are to be coordinated with Donna Shaver, Sea Turtle Coordinator, at Padre Island National Seashore. Offshore, National Marine Fisheries Service should also be coordinated with during this time due to potential sea turtles staging in the gulf waters.

Pg. 2-11 Deluge Water System "…During a launch event, the water tower would discharge approximately 50,000-200,000 gal of water…"
Is this water standing water? We recommend no standing pools of water be left for an undetermined amount of time as not to attract birds to use the area.

Pg. 2-11 2.1.1.7 Nominal trajectories "…The majority of the launches would be conducted between the hours of 7:00 a.m. and 7:00 p.m. However, there could be one nighttime launch per year…"
The ocelot and jaguarundi are most active at dusk and at dawn, and launches scheduled later in the morning and earlier in the evening would be less harassing to the cats. The Service also recommends the nighttime launches occur outside the sea turtle nesting season (March 15 to Oct 1).

Pg. 2-11 Nominal trajectories "…In addition to an Expected Casualty Analysis (EC), Space X would also perform a Debris Analysis…"
The Service would like to review the EC and Debris Analysis.

Pg. 2-11 2.1.1.8 Launch Failure "…the most likely being a fire on the launch pad. An explosion on the launch pad would likely spread debris. As discussed above, the FAA evaluates SpaceX's Debris Analysis to ensure that the hazard area is of sufficient size to ensure public safety…"
Does the Debris analysis describe a plan of action in the event of an explosion, debris or an out of control wildfire impacting refuge lands?

Pg. 2-12 2.1.2 Construction Activities " …The proposed schedule for all construction activities is a 24-month period from start to finish."
Will all construction occur during the day? The area and surroundings should to be maintained free of litter with a minimal amount of disturbed area needed for waste storage.

Pg. 2-12 2.1.2.1 Vertical Launch Area "Proposed facility and infrastructure construction at the vertical launch area would include…"

A list is provided, however, the project does not include light poles, lightning towers, RF transmitters or tanks. Utilities are listed but type is not discussed. Will these utilities be above ground or buried? A complete descriptive list of specific utility components is needed.

"...construction at this location would generally involve fill material to raise land levels high enough to avoid frequent flooding..."
Where will the fill come from? How much fill is anticipated? How will fill affect current runoff patterns? Is there a plan that will discuss potential flooding events, or hurricane storm surge? How will contaminants be secured? A spill protection plan should be developed and implemented at the construction site to ensure that any toxic substances are properly handled and that escape of these materials into the environment is prevented.

"...In addition, most of the larger facilities and those that must support heavy loads would be required to have pilings sunk to support the facilities..."
Pile driving would make more noise than just regular construction noise. In reviewing typical noise levels of familiar noise sources and public responses it is estimated that around 50 feet from certain construction activities the noise level would be approximately 85 dBA, at around 300 feet the noise level would be approximately 70 dBA, and at around 5,280 feet (1 mile) the noise level would be approximately 45 dBA (which would be less than expected ambient noise levels). When pile driving occurs, noise levels would be 101 dBA at 50 feet and will attenuate to 70 dBA at around 1,800 feet. Pile driving should not occur at night and noise levels for day and night construction should be minimized. To assist in minimizing noise occurring from generators being used during construction, the Service recommends all generators be in baffle boxes (a sound-resistant box that is placed over and around a generator), have an attached muffler, or use other noise-abatement methods in accordance with industry standards.

Pg. 2-14 Launch Pad "...The flame duct would extend southeast from the launch pad to direct the heat and combustion products and the initial sound blast toward the Gulf of Mexico..."
Manatees and sea turtles can be sensitive to sound waves that travel from the launch site to the Gulf. The closer a species is to that sound wave, the greater the impact and the greater the startle effect for birds. An analysis of this should be presented in the BA. A biological monitoring plan should be developed for both pre-and post-launch, as well as monitoring during launch if it can be conducted safely to better understand the effects of rocket launches on piping plover and red knot behavior.

Pg. 2-14 "...All pad lighting would consist of high-pressure sodium (HPS) light fixtures. The number of pole lights would be finalized during the site design process..."
Artificial lights from launch facilities could disorient sea turtles and hatchlings at night, causing them to move in the wrong direction, away from the ocean water or nesting beach. Although, the Kemp's ridley sea turtle is mostly a day nester, it occasionally does nest at night like the other four sea turtle species. If a nest is missed by the sea turtle patrols, hatchlings could also emerge from their nest and be disoriented. If any glowing portion of the light is directly visible from the beach then this source is likely to be a problem. Light can be direct and it can be indirect. Indirect light can reach the beach by reflecting off buildings or trees that are visible from the beach. SpaceX has constructed other facilities and should be able to estimate the number of lights necessary to light the facilities. A Light Management Plan should be developed to address lighting configurations. The intent of light management is to confine light landward of areas where sea turtle nests are deposited. The landward extent of nesting habitat is usually the line of permanent dune vegetation. In the absence of a well-defined dune system, nesting may occur anywhere where sufficient areas of open sand are present. The Light Management Plan should include the use of low-pressure sodium light fixtures, shielding of lights and special management steps where lights are visible from the beach, including lighting inspections prior to an dduring sea turtle nesting season to correct any lighting issues that may have occurred. The Light Management Plan can also include actions

taken to minimize impacts for the ocelot and jaguarundi. All lights should be shielded to direct light only onto the work site and the area necessary to ensure the safety of the workers. The source of all lighting is to be located within the perimeter fence. Lighting intensity along the perimeter fence should average 1.5 foot-candles; and through the use of downshielding, direct illumination shall be no more than 5 feet outside of the perimeter fence.

Pg 2-14 Deluge Water System "...during launch approximately 50,000 -200,000 gal would be discharged...all water not vaporized will be contained in a retention basin underneath pad...deluge water withdrawn from underlying aquifer"
How much water is usually vaporized? Is there any potential problem obtaining water due to potential drought water conservation restrictions?

Page 2-15 Access Roads and Infrastructure "...required road access would be determined by final selected site layout and design..."
The perimeter of all areas to be disturbed during construction or maintenance activities should be clearly demarcated using flagging or temporary construction fence, and no disturbance outside that perimeter shall be authorized and in particular tidal flats and dunes. All access routes into and out of the potential action disturbance area shall be flagged, and no construction travel outside those boundaries should be authorized. When available, areas already disturbed by past activities or those that will be used later in the construction period shall be used for staging, parking, and equipment storage. Construction speed limits should not exceed 35 mph on major unpaved roads and 25 mph on all other unpaved roads. Night time travel speeds should not exceed 25 mph. Properly design and locate roads where roadbed erosion into federally listed species habitat is avoided or minimized and the potential for entrapment of surface flows within the roadbed due to grading should also be avoided or minimized. The depth of any pits created should be minimized so animals do not become trapped. Materials such as gravel or topsoil should be obtained from existing developed or previously used sources, not from undisturbed areas adjacent to the property. Drip pans underneath equipment, containment zones used when refueling vehicles or equipment, and other measures shall be implemented. Non-hazardous waste materials and other discarded materials, such as construction waste, shall be contained until removed from the construction site.

"...Utilities would include power, potable water, fire protection water and a septic system...Power and data lines would be buried within the ROW along State Highway 4...or a well and water distribution lines would be installed to provide potable water in the area..." Locations and origination of power lines and water lines need to be identified.

2.2 Proposed Conservation Measures
Pg. 2-20 Construction "...In conjunction with final design, a Stormwater Pollution Prevention Plan (SWPP) would be prepared..."
Runoff from the facilities may cause listed species habitat changes. The Service is unable to assess impacts without information on where the runoff will be discharged to.

Pg. 2-21 "...The construction contractor would be given directions and requirements regarding equipment washdown... to ensure construction-related equipment arrives on site free of mud or seed-bearing material..."
Pumps, hoses, tanks, and other water storage devices should be cleaned and disinfected with 10 percent bleach solution at an appropriate facility before use at another site and water is not to enter any surface water area. If a new water source is used that is not from a treated or groundwater source, the equipment will require additional cleaning. This is important to kill any residual disease organisms or early life stages of invasive species that may affect local populations of federally listed species. Transmission of disease vectors and invasive non-native aquatic species can occur if vehicles cross infected or infested

streams or other waters, and water or mud remains on the vehicle. If these vehicles subsequently cross or enter uninfected or noninfested waters, the disease or invasive species may be introduced to the new area. To prevent this, crossing of streams or marsh areas with flowing or standing water should be avoided, and if not avoidable, the vehicle is to be sprayed with 10 percent bleach solution. Materials used for on-site erosion control in uninfested native habitats should be free of non-native plant seeds and other plant parts to limit potential for infestation. Since natural materials cannot be certified as completely weed-free, if such materials are used, there should be follow-up monitoring to document establishment of non-native plants, and appropriate control measures implemented for a period of time to be determined in the site restoration plan. During follow-up monitoring and during maintenance activities, invasive plants found on the site should be removed. Removal will be done in ways that eliminate the entire plant and remove all plant parts to a disposal area. Any chemical applications on refuge land must be used in coordination with the refuge manager to ensure accurate reporting. Herbicides can be used according to label directions. The monitoring period will be defined in the site restoration plan.

Pg. 2-21 "...discharge water associated with these activities would not reach surrounding water bodies or pools unless specifically authorized in a CWA discharge permit..."
Will SpaceX be applying for a 401 permit?

Pg. 2-21 "...A qualified biologist would be present during the beginning of the construction period to provide all construction personnel with an environmental worker-education briefing that would include..."
It is recommended that an on-site biological monitor or appropriately certified employee be present during construction and post construction. It is also recommended that an endangered species education component be included. This is to familiarize the workers with species in the area, impacts that may occur, and conservation measures being implemented and their responsibilities under the ESA and should be provided to all new incoming employees.

Pg. 2-21 "...to comply with the MBTA, project design and any above-ground utility upgrades within the control center area would incorporate raptor protection measures...equipped with devices to discourage nest building and perching (e.g., monopole technology and visual fright devices)..."
What is meant by "above-ground utility upgrades? Are those different than the utility lines that are to be buried and why only at the control center? Will bird deterrents be installed at the launch facility?

Pg. 2-21 "...SpaceX would coordinate with the Texas Department of Transportation (TxDOT) regarding funding the installation of ....signs along State Highway 4..."
This effort should not only be coordinated with TxDOT, but also with the refuge. We recommend possibly another sign stating that there should be no parking in the right-of-way.

Pg. 2-22 "...A qualified biologist would conduct pre-construction monitoring for piping plovers and aplomado falcons...would include presence/absence surveys and would record the number and location of piping plovers and aplomado falcons..."
Surveys should include red knots and be done pre-construction, during construction and post construction. Piping plover habitat should also be delineated preconstruction to establish a baseline and post construction to document potential vegetative changes in designated critical habitat due to the project.

Pg. 2-22 "...Where applicable, new lighting should be installed with multiple levels of control so that lighting levels can be matched with specific activities..."
What would those specific activities be that would require having multiple levels of control and does that mean that the light could potentially be dimmed if necessary during sea turtle season?

Piping Plover

Pg. 4-5 "...During the migratory survey, 2 piping plovers were on Boca Chica Beach and 5 were observed on Boca Chica flats. During the winter survyes, no piping plovers were observed on Boca Chica Beach, while 11 were observed on Boca Chica Flats.
SpaceX only provides 2009 survey data. The Service recommends updating the information. In 2009, surveys in the Boca Chica Beach and South Bay area, which are within the SpaceX action area documented approximately 305 sightings. In 2012, Service staff sighted approximately 150 piping plovers in the area. We also recommend field surveys extending over a 90-day period during which the site should be inspected for absence or presence of piping plovers pre-construction following Ted L. Eubanks, Jr, Winter Survey Guidelines for Piping Plovers in Texas. There should also be a preconstruction habitat baseline survey and a post construction monitoring be developed to document changes in behavior and habitat changes from construction, operations and launches. A map of your proposed facility overlaid on piping plover habitat and delineating habitat types would be very useful in determining impacts to piping plovers.

Northern Aplomado Falcon
Pg. 4-8 Northern Aplomado falcons need approximately 2,000 acres of foraging habitat. Foraging habitat does occur within the action area. A map delineating that habitat would be helpful to assess impacts. As stated there are several known nesting locations within or closely adjacent to the action area. One of the closest known sites is approximately 4.3 miles to the northwest. In 2011, one of the closests nest was surveyed and did have nestlings. Nesting occurs between April and July. There is a potential that noise and lighting from construction and launches could cause the falcon to seek other foraging grounds and potentially abandon the active nest. The Peregrine Fund surveys the area annually and has information on the nests sights. We recommend SpaceX coordinate with The Peregrine Fund to obtain more information on these sights, the potential for impacts, and develop a monitoring plan.

Gulf Coast Jaguarundi/Ocelot
Pg. 4-9 to 4-12 Jaguarundi are more diurnal than the nocturnal ocelot. However, both cats are most active at dawn and dusk. Launches are scheduled for 7 a.m. or 7 p.m. We recommend a review of launch times and assess whether it would be possible to adjust launch times. The action area does not contain the cats quality habitat, however, as stated, the area is used as a travel corridor. There is documentation provided in the BA that cats have occurred in this area. The use of such travel habitat is important so removal or changes to such habitat should be avoided or minimized. Mapping of habitat and potential travel areas should be overlaid with your facility to assess the extent of impact. The Service has previously consulted with TxDOT on State Highway 48 and as part of that consultation a road crossing was constructed to allow passage for the cats. Road mortality from increased traffic on State Highway 4, lighting from the facilities and noise impacts from operations and launches may impact the cats. Recommendations on lighting, speed limits, education have been provided in the specific comments. We recommend close coordination with the NWR to protect lands that provide habitat for the cats and reduce potential road mortality.

Sea Turtles
Pg. 4-12 to 4-13 The Kemp's ridley sea turtle is primarily a day nester, however, may occasionally nest at night like the other four sea turtle species. Although, sea turtle patrols attempt to locate nests and relocate the eggs, some nests may be missed. Those missed nests are subject to predation, crushing from beach traffic and/or vibration impacts. Emerging hatchlings are also subject to mortality from predation or crushing or disorientation by being trapped in car ruts and lighting on the beach. Therefore, it is important that SpaceX coordinate with the Padre Island National Seashore, Sea Turtle Coordinator, to implement a sea turtle monitoring plan to patrol beaches during construction and launch activities and a Light Management Plan to manage lighting effects on beaches. Regular light surveys prior to and during sea turtle season are necessary to ensure lighting is adjusted if necessary especially after storm events. A protocol should be established to notify the Sea Turtle Coordinator and the Service for procedures prior to

and after launches and in the event a turtle should be found on the beach during potential security patrols. We also recommend coordination with NMFS to address potential impacts to staging nesting sea turtles in the water during launch activities.

West Indian Manatee
Pg. 4.2.10 Sonic booms from the launches cause sound waves that travel to the Gulf of Mexico waters. Manatees could potentially be affected by these sound waves. Further discussion is recommended on those potential impacts in the BA.

Red Knot
Pg. 4-21 Approximately 30+ red knots sighted in May of 2012 in the action area. Several hundred migrate through the area, and some have been known to stay throughout most of the year. Conservation measures implemented for the piping plover should be considered for the red knot, a candidate for listing.

The formal consultation process for the project will begin when we receive all the information, or a statement explaining why that information cannot be made available. We will notify you when we receive this additional information; our notification will also outline the dates within which formal consultation should be complete and the biological opinion delivered on the proposed action.

Comments on the Preliminary Draft Environmental Impacts Statement were prepared in a separate letter. If you have any questions or concerns about this consultation or the consultation process in general, please call Mary Orms at (361) 994-9005, ext. 246.

Sincerely yours,

Allan M. Strand,
Field Supervisor

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
http://sero.nmfs.noaa.gov

F/SER31:AB

Mr. Michael McElligott
Manager, Space Transportation Development Division
United States Department of Transportation
Federal Aviation Administration
800 Independence Avenue, Southwest
Washington, DC 20591

MAR 05 2013

Re: Proposed SpaceX Texas Launch Site, Cameron County, Texas

Dear Mr. McElligott:

This responds to your January 4, 2013, letter requesting National Marine Fisheries Service (NMFS) concurrence with your determinations pursuant to Section 7 of the Endangered Species Act (ESA). The Federal Aviation Administration Office of Commercial Space Transportation (FAA/AST) intends to issue launch licenses and/or experimental permits to Space Exploration Technologies Corporation (SpaceX) for the operation of a vehicle launch program from a private site in Cameron County, Texas. You determined that the proposed activity may affect but is not likely to adversely affect five species of sea turtles. NMFS' determinations regarding the effects of the proposed action are based on the description of the action in this informal consultation. Any changes to the proposed action may negate the findings of the present consultation and may require reinitiation of consultation with NMFS.

The proposed project is located in southeast Texas, just north of the Mexican border. SpaceX intends to construct a vertical launch area and a control center. The launch area will be located adjacent to the eastern terminus of Texas State Highway 4, at the geographic coordinates 25.99684°N, 97.15523°W (World Geodetic System 1984). The control center will be built approximately 2 miles east of the launch area, just outside Boca Chica Village. No construction will occur in marine waters or on adjacent beaches. These facilities will be used by SpaceX to launch up to 12 commercial space missions per year. All launch trajectories will be to the east and the first stage of launch vehicles will be released into the Gulf of Mexico approximately 550 miles downrange of the launch site. SpaceX will locate (via telemetry) and recover all first stages within 24 hours unless they become damaged and sink. Retrieval of first stages will require the use of a salvage ship.

Five species of sea turtles (loggerhead, green, hawksbill, Kemp's ridley, and leatherback) and sperm whales, protected by the ESA, can be found in or near the action area and may be affected by the project. The project is not located within the boundaries of any critical habitat for these species.

Sea turtles and sperm whales may be affected by operational activities if they were to be struck by released first stages or falling debris associated with a launch failure. However, all of these effects are discountable as it is highly unlikely a launch failure will occur (e.g., 1 launch failure in 135 National Aeronautics and Space Administration (NASA) launches) or that a first stage will strike a protected species. A maximum of 12 launches will occur per year, resulting in the release of only 12 first stages. Given the infrequency of these events and the fact turtles and whales spend the majority of their time submerged as opposed to on the surface it is extremely unlikely that a protected species will be struck by released first stages or falling debris.

Protected species could also be affected by the discharge of fuels and propellants should a launch failure occur or from spillage of unspent fuel in released first stages. In the case of first stages that fall into the Gulf of Mexico, any unspent fuels will be minimal and quickly diluted by the vast quantity of seawater. Due to the small volume associated with this type of release, the infrequency of these events (12 per year), and the short duration most of these first stages are expected to be in the water (most recovered within 24 hours), any effects to protected species are extremely unlikely and discountable. In the unlikely event of a launch failure (only 1 launch failure in 135 NASA launches), larger volumes of fuels and propellants could potentially be released into the Gulf of Mexico (provided the launch vehicle and fuels don't fully explode). In this scenario, SpaceX would follow the emergency response and cleanup procedures outlined in the Hazardous Material Emergency Response Plan. These procedures may include containing the spill using disposable containment materials and cleaning the area with absorbents or other materials to reduce the magnitude and duration of any impacts. In most launch failure scenarios at least a portion of the fuels will be consumed by the launch, and any remaining fuels will be diluted by seawater and biodegrade over time (timeframes are variable based on environmental conditions). NMFS believes a launch failure is extremely unlikely and thus effects from a failure are discountable. However, in the event of a launch failure, NMFS believes effects from the discharge of fuel and propellants will be insignificant because impacts will be temporary and localized.

Nesting sea turtles and hatchlings may be affected by lights associated with the two facilities and any night time operations. However, the applicant is working with the US Fish and Wildlife Service to develop and implement a light management plan aimed at minimizing any impacts to marine turtles. Further, only one night mission per year will be permitted resulting in only one night of nesting that could potentially be interrupted. Sea turtle eggs from nests on Boca Chica Beach are retrieved and transported to an incubation facility by Sea Turtle, Inc., so it is extremely unlikely that hatchlings will be affected by lights associated with the project. Therefore, NMFS believes any lighting effects to sea turtles will be insignificant (in the case of nesting females) or discountable (in the case of hatchlings).

This concludes your consultation responsibilities under the ESA for species under NMFS' purview. Consultation must be reinitiated if (1) a take occurs, (2) new information reveals effects of the action not previously considered, (3) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat in a manner or to an extent not previously considered, or (4) if a new species is listed or critical habitat designated that may be affected by the identified action.

We have enclosed other relevant information for your review. If you have any questions, please contact Adam Brame, consultation biologist, at (727) 209-5958 or by e-mail at Adam.Brame@noaa.gov. Thank you for your continued cooperation in the conservation of listed species.

Sincerely,

for Roy E. Crabtree, Ph.D.
Regional Administrator

Enc.: 1. PCTS Access and Additional Considerations for ESA Section 7 Consultations (Revised July 15, 2009)

File: 1514-22.V
Ref.: SER-2013-10162

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Appendix H
EDR Reports

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Coastal
Boca Chica Blvd
Port Isabel, TX 78578

Inquiry Number: 3410419.1s
September 14, 2012

The EDR Radius Map™ Report with GeoCheck®

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
Toll Free: 800.352.0050
www.edrnet.com

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Detail Map	3
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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

BOCA CHICA BLVD
PORT ISABEL, TX 78578

COORDINATES

Latitude (North):	25.9964000 - 25° 59' 47.04''
Longitude (West):	97.1525000 - 97° 9' 9.00''
Universal Tranverse Mercator:	Zone 14
UTM X (Meters):	684922.3
UTM Y (Meters):	2876429.8
Elevation:	1 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	25097-H2 MOUTH OF RIO GRANDE, TX MX28
Most Recent Revision:	1970
North Map:	26097-A2 PORT ISABEL, TX
Most Recent Revision:	1983

AERIAL PHOTOGRAPHY IN THIS REPORT

Photo Year:	2010
Source:	USDA

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL---------- National Priority List

EXECUTIVE SUMMARY

Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

CERCLIS ---------- Comprehensive Environmental Response, Compensation, and Liability Information System
FEDERAL FACILITY ---------- Federal Facility Site Information listing

Federal CERCLIS NFRAP site List

CERC-NFRAP ---------- CERCLIS No Further Remedial Action Planned

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

US ENG CONTROLS ---------- Engineering Controls Sites List
US INST CONTROL ---------- Sites with Institutional Controls

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State- and tribal - equivalent NPL

SHWS ---------- State Superfund Registry

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ---------- Permitted Solid Waste Facilities
CLI ---------- Closed Landfill Inventory
WasteMgt ---------- Commercial Hazardous & Solid Waste Management Facilities

State and tribal leaking storage tank lists

LPST ---------- Leaking Petroleum Storage Tank Listing
INDIAN LUST ---------- Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

UST ---------- Petroleum Storage Tank Database

AST ---- Petroleum Storage Tank Database
INDIAN UST ---- Underground Storage Tanks on Indian Land
FEMA UST ---- Underground Storage Tank Listing

State and tribal institutional control / engineering control registries

AUL ---- Sites with Controls

State and tribal voluntary cleanup sites

VCP ---- Voluntary Cleanup Program Database
INDIAN VCP ---- Voluntary Cleanup Priority Listing

State and tribal Brownfields sites

BROWNFIELDS ---- Brownfields Site Assessments

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ---- A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

ODI ---- Open Dump Inventory
DEBRIS REGION 9 ---- Torres Martinez Reservation Illegal Dump Site Locations
INDIAN ODI ---- Report on the Status of Open Dumps on Indian Lands

Local Lists of Hazardous waste / Contaminated Sites

US CDL ---- Clandestine Drug Labs
DEL SHWS ---- Deleted Superfund Registry Sites
PRIORITYCLEANERS ---- Dry Cleaner Remediation Program Prioritization List
US HIST CDL ---- National Clandestine Laboratory Register

Local Land Records

LIENS 2 ---- CERCLA Lien Information
LUCIS ---- Land Use Control Information System
LIENS ---- Environmental Liens Listing
HIST LIENS ---- Environmental Liens Listing

Records of Emergency Release Reports

HMIRS ---- Hazardous Materials Information Reporting System
SPILLS ---- Spills Database

Other Ascertainable Records

RCRA-NonGen ---- RCRA - Non Generators
DOT OPS ---- Incident and Accident Data
DOD ---- Department of Defense Sites
FUDS ---- Formerly Used Defense Sites

CONSENT	Superfund (CERCLA) Consent Decrees
ROD	Records Of Decision
UMTRA	Uranium Mill Tailings Sites
MINES	Mines Master Index File
TRIS	Toxic Chemical Release Inventory System
TSCA	Toxic Substances Control Act
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
SSTS	Section 7 Tracking Systems
ICIS	Integrated Compliance Information System
PADS	PCB Activity Database System
MLTS	Material Licensing Tracking System
RADINFO	Radiation Information Database
FINDS	Facility Index System/Facility Registry System
RAATS	RCRA Administrative Action Tracking System
IOP	Innocent Owner/Operator Program
NPDES	NPDES Facility List
UIC	Underground Injection Wells Database Listing
DRYCLEANERS	Drycleaner Registration Database Listing
ENF	Notice of Violations Listing
Ind. Haz Waste	Industrial & Hazardous Waste Database
ED AQUIF	Edwards Aquifer Permits
AIRS	Current Emission Inventory Data
MSD	Municipal Settings Designations Database
TIER 2	Tier 2 Chemical Inventory Reports
RWS	Radioactive Waste Sites
INDIAN RESERV	Indian Reservations
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
2020 COR ACTION	2020 Corrective Action Program List
GCC	Groundwater Contamination Cases
EPA WATCH LIST	EPA WATCH LIST
FINANCIAL ASSURANCE	Financial Assurance Information Listing
PCB TRANSFORMER	PCB Transformer Registration Database
PRP	Potentially Responsible Parties
COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
US FIN ASSUR	Financial Assurance Information

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants	EDR Proprietary Manufactured Gas Plants

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were not identified.

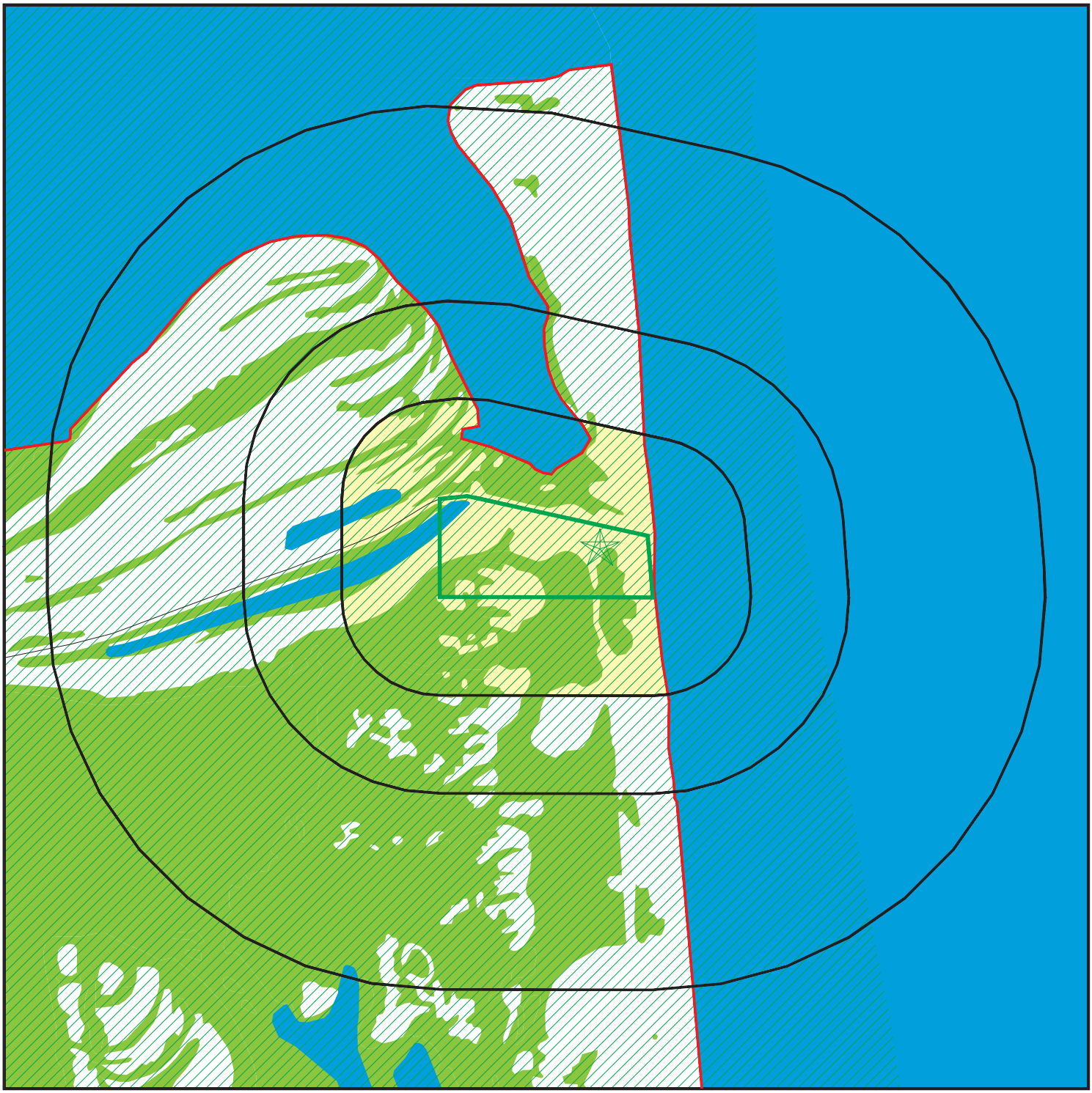
Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 6 records.

Site Name	Database(s)
BAYSIDE NET & TWINE CO	CERC-NFRAP
CITY OF PORT ISABEL LANDFILL	SWF/LF
CAMERON COUNTY FWSD NO 1 TRANSFER	SWF/LF
CAMERON COUNTY FWSD NO 1 TRANSFER	SWF/LF
CITY OF PORT ISABEL LANDFILL	SWF/LF
VALLEY FISHERIES	AST

OVERVIEW MAP - 3410419.1s



Target Property
Sites at elevations higher than or equal to the target property
Sites at elevations lower than the target property
Manufactured Gas Plants
National Priority List Sites
Dept. Defense Sites

0 1/4 1/2 1 Miles

Indian Reservations BIA
County Boundary
Oil & Gas pipelines from USGS
100-year flood zone
500-year flood zone
National Wetland Inventory

N

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Coastal	CLIENT:	SpaceX
ADDRESS:	Boca Chica Blvd Port Isabel TX 78578	CONTACT:	Steve Davis
		INQUIRY #:	3410419.1s
LAT/LONG:	25.9964 / 97.1525	DATE:	September 14, 2012 9:21 am

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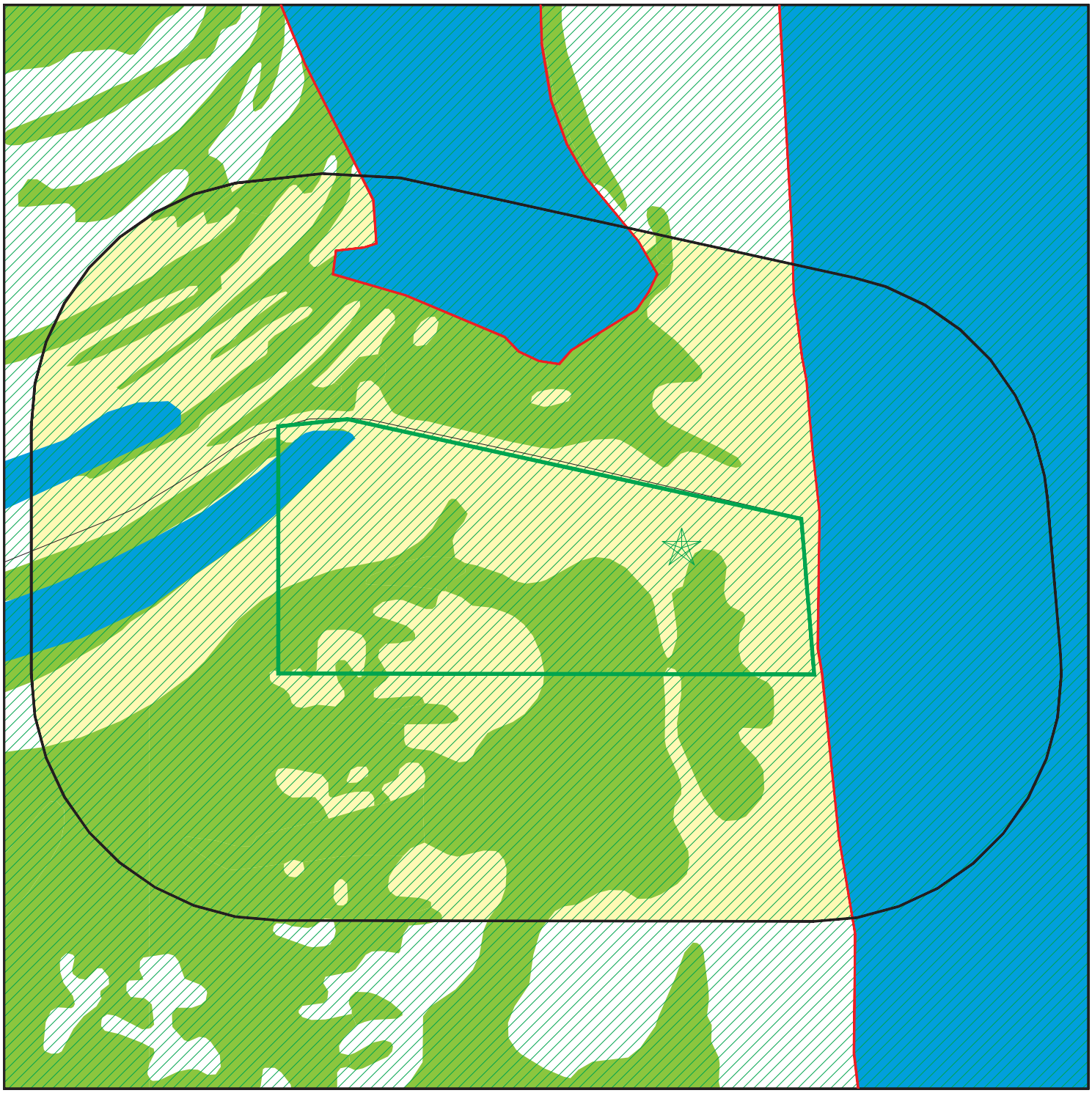
DETAIL MAP - 3410419.1s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites

0 1/8 1/4 1/2 Miles

- Indian Reservations BIA
- County Boundary
- Oil & Gas pipelines from USGS
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory

N

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Coastal	CLIENT:	SpaceX
ADDRESS:	Boca Chica Blvd Port Isabel TX 78578	CONTACT:	Steve Davis
		INQUIRY #:	3410419.1s
LAT/LONG:	25.9964 / 97.1525	DATE:	September 14, 2012 9:23 am

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
CERCLIS	0.500		0	0	0	NR	NR	0
FEDERAL FACILITY	1.000		0	0	0	0	NR	0
Federal CERCLIS NFRAP site List								
CERC-NFRAP	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
SHWS	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
CLI	0.500		0	0	0	NR	NR	0
WasteMgt	TP		NR	NR	NR	NR	NR	0
State and tribal leaking storage tank lists								
LPST	0.500		0	0	0	NR	NR	0
INDIAN LUST	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
UST	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
FEMA UST	0.250		0	0	NR	NR	NR	0
State and tribal institutional control / engineering control registries								
AUL	0.500		0	0	0	NR	NR	0
State and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US CDL	TP		NR	NR	NR	NR	NR	0
DEL SHWS	1.000		0	0	0	0	NR	0
PRIORITYCLEANERS	0.500		0	0	0	NR	NR	0
US HIST CDL	TP		NR	NR	NR	NR	NR	0
Local Land Records								
LIENS 2	TP		NR	NR	NR	NR	NR	0
LUCIS	0.500		0	0	0	NR	NR	0
LIENS	TP		NR	NR	NR	NR	NR	0
HIST LIENS	TP		NR	NR	NR	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0
SPILLS	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA-NonGen	0.250		0	0	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
DOD	1.000		0	0	0	0	NR	0
FUDS	1.000		0	0	0	0	NR	0
CONSENT	1.000		0	0	0	0	NR	0
ROD	1.000		0	0	0	0	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
UMTRA	0.500		0	0	0	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
IOP	TP		NR	NR	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
ENF	TP		NR	NR	NR	NR	NR	0
Ind. Haz Waste	TP		NR	NR	NR	NR	NR	0
ED AQUIF	TP		NR	NR	NR	NR	NR	0
AIRS	TP		NR	NR	NR	NR	NR	0
MSD	0.500		0	0	0	NR	NR	0
TIER 2	TP		NR	NR	NR	NR	NR	0
RWS	TP		NR	NR	NR	NR	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
GCC	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
FINANCIAL ASSURANCE	TP		NR	NR	NR	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants	1.000		0	0	0	0	NR	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

MAP FINDINGS

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number

NO SITES FOUND

Count: 6 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
PORT ISABEL	1003875881	BAYSIDE NET & TWINE CO	HWY 100 N (P.O. BOX 959)	78578	CERC-NFRAP
PORT ISABEL	S108425080	CITY OF PORT ISABEL LANDFILL	15TH MILES SW OF INTERSECTION		SWF/LF
PORT ISABEL	S109515052	CAMERON COUNTY FWSD NO 1 TRANSFER	ADJACENT TO W BOUNDARY OF PRT		SWF/LF
PORT ISABEL	S109515053	CAMERON COUNTY FWSD NO 1 TRANSFER	ADJACENT TO W BOUNDRY OF PRT		SWF/LF
PORT ISABEL	A100190419	VALLEY FISHERIES	S JUNCTION HWY 48TH &	78578	AST
PORT ISABEL	S109978523	CITY OF PORT ISABEL LANDFILL	PORT RD		SWF/LF

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 05/08/2012
Date Data Arrived at EDR: 05/10/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 5

Source: EPA
Telephone: N/A
Last EDR Contact: 07/05/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 03/30/2012
Date Data Arrived at EDR: 04/05/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 40

Source: EPA
Telephone: N/A
Last EDR Contact: 07/05/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 03/30/2012
Date Data Arrived at EDR: 04/05/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 40

Source: EPA
Telephone: N/A
Last EDR Contact: 07/05/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Quarterly

Federal CERCLIS list

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 12/27/2011
Date Data Arrived at EDR: 02/27/2012
Date Made Active in Reports: 03/12/2012
Number of Days to Update: 14

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 08/28/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Quarterly

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 12/10/2010
Date Data Arrived at EDR: 01/11/2011
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Varies

Federal CERCLIS NFRAP site List

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 12/28/2011
Date Data Arrived at EDR: 02/27/2012
Date Made Active in Reports: 03/12/2012
Number of Days to Update: 14

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 08/28/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 08/19/2011
Date Data Arrived at EDR: 08/31/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 132

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/15/2012
Date Data Arrived at EDR: 04/04/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 41

Source: Environmental Protection Agency
Telephone: 214-665-6444
Last EDR Contact: 08/16/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/15/2012
Date Data Arrived at EDR: 04/04/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 41

Source: Environmental Protection Agency
Telephone: 214-665-6444
Last EDR Contact: 08/16/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/15/2012
Date Data Arrived at EDR: 04/04/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 41

Source: Environmental Protection Agency
Telephone: 214-665-6444
Last EDR Contact: 08/16/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/15/2012
Date Data Arrived at EDR: 04/04/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 41

Source: Environmental Protection Agency
Telephone: 214-665-6444
Last EDR Contact: 08/16/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Varies

Federal institutional controls / engineering controls registries

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 12/30/2011
Date Data Arrived at EDR: 12/30/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 11

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 12/30/2011
Date Data Arrived at EDR: 12/30/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 11

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 04/02/2012
Date Data Arrived at EDR: 04/03/2012
Date Made Active in Reports: 06/14/2012
Number of Days to Update: 72

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 07/02/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Annually

State- and tribal - equivalent NPL

SHWS: State Superfund Registry

State Hazardous Waste Sites. State hazardous waste site records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. Available information varies by state.

Date of Government Version: 05/01/2012
Date Data Arrived at EDR: 06/21/2012
Date Made Active in Reports: 08/21/2012
Number of Days to Update: 61

Source: Texas Commission on Environmental Quality
Telephone: 512-239-5680
Last EDR Contact: 06/14/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Semi-Annually

State and tribal landfill and/or solid waste disposal site lists

SWF/LF: Permitted Solid Waste Facilities

Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 08/02/2012
Date Data Arrived at EDR: 08/03/2012
Date Made Active in Reports: 08/23/2012
Number of Days to Update: 20
Source: Texas Commission on Environmental Quality
Telephone: 512-239-6706
Last EDR Contact: 07/27/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Quarterly

CLI: Closed Landfill Inventory
Closed and abandoned landfills (permitted as well as unauthorized) across the state of Texas.

Date of Government Version: 08/30/1999
Date Data Arrived at EDR: 09/28/2000
Date Made Active in Reports: 10/30/2000
Number of Days to Update: 32
Source: Texas Commission on Environmental Quality
Telephone: 512-239-6016
Last EDR Contact: 07/05/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Varies

H-GAC CLI: Houston-Galveston Closed Landfill Inventory
Closed Landfill Inventory for the Houston-Galveston Area Council Region. In 1993, the Texas Legislature passed House Bill (HB) 2537, which required Councils of Governments (COGs) to develop an inventory of closed municipal solid waste landfills for their regional solid waste management plans.

Date of Government Version: 03/23/2011
Date Data Arrived at EDR: 03/25/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 28
Source: Houston-Galveston Area Council
Telephone: 832-681-2518
Last EDR Contact: 07/05/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Varies

WASTEMGT: Commercial Hazardous & Solid Waste Management Facilities
This list contains commercial recycling facilities and facilities permitted or authorized (interim status) by the Texas Natural Resource Conservation Commission.

Date of Government Version: 07/01/2011
Date Data Arrived at EDR: 10/13/2011
Date Made Active in Reports: 11/15/2011
Number of Days to Update: 33
Source: Texas Commission on Environmental Quality
Telephone: 512-239-2920
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Varies

State and tribal leaking storage tank lists

LPST: Leaking Petroleum Storage Tank Database
An inventory of reported leaking petroleum storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 06/08/2012
Date Data Arrived at EDR: 07/03/2012
Date Made Active in Reports: 08/23/2012
Number of Days to Update: 51
Source: Texas Commission on Environmental Quality
Telephone: 512-239-2200
Last EDR Contact: 07/03/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 05/07/2012
Date Data Arrived at EDR: 05/08/2012
Date Made Active in Reports: 07/10/2012
Number of Days to Update: 63
Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Quarterly

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 05/25/2012
Date Data Arrived at EDR: 05/25/2012
Date Made Active in Reports: 07/16/2012
Number of Days to Update: 52
Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Quarterly

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 09/12/2011
Date Data Arrived at EDR: 09/13/2011
Date Made Active in Reports: 11/11/2011
Number of Days to Update: 59
Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 08/18/2011
Date Data Arrived at EDR: 08/19/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 25
Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Quarterly

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 02/07/2012
Date Data Arrived at EDR: 02/17/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 88
Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 12/14/2011
Date Data Arrived at EDR: 12/15/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 26
Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Semi-Annually

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/12/2012
Date Data Arrived at EDR: 05/09/2012
Date Made Active in Reports: 07/10/2012
Number of Days to Update: 62
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 08/03/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

State and tribal registered storage tank lists

UST: Petroleum Storage Tank Database
Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 06/08/2012
Date Data Arrived at EDR: 07/03/2012
Date Made Active in Reports: 08/21/2012
Number of Days to Update: 49
Source: Texas Commission on Environmental Quality
Telephone: 512-239-2160
Last EDR Contact: 07/03/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

AST: Petroleum Storage Tank Database
Registered Aboveground Storage Tanks.

Date of Government Version: 06/08/2012
Date Data Arrived at EDR: 07/03/2012
Date Made Active in Reports: 08/21/2012
Number of Days to Update: 49

Source: Texas Commission on Environmental Quality
Telephone: 512-239-2160
Last EDR Contact: 07/03/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 05/07/2012
Date Data Arrived at EDR: 05/08/2012
Date Made Active in Reports: 07/16/2012
Number of Days to Update: 69

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 11/28/2011
Date Data Arrived at EDR: 11/29/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 42

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Quarterly

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 08/18/2011
Date Data Arrived at EDR: 08/19/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 25

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Quarterly

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 02/07/2012
Date Data Arrived at EDR: 02/17/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 88

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 05/10/2011
Date Data Arrived at EDR: 05/11/2011
Date Made Active in Reports: 06/14/2011
Number of Days to Update: 34

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 02/28/2012
Date Data Arrived at EDR: 02/29/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 76

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 12/14/2011
Date Data Arrived at EDR: 12/15/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 26

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 04/12/2012
Date Data Arrived at EDR: 05/02/2012
Date Made Active in Reports: 07/16/2012
Number of Days to Update: 75

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 08/03/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

FEMA UST: Underground Storage Tank Listing

A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 07/12/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Varies

State and tribal institutional control / engineering control registries

AUL: Sites with Controls

Activity and use limitations include both engineering controls and institutional controls.

Date of Government Version: 06/27/2012
Date Data Arrived at EDR: 07/13/2012
Date Made Active in Reports: 08/23/2012
Number of Days to Update: 41

Source: Texas Commission on Environmental Quality
Telephone: 512-239-5891
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R1: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 02/17/2012
Date Data Arrived at EDR: 04/03/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 42

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 07/02/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Varies

VCP RRC: Voluntary Cleanup Program Sites
The Voluntary Cleanup Program (RRC-VCP) provides an incentive to remediate Oil & Gas related pollution by participants as long as they did not cause or contribute to the contamination. Applicants to the program receive a release of liability to the state in exchange for a successful cleanup.

Date of Government Version: 04/26/2012
Date Data Arrived at EDR: 07/13/2012
Date Made Active in Reports: 08/23/2012
Number of Days to Update: 41
Source: Railroad Commission of Texas
Telephone: 512-463-6969
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27
Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP TCEQ: Voluntary Cleanup Program Database
The Texas Voluntary Cleanup Program was established to provide administrative, technical, and legal incentives to encourage the cleanup of contaminated sites in Texas.

Date of Government Version: 06/27/2012
Date Data Arrived at EDR: 07/13/2012
Date Made Active in Reports: 08/23/2012
Number of Days to Update: 41
Source: Texas Commission on Environmental Quality
Telephone: 512-239-5891
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Quarterly

State and tribal Brownfields sites

BROWNFIELDS: Brownfields Site Assessments
Brownfield site assessments that are being cleaned under EPA grant monies.

Date of Government Version: 06/27/2012
Date Data Arrived at EDR: 07/13/2012
Date Made Active in Reports: 08/21/2012
Number of Days to Update: 39
Source: TCEQ
Telephone: 512-239-5872
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Semi-Annually

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 06/27/2011
Date Data Arrived at EDR: 06/27/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 78
Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 06/25/2012
Next Scheduled EDR Contact: 10/08/2012
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137
Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 07/03/2012
Next Scheduled EDR Contact: 10/08/2012
Data Release Frequency: No Update Planned

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39
Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52
Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 08/03/2012
Next Scheduled EDR Contact: 11/19/2012
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US CDL: Clandestine Drug Labs
A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 03/16/2012
Date Data Arrived at EDR: 06/12/2012
Date Made Active in Reports: 07/16/2012
Number of Days to Update: 34
Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 12/17/2012
Data Release Frequency: Quarterly

DEL SHWS: Deleted Superfund Registry Sites
Sites have been deleted from the state Superfund registry in accordance with the Act, ?361.189

Date of Government Version: 05/01/2012
Date Data Arrived at EDR: 06/21/2012
Date Made Active in Reports: 08/21/2012
Number of Days to Update: 61
Source: Texas Commission on Environmental Quality
Telephone: 512-239-0666
Last EDR Contact: 06/14/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Quarterly

PRIORITY CLEANERS: Dry Cleaner Remediation Program Prioritization List
A listing of dry cleaner related contaminated sites.

Date of Government Version: 04/12/2012
Date Data Arrived at EDR: 06/13/2012
Date Made Active in Reports: 08/21/2012
Number of Days to Update: 69
Source: Texas Commisision on Environmenatl Quality
Telephone: 512-239-5658
Last EDR Contact: 09/12/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Varies

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/01/2007
Date Data Arrived at EDR: 11/19/2008
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 131

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

Local Land Records

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/16/2012
Date Data Arrived at EDR: 03/26/2012
Date Made Active in Reports: 06/14/2012
Number of Days to Update: 80

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 07/27/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/09/2005
Date Data Arrived at EDR: 12/11/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 31

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/21/2012
Next Scheduled EDR Contact: 09/03/2012
Data Release Frequency: Varies

LIENS: Environmental Liens Listing

The listing covers TCEQ liens placed against either State Superfund sites or Federal Superfund sites to recover cost incurred by TCEQ.

Date of Government Version: 08/24/2012
Date Data Arrived at EDR: 08/29/2012
Date Made Active in Reports: 09/12/2012
Number of Days to Update: 14

Source: Texas Commission on Environmental Quality
Telephone: 512-239-2209
Last EDR Contact: 08/23/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Varies

HIST LIENS: Environmental Liens Listing

This listing contains information fields that are no longer tracked in the LIENS database.

Date of Government Version: 03/23/2007
Date Data Arrived at EDR: 03/23/2007
Date Made Active in Reports: 05/02/2007
Number of Days to Update: 40

Source: Texas Commission on Environmental Qualilty
Telephone: 512-239-2209
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 04/01/2012
Date Data Arrived at EDR: 04/03/2012
Date Made Active in Reports: 06/14/2012
Number of Days to Update: 72
Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 07/02/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Annually

SPILLS: Spills Database
Spills reported to the Emergency Response Division.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 07/03/2012
Date Made Active in Reports: 08/29/2012
Number of Days to Update: 57
Source: Texas Commission on Environmental Quality
Telephone: 512-239-2507
Last EDR Contact: 08/23/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Quarterly

Other Ascertainable Records

RCRA-NonGen: RCRA - Non Generators
RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/15/2012
Date Data Arrived at EDR: 04/04/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 41
Source: Environmental Protection Agency
Telephone: 214-665-6444
Last EDR Contact: 08/16/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Varies

DOT OPS: Incident and Accident Data
Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/29/2011
Date Data Arrived at EDR: 08/09/2011
Date Made Active in Reports: 11/11/2011
Number of Days to Update: 94
Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/19/2012
Data Release Frequency: Varies

DOD: Department of Defense Sites
This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62
Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites
The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 08/12/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 112
Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 09/10/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 01/25/2012
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 36

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 06/27/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 02/27/2012
Date Data Arrived at EDR: 03/14/2012
Date Made Active in Reports: 06/14/2012
Number of Days to Update: 92

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 09/12/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/07/2011
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 146

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 08/28/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Varies

MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 08/18/2011
Date Data Arrived at EDR: 09/08/2011
Date Made Active in Reports: 09/29/2011
Number of Days to Update: 21

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 09/04/2012
Next Scheduled EDR Contact: 12/17/2012
Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 09/01/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 131

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 08/31/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 64

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 06/29/2012
Next Scheduled EDR Contact: 10/08/2012
Data Release Frequency: Every 4 Years

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/22/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/22/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

SSTS: Section 7 Tracking Systems
Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77
Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 07/27/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 07/20/2011
Date Data Arrived at EDR: 11/10/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 61

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 06/21/2012
Next Scheduled EDR Contact: 10/08/2012
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 11/01/2010
Date Data Arrived at EDR: 11/10/2010
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 98

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 06/21/2011
Date Data Arrived at EDR: 07/15/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 60

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 01/10/2012
Date Data Arrived at EDR: 01/12/2012
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 49

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 07/11/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 10/23/2011
Date Data Arrived at EDR: 12/13/2011
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 79

Source: EPA
Telephone: (214) 665-2200
Last EDR Contact: 09/11/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 08/31/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Biennially

IOP: Innocent Owner/Operator Program

Contains information on all sites that are in the IOP. An IOP is an innocent owner or operator whose property is contaminated as a result of a release or migration of contaminants from a source or sources not located on the property, and they did not cause or contribute to the source or sources of contamination.

Date of Government Version: 06/27/2012
Date Data Arrived at EDR: 07/13/2012
Date Made Active in Reports: 08/23/2012
Number of Days to Update: 41

Source: Texas Commission on Environmental Quality
Telephone: 512-239-5894
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Quarterly

NPDES: NPDES Facility List

Permitted wastewater outfalls.

Date of Government Version: 03/02/2012
Date Data Arrived at EDR: 05/24/2012
Date Made Active in Reports: 06/11/2012
Number of Days to Update: 18

Source: Texas Commission on Environmental Quality
Telephone: 512-239-4591
Last EDR Contact: 08/24/2012
Next Scheduled EDR Contact: 12/03/2012
Data Release Frequency: Varies

UIC: Underground Injection Wells Database Listing

Class V injection wells regulated by the TCEQ. Class V wells are used to inject non-hazardous fluids underground. Most Class V wells are used to dispose of wastes into or above underground sources of drinking water and can pose a threat to ground water quality, if not managed properly.

Date of Government Version: 07/23/2012
Date Data Arrived at EDR: 07/26/2012
Date Made Active in Reports: 08/29/2012
Number of Days to Update: 34

Source: Texas Commission on Environmental Quality
Telephone: 512-239-6627
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 11/05/2012
Data Release Frequency: Varies

DRYCLEANERS: Drycleaner Registration Database Listing

A listing of drycleaning facilities.

Date of Government Version: 03/31/2012
Date Data Arrived at EDR: 06/13/2012
Date Made Active in Reports: 08/17/2012
Number of Days to Update: 65

Source: Texas Commission on Environmental Quality
Telephone: 512-239-2160
Last EDR Contact: 09/12/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Varies

ENFORCEMENT: Notice of Violations Listing

A listing of permit violations.

Date of Government Version: 03/16/2012
Date Data Arrived at EDR: 03/22/2012
Date Made Active in Reports: 04/06/2012
Number of Days to Update: 15

Source: Texas Commission on Environmental Quality
Telephone: 512-239-6012
Last EDR Contact: 09/06/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Semi-Annually

Ind. Haz Waste: Industrial & Hazardous Waste Database

Summary reports reported by waste handlers, generators and shippers in Texas.

Date of Government Version: 05/31/2012
Date Data Arrived at EDR: 07/13/2012
Date Made Active in Reports: 08/23/2012
Number of Days to Update: 41

Source: Texas Commission on Environmental Quality
Telephone: 512-239-0985
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Annually

ED AQUIF: Edwards Aquifer Permits

A listing of permits in the Edwards Aquifer Protection Program database. The information provided is for the counties located in the Austin Region (Hays, Travis, and Williamson counties).

Date of Government Version: 07/19/2012
Date Data Arrived at EDR: 07/26/2012
Date Made Active in Reports: 08/23/2012
Number of Days to Update: 28

Source: Texas Commission on Environmental Quality, Austin Region
Telephone: 512-339-2929
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Varies

AIRS: Current Emission Inventory Data

The database lists by company, along with their actual emissions, the TNRCC air accounts that emit EPA criteria pollutants.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/12/2012
Date Made Active in Reports: 02/06/2012
Number of Days to Update: 25

Source: Texas Commission on Environmental Quality
Telephone: N/A
Last EDR Contact: 06/22/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Semi-Annually

MSD: Municipal Settings Designations Database

An MSD is an official state designation given to property within a municipality or its extraterritorial jurisdiction that certifies that designated groundwater at the property is not use as potable water, and is prohibited from future use as potatable water because that groundwater is contaminated in excess of the applicable potable-water protective concentration level.

Date of Government Version: 06/25/2012
Date Data Arrived at EDR: 06/29/2012
Date Made Active in Reports: 08/21/2012
Number of Days to Update: 53

Source: Texas Commission on Environmental Quality
Telephone: 512-239-4982
Last EDR Contact: 06/22/2012
Next Scheduled EDR Contact: 10/08/2012
Data Release Frequency: Varies

TIER 2: Tier 2 Chemical Inventory Reports

A listing of facilities which store or manufacture hazardous materials and submit a chemical inventory report.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 06/13/2012
Date Made Active in Reports: 08/21/2012
Number of Days to Update: 69

Source: Department of State Health Services
Telephone: 512-834-6603
Last EDR Contact: 08/23/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Annually

RWS: Radioactive Waste Sites

Sites in the State of Texas that have been designated as Radioactive Waste sites.

Date of Government Version: 07/24/2006
Date Data Arrived at EDR: 12/14/2006
Date Made Active in Reports: 01/23/2007
Number of Days to Update: 40

Source: Texas Commission on Environmental Quality
Telephone: 512-239-0859
Last EDR Contact: 08/24/2012
Next Scheduled EDR Contact: 12/03/2012
Data Release Frequency: Semi-Annually

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Semi-Annually

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 03/07/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 11/05/2012
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 05/24/2012
Date Data Arrived at EDR: 06/05/2012
Date Made Active in Reports: 06/14/2012
Number of Days to Update: 9

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 08/14/2012
Next Scheduled EDR Contact: 12/03/2012
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 03/31/2012
Date Data Arrived at EDR: 05/17/2012
Date Made Active in Reports: 06/14/2012
Number of Days to Update: 28

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Quarterly

GCC: Groundwater Contamination Cases

Texas Water Code, Section 26.406 requires the annual report to describe the current status of groundwater monitoring activities conducted or required by each agency at regulated facilities or associated with regulated activities. The report is required to contain a description of each case of groundwater contamination documented during the previous calendar year. Also to be included, is a description of each case of contamination documented during previous periods for which voluntary clean up action was incomplete at the time the preceding report was issued. The report is also required to indicate the status of enforcement action for each listed case.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 12/20/2011
Date Made Active in Reports: 02/01/2012
Number of Days to Update: 43

Source: Texas Commission on Environmental Quality
Telephone: 512-239-5690
Last EDR Contact: 09/07/2012
Next Scheduled EDR Contact: 12/17/2012
Data Release Frequency: Annually

PRP: Potentially Responsible Parties

A listing of verified Potentially Responsible Parties

Date of Government Version: 02/27/2012
Date Data Arrived at EDR: 04/04/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 41

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 07/02/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: N/A

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 11/11/2011
Date Data Arrived at EDR: 05/18/2012
Date Made Active in Reports: 05/25/2012
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 08/16/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Varies

FINANCIAL ASSURANCE 2: Financial Assurance Information Listing

Financial Assurance information for underground storage tank facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay

Date of Government Version: 06/08/2012
Date Data Arrived at EDR: 07/03/2012
Date Made Active in Reports: 08/21/2012
Number of Days to Update: 49

Source: Texas Commission on Environmental Quality
Telephone: 512-239-0986
Last EDR Contact: 07/03/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

PCB TRANSFORMER: PCB Transformer Registration Database

The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 10/19/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 83

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 08/03/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

COAL ASH DOE: Sleam-Electric Plan Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 07/16/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 08/17/2010
Date Data Arrived at EDR: 01/03/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 77
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 06/12/2012
Next Scheduled EDR Contact: 09/24/2012
Data Release Frequency: Varies

FINANCIAL ASSURANCE 1: Financial Assurance Information Listing
Financial assurance information.

Date of Government Version: 07/02/2012
Date Data Arrived at EDR: 07/03/2012
Date Made Active in Reports: 08/21/2012
Number of Days to Update: 49
Source: Texas Commission on Environmental Quality
Telephone: 512-239-6239
Last EDR Contact: 06/29/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Varies

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A
Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

COUNTY RECORDS

TRAVIS COUNTY:

Historic Tank Records
A listing of historic records from the City of Austin.

Date of Government Version: 06/25/2012
Date Data Arrived at EDR: 06/29/2012
Date Made Active in Reports: 08/23/2012
Number of Days to Update: 55
Source: Department of Planning & Development Review
Telephone: 512-974-2715
Last EDR Contact: 09/06/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data

Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 05/21/2012
Date Data Arrived at EDR: 05/22/2012
Date Made Active in Reports: 05/31/2012
Number of Days to Update: 9

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 08/20/2012
Next Scheduled EDR Contact: 12/03/2012
Data Release Frequency: Annually

NJ MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 07/19/2012
Date Made Active in Reports: 08/28/2012
Number of Days to Update: 40

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data

Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 05/01/2012
Date Data Arrived at EDR: 05/09/2012
Date Made Active in Reports: 06/14/2012
Number of Days to Update: 36

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 08/09/2012
Next Scheduled EDR Contact: 11/19/2012
Data Release Frequency: Annually

PA MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 04/27/2012
Date Made Active in Reports: 06/05/2012
Number of Days to Update: 39

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 11/05/2012
Data Release Frequency: Annually

RI MANIFEST: Manifest information

Hazardous waste manifest information

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 06/22/2012
Date Made Active in Reports: 07/31/2012
Number of Days to Update: 39

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 08/23/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Annually

VT MANIFEST: Hazardous Waste Manifest Data

Hazardous waste manifest information.

Date of Government Version: 08/09/2012
Date Data Arrived at EDR: 08/15/2012
Date Made Active in Reports: 09/13/2012
Number of Days to Update: 29

Source: Department of Environmental Conservation
Telephone: 802-241-3443
Last EDR Contact: 07/23/2012
Next Scheduled EDR Contact: 11/05/2012
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 08/19/2011
Date Made Active in Reports: 09/15/2011
Number of Days to Update: 27

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 07/16/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Annually

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: Rextag Strategies Corp.
Telephone: (281) 769-2247
U.S. Electric Transmission and Power Plants Systems Digital GIS Data

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Child Care Facility List
Source: Department of Protective & Regulatory Services
Telephone: 512-438-3269

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

COASTAL
BOCA CHICA BLVD
PORT ISABEL, TX 78578

TARGET PROPERTY COORDINATES

Latitude (North):	25.9964 - 25° 59' 47.04''
Longitude (West):	97.1525 - 97° 9' 9.00''
Universal Tranverse Mercator:	Zone 14
UTM X (Meters):	684922.3
UTM Y (Meters):	2876429.8
Elevation:	1 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	25097-H2 MOUTH OF RIO GRANDE, TX MX28
Most Recent Revision:	1970
North Map:	26097-A2 PORT ISABEL, TX
Most Recent Revision:	1983

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principal investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

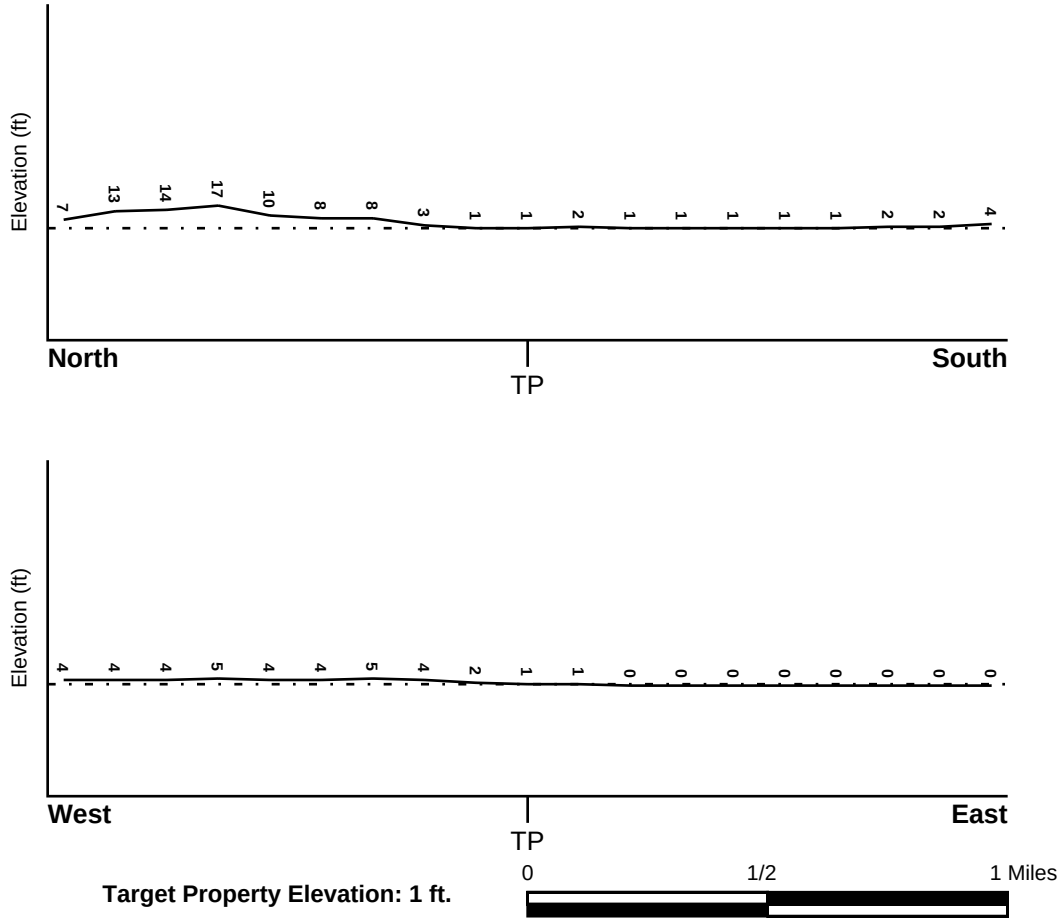
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General ESE

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
CAMERON, TX	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property: 4801010375D - FEMA Q3 Flood data

Additional Panels in search area: Not Reported

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
MOUTH OF RIO GRANDE	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

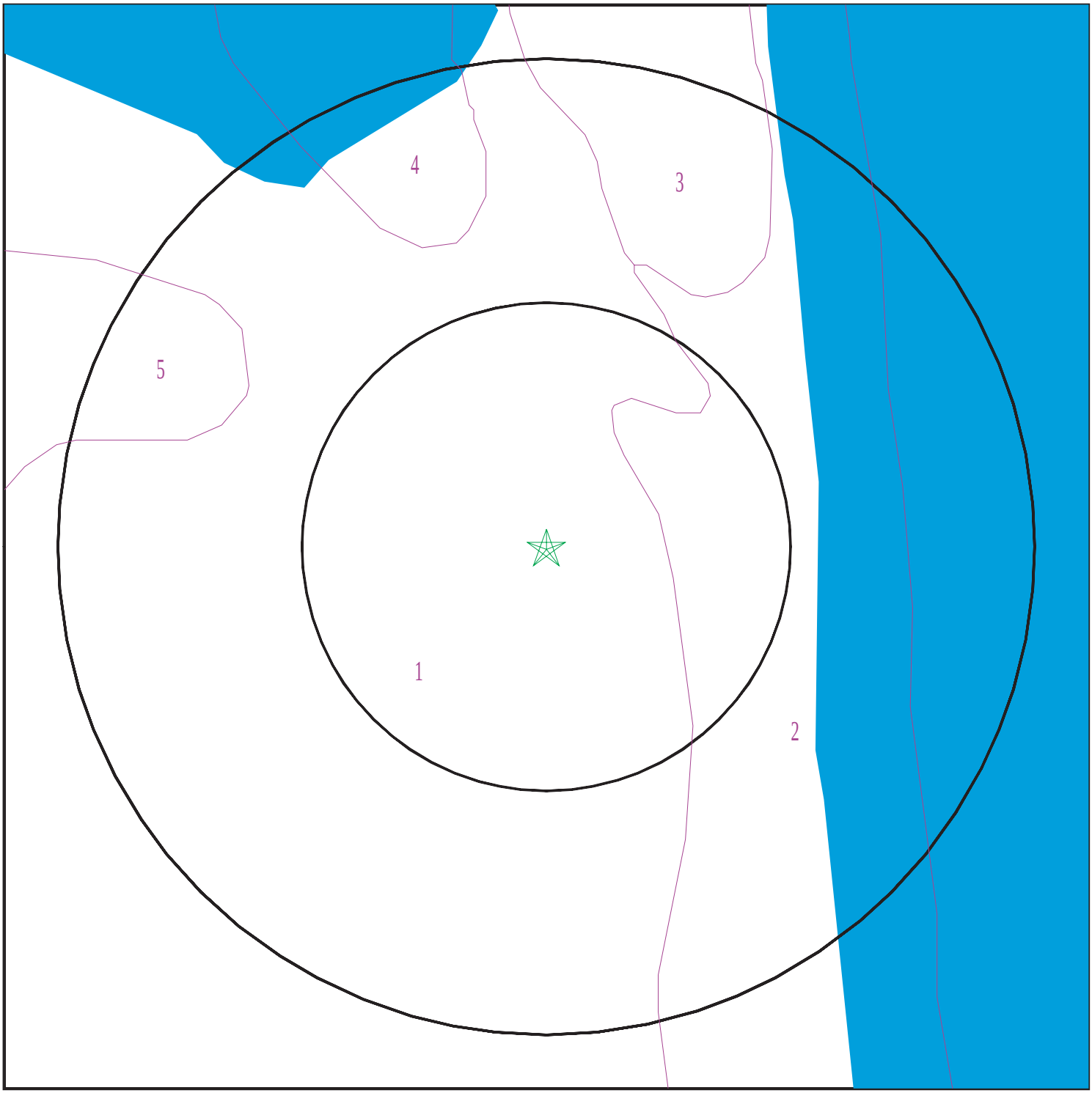
Era:	Cenozoic
System:	Quaternary
Series:	Holocene
Code:	Qh *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 3410419.1s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Coastal	CLIENT:	SpaceX
ADDRESS:	Boca Chica Blvd Port Isabel TX 78578	CONTACT:	Steve Davis
		INQUIRY #:	3410419.1s
LAT/LONG:	25.9964 / 97.1525	DATE:	September 14, 2012 9:24 am

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Mustang

Soil Surface Texture: fine sand

Hydrologic Group: Class A/D - Drained/undrained hydrology class of soils that can be drained and are classified.

Soil Drainage Class: Poorly drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 8 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	5 inches	fine sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Clean Sands, Poorly graded sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 8.4 Min: 6.6
2	5 inches	72 inches	fine sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Clean Sands, Poorly graded sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 8.4 Min: 6.6

Soil Map ID: 2

Soil Component Name: Coastal beach

Soil Surface Texture: fine sand

Hydrologic Group: Class A/D - Drained/undrained hydrology class of soils that can be drained and are classified.

Soil Drainage Class: Very poorly drained

Hydric Status: Unknown

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 8 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	79 inches	fine sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Clean Sands, Poorly graded sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 141	Max: 9 Min: 7.4

Soil Map ID: 3

Soil Component Name: Coastal dunes

Soil Surface Texture: fine sand

Hydrologic Group: Class A - High infiltration rates. Soils are deep, well drained to excessively drained sands and gravels.

Soil Drainage Class: Somewhat excessively drained

Hydric Status: Unknown

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	79 inches	fine sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Clean Sands, Poorly graded sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 141	Max: 9 Min: 7.4

Soil Map ID: 4

Soil Component Name: Water

Soil Surface Texture: fine sand

Hydrologic Group: Class A - High infiltration rates. Soils are deep, well drained to excessively drained sands and gravels.

Soil Drainage Class:
Hydric Status: Unknown

Corrosion Potential - Uncoated Steel: Not Reported

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

No Layer Information available.

Soil Map ID: 5

Soil Component Name: Galveston

Soil Surface Texture: fine sand

Hydrologic Group: Class A - High infiltration rates. Soils are deep, well drained to excessively drained sands and gravels.

Soil Drainage Class: Somewhat excessively drained

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 137 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	5 inches	fine sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Clean Sands, Poorly graded sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 8.4 Min: 5.6
2	5 inches	62 inches	fine sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Clean Sands, Poorly graded sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 8.4 Min: 5.6

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP

No PWS System Found

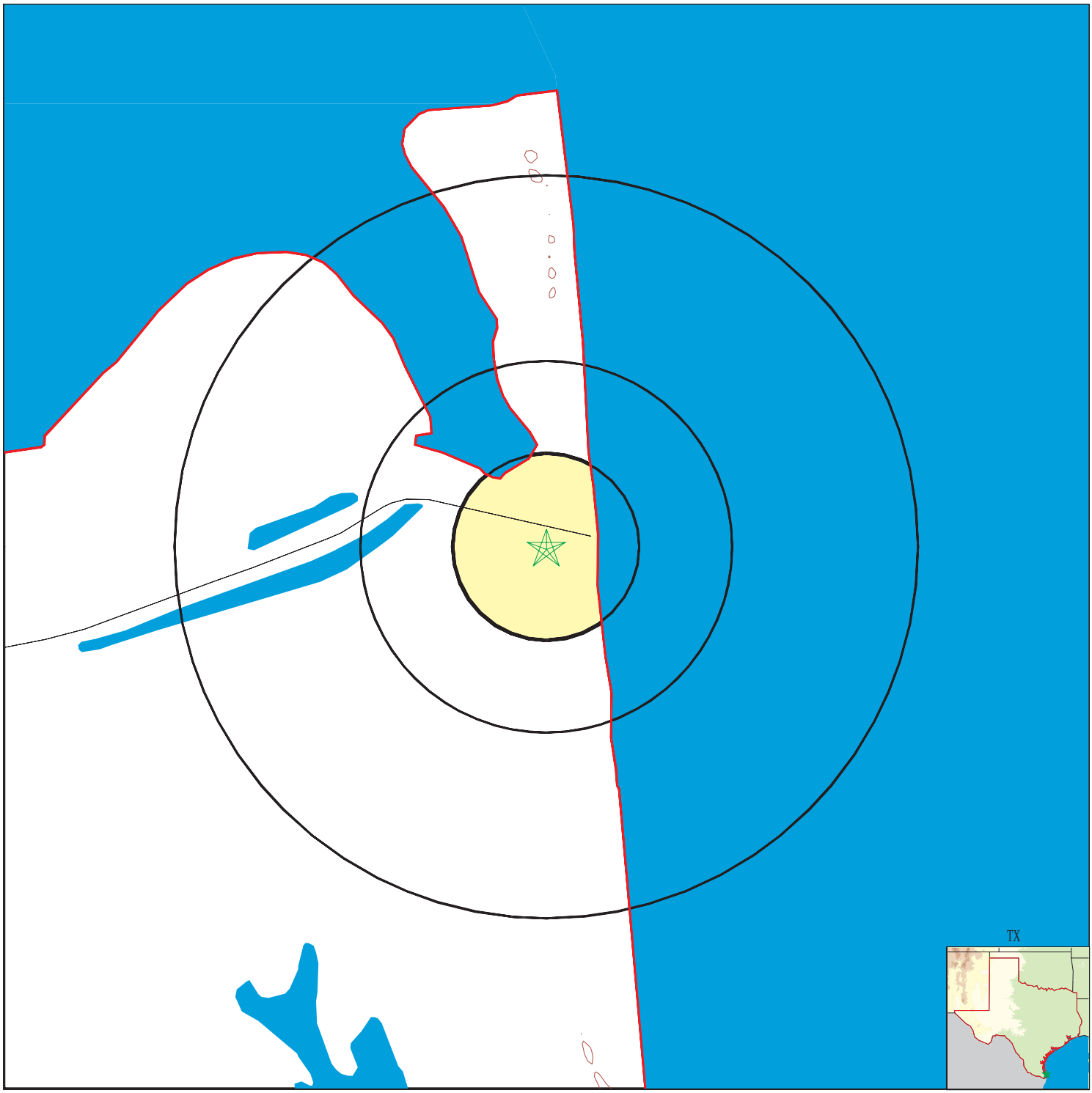
Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP

No Wells Found

PHYSICAL SETTING SOURCE MAP - 3410419.1s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil or gas wells

SITE NAME: Coastal	CLIENT: SpaceX
ADDRESS: Boca Chica Blvd	CONTACT: Steve Davis
Port Isabel TX 78578	INQUIRY #: 3410419.1s
LAT/LONG: 25.9964 / 97.1525	DATE: September 14, 2012 9:23 am

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: TX Radon

Radon Test Results

County	Mean	Total Sites	%>4 pCi/L	%>20 pCi/L	Min pCi/L	Max pCi/L
CAMERON	<.5	11	.0	.0	<.5	1.4

Federal EPA Radon Zone for CAMERON County: 3

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for CAMERON COUNTY, TX

Number of sites tested: 7

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.386 pCi/L	100%	0%	0%
Living Area - 2nd Floor	0.100 pCi/L	100%	0%	0%
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Public Water Supply Sources Databases
Source: Texas Commission on Environmental Quality
Telephone: 512-239-6199
Locations of public drinking water sources maintained by the TCEQ

Groundwater Database
Source: Texas Water Development Board
Telephone: 512-936-0837

Well Report Database
Source: Department of Licensing and Regulation
Telephone: 512-936-0833

Water Well Database
Source: Harris-Galveston Coastal Subsidence District
Telephone: 281-486-1105

Submitted Driller's Reports Database
Source: Texas Water Development Board
Telephone: 512-936-0833
The Submitted Driller's Reports Database is populated from the online Texas Well Report Submission and Retrieval System which is a cooperative Texas Department of Licensing and Regulation (TDLR) and Texas Water Development Board (TWDB) application that registered water-well drillers use to submit their required reports.

OTHER STATE DATABASE INFORMATION

Texas Oil and Gas Wells:
Source: Texas Railroad Commission
Telephone: 512-463-6882
Oil and gas well locations

RADON

State Database: TX Radon
Source: Department of Health
Telephone: 512-834-6688
Rinal Report of the Texas Indoor Radon Survey

PHYSICAL SETTING SOURCE RECORDS SEARCHED

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

STREET AND ADDRESS INFORMATION

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P1
Boca Chica Boulevard
Port Isabel, TX 78578

Inquiry Number: 3410419.3s
September 14, 2012

The EDR Radius Map™ Report with GeoCheck®

EDR® Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
Toll Free: 800.352.0050
www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

BOCA CHICA BOULEVARD
PORT ISABEL, TX 78578

COORDINATES

Latitude (North):	25.9856000 - 25° 59' 8.16''
Longitude (West):	97.1867000 - 97° 11' 12.12''
Universal Tranverse Mercator:	Zone 14
UTM X (Meters):	681515.0
UTM Y (Meters):	2875185.2
Elevation:	7 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	25097-H2 MOUTH OF RIO GRANDE, TX MX28
Most Recent Revision:	1970
North Map:	26097-A2 PORT ISABEL, TX
Most Recent Revision:	1983

AERIAL PHOTOGRAPHY IN THIS REPORT

Photo Year:	2010
Source:	USDA

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL---------- National Priority List

EXECUTIVE SUMMARY

Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

CERCLIS ---------- Comprehensive Environmental Response, Compensation, and Liability Information System
FEDERAL FACILITY ---------- Federal Facility Site Information listing

Federal CERCLIS NFRAP site List

CERC-NFRAP ---------- CERCLIS No Further Remedial Action Planned

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

US ENG CONTROLS ---------- Engineering Controls Sites List
US INST CONTROL ---------- Sites with Institutional Controls

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State- and tribal - equivalent NPL

SHWS ---------- State Superfund Registry

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ---------- Permitted Solid Waste Facilities
CLI ---------- Closed Landfill Inventory
WasteMgt ---------- Commercial Hazardous & Solid Waste Management Facilities

State and tribal leaking storage tank lists

LPST ---------- Leaking Petroleum Storage Tank Listing
INDIAN LUST ---------- Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

UST ---------- Petroleum Storage Tank Database

AST ---- Petroleum Storage Tank Database
INDIAN UST ---- Underground Storage Tanks on Indian Land
FEMA UST ---- Underground Storage Tank Listing

State and tribal institutional control / engineering control registries

AUL ---- Sites with Controls

State and tribal voluntary cleanup sites

VCP ---- Voluntary Cleanup Program Database
INDIAN VCP ---- Voluntary Cleanup Priority Listing

State and tribal Brownfields sites

BROWNFIELDS ---- Brownfields Site Assessments

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ---- A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

ODI ---- Open Dump Inventory
DEBRIS REGION 9 ---- Torres Martinez Reservation Illegal Dump Site Locations
INDIAN ODI ---- Report on the Status of Open Dumps on Indian Lands

Local Lists of Hazardous waste / Contaminated Sites

US CDL ---- Clandestine Drug Labs
DEL SHWS ---- Deleted Superfund Registry Sites
PRIORITYCLEANERS ---- Dry Cleaner Remediation Program Prioritization List
US HIST CDL ---- National Clandestine Laboratory Register

Local Land Records

LIENS 2 ---- CERCLA Lien Information
LUCIS ---- Land Use Control Information System
LIENS ---- Environmental Liens Listing
HIST LIENS ---- Environmental Liens Listing

Records of Emergency Release Reports

HMIRS ---- Hazardous Materials Information Reporting System
SPILLS ---- Spills Database

Other Ascertainable Records

RCRA-NonGen ---- RCRA - Non Generators
DOT OPS ---- Incident and Accident Data
DOD ---- Department of Defense Sites
FUDS ---- Formerly Used Defense Sites

CONSENT	Superfund (CERCLA) Consent Decrees
ROD	Records Of Decision
UMTRA	Uranium Mill Tailings Sites
MINES	Mines Master Index File
TRIS	Toxic Chemical Release Inventory System
TSCA	Toxic Substances Control Act
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
SSTS	Section 7 Tracking Systems
ICIS	Integrated Compliance Information System
PADS	PCB Activity Database System
MLTS	Material Licensing Tracking System
RADINFO	Radiation Information Database
FINDS	Facility Index System/Facility Registry System
RAATS	RCRA Administrative Action Tracking System
IOP	Innocent Owner/Operator Program
NPDES	NPDES Facility List
UIC	Underground Injection Wells Database Listing
DRYCLEANERS	Drycleaner Registration Database Listing
ENF	Notice of Violations Listing
Ind. Haz Waste	Industrial & Hazardous Waste Database
ED AQUIF	Edwards Aquifer Permits
AIRS	Current Emission Inventory Data
MSD	Municipal Settings Designations Database
TIER 2	Tier 2 Chemical Inventory Reports
RWS	Radioactive Waste Sites
INDIAN RESERV	Indian Reservations
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
2020 COR ACTION	2020 Corrective Action Program List
GCC	Groundwater Contamination Cases
EPA WATCH LIST	EPA WATCH LIST
FINANCIAL ASSURANCE	Financial Assurance Information Listing
PCB TRANSFORMER	PCB Transformer Registration Database
PRP	Potentially Responsible Parties
COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
US FIN ASSUR	Financial Assurance Information

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants	EDR Proprietary Manufactured Gas Plants

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were not identified.

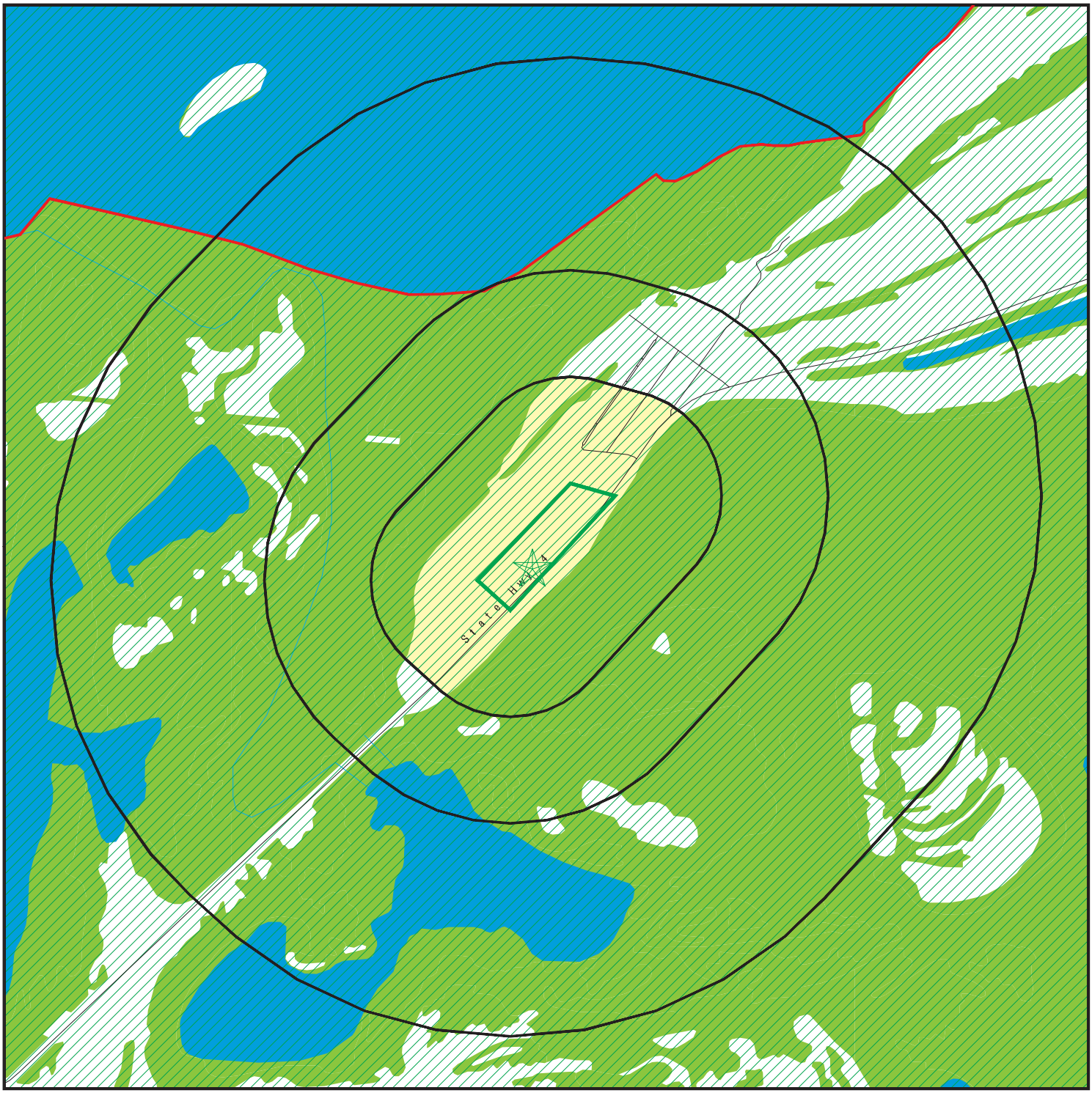
Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 6 records.

Site Name	Database(s)
BAYSIDE NET & TWINE CO	CERC-NFRAP
CITY OF PORT ISABEL LANDFILL	SWF/LF
CAMERON COUNTY FWSD NO 1 TRANSFER	SWF/LF
CAMERON COUNTY FWSD NO 1 TRANSFER	SWF/LF
CITY OF PORT ISABEL LANDFILL	SWF/LF
VALLEY FISHERIES	AST

OVERVIEW MAP - 3410419.3s



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

National Priority List Sites

Dept. Defense Sites

0 1/4 1/2 1 Miles

Indian Reservations BIA

County Boundary

Oil & Gas pipelines from USGS

100-year flood zone

500-year flood zone

National Wetland Inventory

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	P1	CLIENT:	SpaceX
ADDRESS:	Boca Chica Boulevard Port Isabel TX 78578	CONTACT:	Steve Davis
		INQUIRY #:	3410419.3s
LAT/LONG:	25.9856 / 97.1867	DATE:	September 14, 2012 9:21 am

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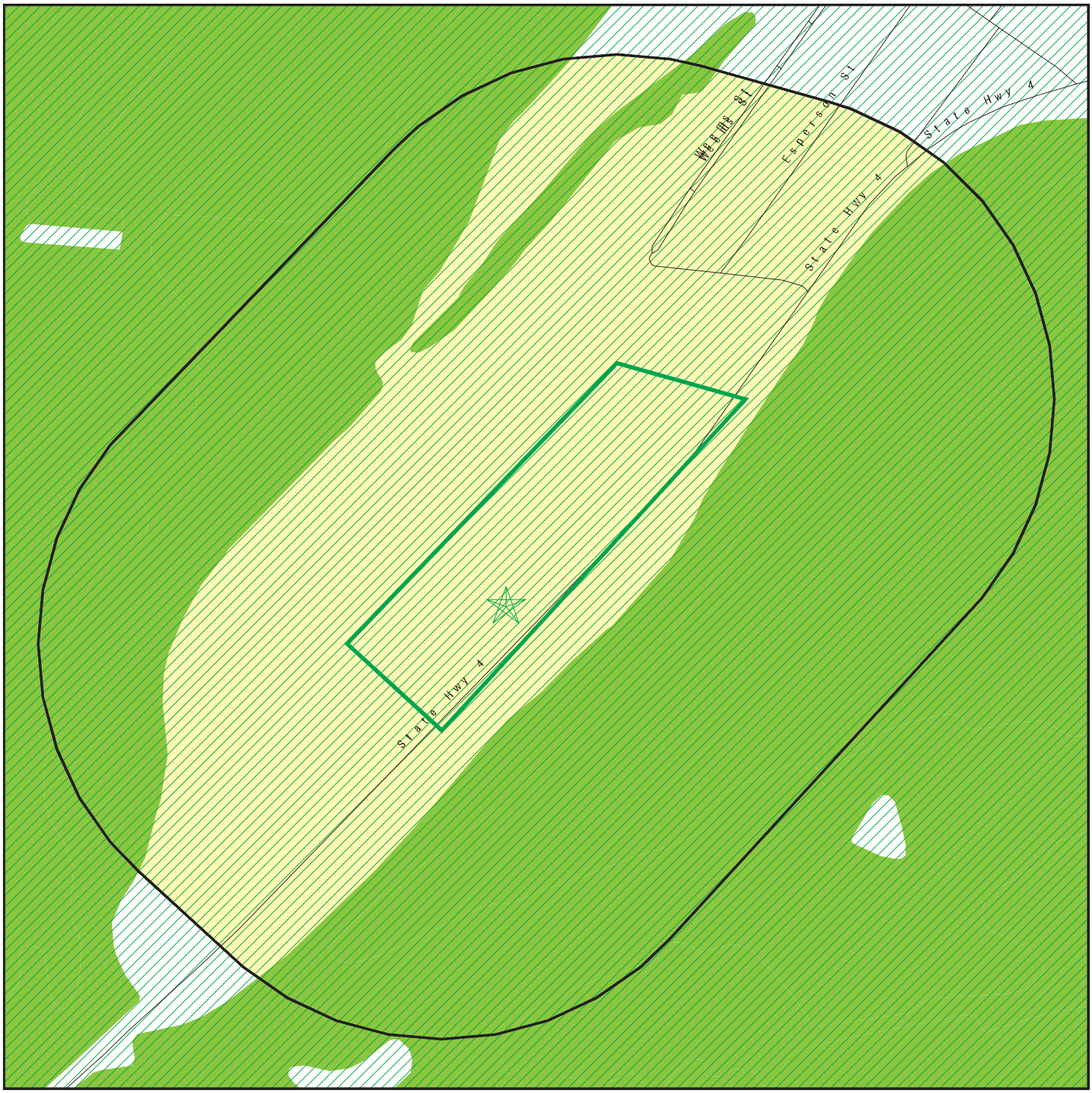
DETAIL MAP - 3410419.3s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites

0 1/16 1/8 1/4 Miles

- Indian Reservations BIA
- Oil & Gas pipelines from USGS
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	P1	CLIENT:	SpaceX
ADDRESS:	Boca Chica Boulevard Port Isabel TX 78578	CONTACT:	Steve Davis
		INQUIRY #:	3410419.3s
LAT/LONG:	25.9856 / 97.1867	DATE:	September 14, 2012 9:23 am

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
CERCLIS	0.500		0	0	0	NR	NR	0
FEDERAL FACILITY	1.000		0	0	0	0	NR	0
Federal CERCLIS NFRAP site List								
CERC-NFRAP	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
SHWS	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
CLI	0.500		0	0	0	NR	NR	0
WasteMgt	TP		NR	NR	NR	NR	NR	0
State and tribal leaking storage tank lists								
LPST	0.500		0	0	0	NR	NR	0
INDIAN LUST	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
UST	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
FEMA UST	0.250		0	0	NR	NR	NR	0
State and tribal institutional control / engineering control registries								
AUL	0.500		0	0	0	NR	NR	0
State and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US CDL	TP		NR	NR	NR	NR	NR	0
DEL SHWS	1.000		0	0	0	0	NR	0
PRIORITYCLEANERS	0.500		0	0	0	NR	NR	0
US HIST CDL	TP		NR	NR	NR	NR	NR	0
Local Land Records								
LIENS 2	TP		NR	NR	NR	NR	NR	0
LUCIS	0.500		0	0	0	NR	NR	0
LIENS	TP		NR	NR	NR	NR	NR	0
HIST LIENS	TP		NR	NR	NR	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0
SPILLS	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA-NonGen	0.250		0	0	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
DOD	1.000		0	0	0	0	NR	0
FUDS	1.000		0	0	0	0	NR	0
CONSENT	1.000		0	0	0	0	NR	0
ROD	1.000		0	0	0	0	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
UMTRA	0.500		0	0	0	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
IOP	TP		NR	NR	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
ENF	TP		NR	NR	NR	NR	NR	0
Ind. Haz Waste	TP		NR	NR	NR	NR	NR	0
ED AQUIF	TP		NR	NR	NR	NR	NR	0
AIRS	TP		NR	NR	NR	NR	NR	0
MSD	0.500		0	0	0	NR	NR	0
TIER 2	TP		NR	NR	NR	NR	NR	0
RWS	TP		NR	NR	NR	NR	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
GCC	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
FINANCIAL ASSURANCE	TP		NR	NR	NR	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants	1.000		0	0	0	0	NR	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

MAP FINDINGS

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number

NO SITES FOUND

Count: 6 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
PORT ISABEL	1003875881	BAYSIDE NET & TWINE CO	HWY 100 N (P.O. BOX 959)	78578	CERC-NFRAP
PORT ISABEL	S108425080	CITY OF PORT ISABEL LANDFILL	15TH MILES SW OF INTERSECTION		SWF/LF
PORT ISABEL	S109515052	CAMERON COUNTY FWSD NO 1 TRANSFER	ADJACENT TO W BOUNDARY OF PRT		SWF/LF
PORT ISABEL	S109515053	CAMERON COUNTY FWSD NO 1 TRANSFER	ADJACENT TO W BOUNDRY OF PRT		SWF/LF
PORT ISABEL	A100190419	VALLEY FISHERIES	S JUNCTION HWY 48TH &	78578	AST
PORT ISABEL	S109978523	CITY OF PORT ISABEL LANDFILL	PORT RD		SWF/LF

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 05/08/2012
Date Data Arrived at EDR: 05/10/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 5

Source: EPA
Telephone: N/A
Last EDR Contact: 07/05/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 03/30/2012
Date Data Arrived at EDR: 04/05/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 40

Source: EPA
Telephone: N/A
Last EDR Contact: 07/05/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 03/30/2012
Date Data Arrived at EDR: 04/05/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 40

Source: EPA
Telephone: N/A
Last EDR Contact: 07/05/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Quarterly

Federal CERCLIS list

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 12/27/2011
Date Data Arrived at EDR: 02/27/2012
Date Made Active in Reports: 03/12/2012
Number of Days to Update: 14

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 08/28/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Quarterly

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 12/10/2010
Date Data Arrived at EDR: 01/11/2011
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Varies

Federal CERCLIS NFRAP site List

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 12/28/2011
Date Data Arrived at EDR: 02/27/2012
Date Made Active in Reports: 03/12/2012
Number of Days to Update: 14

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 08/28/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 08/19/2011
Date Data Arrived at EDR: 08/31/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 132

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/15/2012
Date Data Arrived at EDR: 04/04/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 41

Source: Environmental Protection Agency
Telephone: 214-665-6444
Last EDR Contact: 08/16/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/15/2012
Date Data Arrived at EDR: 04/04/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 41

Source: Environmental Protection Agency
Telephone: 214-665-6444
Last EDR Contact: 08/16/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/15/2012
Date Data Arrived at EDR: 04/04/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 41

Source: Environmental Protection Agency
Telephone: 214-665-6444
Last EDR Contact: 08/16/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/15/2012
Date Data Arrived at EDR: 04/04/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 41

Source: Environmental Protection Agency
Telephone: 214-665-6444
Last EDR Contact: 08/16/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal institutional controls / engineering controls registries

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 12/30/2011
Date Data Arrived at EDR: 12/30/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 11

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 12/30/2011
Date Data Arrived at EDR: 12/30/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 11

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 04/02/2012
Date Data Arrived at EDR: 04/03/2012
Date Made Active in Reports: 06/14/2012
Number of Days to Update: 72

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 07/02/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Annually

State- and tribal - equivalent NPL

SHWS: State Superfund Registry

State Hazardous Waste Sites. State hazardous waste site records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. Available information varies by state.

Date of Government Version: 05/01/2012
Date Data Arrived at EDR: 06/21/2012
Date Made Active in Reports: 08/21/2012
Number of Days to Update: 61

Source: Texas Commission on Environmental Quality
Telephone: 512-239-5680
Last EDR Contact: 06/14/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Semi-Annually

State and tribal landfill and/or solid waste disposal site lists

SWF/LF: Permitted Solid Waste Facilities

Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 08/02/2012
Date Data Arrived at EDR: 08/03/2012
Date Made Active in Reports: 08/23/2012
Number of Days to Update: 20

Source: Texas Commission on Environmental Quality
Telephone: 512-239-6706
Last EDR Contact: 07/27/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Quarterly

CLI: Closed Landfill Inventory
Closed and abandoned landfills (permitted as well as unauthorized) across the state of Texas.

Date of Government Version: 08/30/1999
Date Data Arrived at EDR: 09/28/2000
Date Made Active in Reports: 10/30/2000
Number of Days to Update: 32

Source: Texas Commission on Environmental Quality
Telephone: 512-239-6016
Last EDR Contact: 07/05/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Varies

H-GAC CLI: Houston-Galveston Closed Landfill Inventory
Closed Landfill Inventory for the Houston-Galveston Area Council Region. In 1993, the Texas Legislature passed House Bill (HB) 2537, which required Councils of Governments (COGs) to develop an inventory of closed municipal solid waste landfills for their regional solid waste management plans.

Date of Government Version: 03/23/2011
Date Data Arrived at EDR: 03/25/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 28

Source: Houston-Galveston Area Council
Telephone: 832-681-2518
Last EDR Contact: 07/05/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Varies

WASTEMGT: Commercial Hazardous & Solid Waste Management Facilities
This list contains commercial recycling facilities and facilities permitted or authorized (interim status) by the Texas Natural Resource Conservation Commission.

Date of Government Version: 07/01/2011
Date Data Arrived at EDR: 10/13/2011
Date Made Active in Reports: 11/15/2011
Number of Days to Update: 33

Source: Texas Commission on Environmental Quality
Telephone: 512-239-2920
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Varies

State and tribal leaking storage tank lists

LPST: Leaking Petroleum Storage Tank Database
An inventory of reported leaking petroleum storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 06/08/2012
Date Data Arrived at EDR: 07/03/2012
Date Made Active in Reports: 08/23/2012
Number of Days to Update: 51

Source: Texas Commission on Environmental Quality
Telephone: 512-239-2200
Last EDR Contact: 07/03/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 05/07/2012
Date Data Arrived at EDR: 05/08/2012
Date Made Active in Reports: 07/10/2012
Number of Days to Update: 63

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Quarterly

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 05/25/2012
Date Data Arrived at EDR: 05/25/2012
Date Made Active in Reports: 07/16/2012
Number of Days to Update: 52
Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Quarterly

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 09/12/2011
Date Data Arrived at EDR: 09/13/2011
Date Made Active in Reports: 11/11/2011
Number of Days to Update: 59
Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 08/18/2011
Date Data Arrived at EDR: 08/19/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 25
Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Quarterly

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 02/07/2012
Date Data Arrived at EDR: 02/17/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 88
Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 12/14/2011
Date Data Arrived at EDR: 12/15/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 26
Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Semi-Annually

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/12/2012
Date Data Arrived at EDR: 05/09/2012
Date Made Active in Reports: 07/10/2012
Number of Days to Update: 62
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 08/03/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

State and tribal registered storage tank lists

UST: Petroleum Storage Tank Database
Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 06/08/2012
Date Data Arrived at EDR: 07/03/2012
Date Made Active in Reports: 08/21/2012
Number of Days to Update: 49
Source: Texas Commission on Environmental Quality
Telephone: 512-239-2160
Last EDR Contact: 07/03/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

AST: Petroleum Storage Tank Database
Registered Aboveground Storage Tanks.

Date of Government Version: 06/08/2012
Date Data Arrived at EDR: 07/03/2012
Date Made Active in Reports: 08/21/2012
Number of Days to Update: 49

Source: Texas Commission on Environmental Quality
Telephone: 512-239-2160
Last EDR Contact: 07/03/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 05/07/2012
Date Data Arrived at EDR: 05/08/2012
Date Made Active in Reports: 07/16/2012
Number of Days to Update: 69

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 11/28/2011
Date Data Arrived at EDR: 11/29/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 42

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Quarterly

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 08/18/2011
Date Data Arrived at EDR: 08/19/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 25

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Quarterly

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 02/07/2012
Date Data Arrived at EDR: 02/17/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 88

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 05/10/2011
Date Data Arrived at EDR: 05/11/2011
Date Made Active in Reports: 06/14/2011
Number of Days to Update: 34

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 02/28/2012
Date Data Arrived at EDR: 02/29/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 76

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 12/14/2011
Date Data Arrived at EDR: 12/15/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 26

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 04/12/2012
Date Data Arrived at EDR: 05/02/2012
Date Made Active in Reports: 07/16/2012
Number of Days to Update: 75

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 08/03/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

FEMA UST: Underground Storage Tank Listing

A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 07/12/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Varies

State and tribal institutional control / engineering control registries

AUL: Sites with Controls

Activity and use limitations include both engineering controls and institutional controls.

Date of Government Version: 06/27/2012
Date Data Arrived at EDR: 07/13/2012
Date Made Active in Reports: 08/23/2012
Number of Days to Update: 41

Source: Texas Commission on Environmental Quality
Telephone: 512-239-5891
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R1: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 02/17/2012
Date Data Arrived at EDR: 04/03/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 42

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 07/02/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Varies

VCP RRC: Voluntary Cleanup Program Sites

The Voluntary Cleanup Program (RRC-VCP) provides an incentive to remediate Oil & Gas related pollution by participants as long as they did not cause or contribute to the contamination. Applicants to the program receive a release of liability to the state in exchange for a successful cleanup.

Date of Government Version: 04/26/2012
Date Data Arrived at EDR: 07/13/2012
Date Made Active in Reports: 08/23/2012
Number of Days to Update: 41

Source: Railroad Commission of Texas
Telephone: 512-463-6969
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP TCEQ: Voluntary Cleanup Program Database

The Texas Voluntary Cleanup Program was established to provide administrative, technical, and legal incentives to encourage the cleanup of contaminated sites in Texas.

Date of Government Version: 06/27/2012
Date Data Arrived at EDR: 07/13/2012
Date Made Active in Reports: 08/23/2012
Number of Days to Update: 41

Source: Texas Commission on Environmental Quality
Telephone: 512-239-5891
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Quarterly

State and tribal Brownfields sites

BROWNFIELDS: Brownfields Site Assessments

Brownfield site assessments that are being cleaned under EPA grant monies.

Date of Government Version: 06/27/2012
Date Data Arrived at EDR: 07/13/2012
Date Made Active in Reports: 08/21/2012
Number of Days to Update: 39

Source: TCEQ
Telephone: 512-239-5872
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Semi-Annually

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 06/27/2011
Date Data Arrived at EDR: 06/27/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 78

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 06/25/2012
Next Scheduled EDR Contact: 10/08/2012
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137
Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 07/03/2012
Next Scheduled EDR Contact: 10/08/2012
Data Release Frequency: No Update Planned

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39
Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52
Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 08/03/2012
Next Scheduled EDR Contact: 11/19/2012
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US CDL: Clandestine Drug Labs
A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 03/16/2012
Date Data Arrived at EDR: 06/12/2012
Date Made Active in Reports: 07/16/2012
Number of Days to Update: 34
Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 12/17/2012
Data Release Frequency: Quarterly

DEL SHWS: Deleted Superfund Registry Sites
Sites have been deleted from the state Superfund registry in accordance with the Act, ?361.189

Date of Government Version: 05/01/2012
Date Data Arrived at EDR: 06/21/2012
Date Made Active in Reports: 08/21/2012
Number of Days to Update: 61
Source: Texas Commission on Environmental Quality
Telephone: 512-239-0666
Last EDR Contact: 06/14/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Quarterly

PRIORITY CLEANERS: Dry Cleaner Remediation Program Prioritization List
A listing of dry cleaner related contaminated sites.

Date of Government Version: 04/12/2012
Date Data Arrived at EDR: 06/13/2012
Date Made Active in Reports: 08/21/2012
Number of Days to Update: 69
Source: Texas Commisision on Environmenatl Quality
Telephone: 512-239-5658
Last EDR Contact: 09/12/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Varies

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/01/2007
Date Data Arrived at EDR: 11/19/2008
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 131

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

Local Land Records

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/16/2012
Date Data Arrived at EDR: 03/26/2012
Date Made Active in Reports: 06/14/2012
Number of Days to Update: 80

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 07/27/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/09/2005
Date Data Arrived at EDR: 12/11/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 31

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/21/2012
Next Scheduled EDR Contact: 09/03/2012
Data Release Frequency: Varies

LIENS: Environmental Liens Listing

The listing covers TCEQ liens placed against either State Superfund sites or Federal Superfund sites to recover cost incurred by TCEQ.

Date of Government Version: 08/24/2012
Date Data Arrived at EDR: 08/29/2012
Date Made Active in Reports: 09/12/2012
Number of Days to Update: 14

Source: Texas Commission on Environmental Quality
Telephone: 512-239-2209
Last EDR Contact: 08/23/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Varies

HIST LIENS: Environmental Liens Listing

This listing contains information fields that are no longer tracked in the LIENS database.

Date of Government Version: 03/23/2007
Date Data Arrived at EDR: 03/23/2007
Date Made Active in Reports: 05/02/2007
Number of Days to Update: 40

Source: Texas Commission on Environmental Qualilty
Telephone: 512-239-2209
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 04/01/2012
Date Data Arrived at EDR: 04/03/2012
Date Made Active in Reports: 06/14/2012
Number of Days to Update: 72

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 07/02/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Annually

SPILLS: Spills Database

Spills reported to the Emergency Response Division.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 07/03/2012
Date Made Active in Reports: 08/29/2012
Number of Days to Update: 57

Source: Texas Commission on Environmental Quality
Telephone: 512-239-2507
Last EDR Contact: 08/23/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Quarterly

Other Ascertainable Records

RCRA-NonGen: RCRA - Non Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/15/2012
Date Data Arrived at EDR: 04/04/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 41

Source: Environmental Protection Agency
Telephone: 214-665-6444
Last EDR Contact: 08/16/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Varies

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/29/2011
Date Data Arrived at EDR: 08/09/2011
Date Made Active in Reports: 11/11/2011
Number of Days to Update: 94

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/19/2012
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 08/12/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 112

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 09/10/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 01/25/2012
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 36

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 06/27/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 02/27/2012
Date Data Arrived at EDR: 03/14/2012
Date Made Active in Reports: 06/14/2012
Number of Days to Update: 92

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 09/12/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/07/2011
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 146

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 08/28/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Varies

MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 08/18/2011
Date Data Arrived at EDR: 09/08/2011
Date Made Active in Reports: 09/29/2011
Number of Days to Update: 21

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 09/04/2012
Next Scheduled EDR Contact: 12/17/2012
Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 09/01/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 131

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 08/31/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 64

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 06/29/2012
Next Scheduled EDR Contact: 10/08/2012
Data Release Frequency: Every 4 Years

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/22/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/22/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

SSTS: Section 7 Tracking Systems
Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77
Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 07/27/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 07/20/2011
Date Data Arrived at EDR: 11/10/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 61

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 06/21/2012
Next Scheduled EDR Contact: 10/08/2012
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 11/01/2010
Date Data Arrived at EDR: 11/10/2010
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 98

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 06/21/2011
Date Data Arrived at EDR: 07/15/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 60

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 01/10/2012
Date Data Arrived at EDR: 01/12/2012
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 49

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 07/11/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 10/23/2011
Date Data Arrived at EDR: 12/13/2011
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 79

Source: EPA
Telephone: (214) 665-2200
Last EDR Contact: 09/11/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 08/31/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Biennially

IOP: Innocent Owner/Operator Program

Contains information on all sites that are in the IOP. An IOP is an innocent owner or operator whose property is contaminated as a result of a release or migration of contaminants from a source or sources not located on the property, and they did not cause or contribute to the source or sources of contamination.

Date of Government Version: 06/27/2012
Date Data Arrived at EDR: 07/13/2012
Date Made Active in Reports: 08/23/2012
Number of Days to Update: 41

Source: Texas Commission on Environmental Quality
Telephone: 512-239-5894
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Quarterly

NPDES: NPDES Facility List

Permitted wastewater outfalls.

Date of Government Version: 03/02/2012
Date Data Arrived at EDR: 05/24/2012
Date Made Active in Reports: 06/11/2012
Number of Days to Update: 18

Source: Texas Commission on Environmental Quality
Telephone: 512-239-4591
Last EDR Contact: 08/24/2012
Next Scheduled EDR Contact: 12/03/2012
Data Release Frequency: Varies

UIC: Underground Injection Wells Database Listing

Class V injection wells regulated by the TCEQ. Class V wells are used to inject non-hazardous fluids underground. Most Class V wells are used to dispose of wastes into or above underground sources of drinking water and can pose a threat to ground water quality, if not managed properly.

Date of Government Version: 07/23/2012
Date Data Arrived at EDR: 07/26/2012
Date Made Active in Reports: 08/29/2012
Number of Days to Update: 34

Source: Texas Commission on Environmental Quality
Telephone: 512-239-6627
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 11/05/2012
Data Release Frequency: Varies

DRYCLEANERS: Drycleaner Registration Database Listing

A listing of drycleaning facilities.

Date of Government Version: 03/31/2012
Date Data Arrived at EDR: 06/13/2012
Date Made Active in Reports: 08/17/2012
Number of Days to Update: 65

Source: Texas Commission on Environmental Quality
Telephone: 512-239-2160
Last EDR Contact: 09/12/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Varies

ENFORCEMENT: Notice of Violations Listing

A listing of permit violations.

Date of Government Version: 03/16/2012
Date Data Arrived at EDR: 03/22/2012
Date Made Active in Reports: 04/06/2012
Number of Days to Update: 15

Source: Texas Commission on Environmental Quality
Telephone: 512-239-6012
Last EDR Contact: 09/06/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Semi-Annually

Ind. Haz Waste: Industrial & Hazardous Waste Database

Summary reports reported by waste handlers, generators and shippers in Texas.

Date of Government Version: 05/31/2012
Date Data Arrived at EDR: 07/13/2012
Date Made Active in Reports: 08/23/2012
Number of Days to Update: 41

Source: Texas Commission on Environmental Quality
Telephone: 512-239-0985
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Annually

ED AQUIF: Edwards Aquifer Permits

A listing of permits in the Edwards Aquifer Protection Program database. The information provided is for the counties located in the Austin Region (Hays, Travis, and Williamson counties).

Date of Government Version: 07/19/2012
Date Data Arrived at EDR: 07/26/2012
Date Made Active in Reports: 08/23/2012
Number of Days to Update: 28

Source: Texas Commission on Environmental Quality, Austin Region
Telephone: 512-339-2929
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Varies

AIRS: Current Emission Inventory Data

The database lists by company, along with their actual emissions, the TNRCC air accounts that emit EPA criteria pollutants.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/12/2012
Date Made Active in Reports: 02/06/2012
Number of Days to Update: 25

Source: Texas Commission on Environmental Quality
Telephone: N/A
Last EDR Contact: 06/22/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Semi-Annually

MSD: Municipal Settings Designations Database

An MSD is an official state designation given to property within a municipality or its extraterritorial jurisdiction that certifies that designated groundwater at the property is not use as potable water, and is prohibited from future use as potatable water because that groundwater is contaminated in excess of the applicable potable-water protective concentration level.

Date of Government Version: 06/25/2012
Date Data Arrived at EDR: 06/29/2012
Date Made Active in Reports: 08/21/2012
Number of Days to Update: 53

Source: Texas Commission on Environmental Quality
Telephone: 512-239-4982
Last EDR Contact: 06/22/2012
Next Scheduled EDR Contact: 10/08/2012
Data Release Frequency: Varies

TIER 2: Tier 2 Chemical Inventory Reports

A listing of facilities which store or manufacture hazardous materials and submit a chemical inventory report.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 06/13/2012
Date Made Active in Reports: 08/21/2012
Number of Days to Update: 69

Source: Department of State Health Services
Telephone: 512-834-6603
Last EDR Contact: 08/23/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Annually

RWS: Radioactive Waste Sites

Sites in the State of Texas that have been designated as Radioactive Waste sites.

Date of Government Version: 07/24/2006
Date Data Arrived at EDR: 12/14/2006
Date Made Active in Reports: 01/23/2007
Number of Days to Update: 40

Source: Texas Commission on Environmental Quality
Telephone: 512-239-0859
Last EDR Contact: 08/24/2012
Next Scheduled EDR Contact: 12/03/2012
Data Release Frequency: Semi-Annually

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Semi-Annually

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 03/07/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 11/05/2012
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 05/24/2012
Date Data Arrived at EDR: 06/05/2012
Date Made Active in Reports: 06/14/2012
Number of Days to Update: 9

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 08/14/2012
Next Scheduled EDR Contact: 12/03/2012
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 03/31/2012
Date Data Arrived at EDR: 05/17/2012
Date Made Active in Reports: 06/14/2012
Number of Days to Update: 28

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Quarterly

GCC: Groundwater Contamination Cases

Texas Water Code, Section 26.406 requires the annual report to describe the current status of groundwater monitoring activities conducted or required by each agency at regulated facilities or associated with regulated activities. The report is required to contain a description of each case of groundwater contamination documented during the previous calendar year. Also to be included, is a description of each case of contamination documented during previous periods for which voluntary clean up action was incomplete at the time the preceding report was issued. The report is also required to indicate the status of enforcement action for each listed case.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 12/20/2011
Date Made Active in Reports: 02/01/2012
Number of Days to Update: 43
Source: Texas Commission on Environmental Quality
Telephone: 512-239-5690
Last EDR Contact: 09/07/2012
Next Scheduled EDR Contact: 12/17/2012
Data Release Frequency: Annually

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 02/27/2012
Date Data Arrived at EDR: 04/04/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 41
Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 07/02/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

FEDLAND: Federal and Indian Lands
Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339
Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: N/A

2020 COR ACTION: 2020 Corrective Action Program List
The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 11/11/2011
Date Data Arrived at EDR: 05/18/2012
Date Made Active in Reports: 05/25/2012
Number of Days to Update: 7
Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 08/16/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Varies

FINANCIAL ASSURANCE 2: Financial Assurance Information Listing
Financial Assurance information for underground storage tank facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay

Date of Government Version: 06/08/2012
Date Data Arrived at EDR: 07/03/2012
Date Made Active in Reports: 08/21/2012
Number of Days to Update: 49
Source: Texas Commission on Environmental Quality
Telephone: 512-239-0986
Last EDR Contact: 07/03/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 10/19/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 83
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 08/03/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

COAL ASH DOE: Sleam-Electric Plan Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 07/16/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 08/17/2010
Date Data Arrived at EDR: 01/03/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 77
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 06/12/2012
Next Scheduled EDR Contact: 09/24/2012
Data Release Frequency: Varies

FINANCIAL ASSURANCE 1: Financial Assurance Information Listing
Financial assurance information.

Date of Government Version: 07/02/2012
Date Data Arrived at EDR: 07/03/2012
Date Made Active in Reports: 08/21/2012
Number of Days to Update: 49
Source: Texas Commission on Environmental Quality
Telephone: 512-239-6239
Last EDR Contact: 06/29/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Varies

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A
Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

COUNTY RECORDS

TRAVIS COUNTY:

Historic Tank Records
A listing of historic records from the City of Austin.

Date of Government Version: 06/25/2012
Date Data Arrived at EDR: 06/29/2012
Date Made Active in Reports: 08/23/2012
Number of Days to Update: 55
Source: Department of Planning & Development Review
Telephone: 512-974-2715
Last EDR Contact: 09/06/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data

Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 05/21/2012
Date Data Arrived at EDR: 05/22/2012
Date Made Active in Reports: 05/31/2012
Number of Days to Update: 9

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 08/20/2012
Next Scheduled EDR Contact: 12/03/2012
Data Release Frequency: Annually

NJ MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 07/19/2012
Date Made Active in Reports: 08/28/2012
Number of Days to Update: 40

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data

Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 05/01/2012
Date Data Arrived at EDR: 05/09/2012
Date Made Active in Reports: 06/14/2012
Number of Days to Update: 36

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 08/09/2012
Next Scheduled EDR Contact: 11/19/2012
Data Release Frequency: Annually

PA MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 04/27/2012
Date Made Active in Reports: 06/05/2012
Number of Days to Update: 39

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 11/05/2012
Data Release Frequency: Annually

RI MANIFEST: Manifest information

Hazardous waste manifest information

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 06/22/2012
Date Made Active in Reports: 07/31/2012
Number of Days to Update: 39

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 08/23/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Annually

VT MANIFEST: Hazardous Waste Manifest Data

Hazardous waste manifest information.

Date of Government Version: 08/09/2012
Date Data Arrived at EDR: 08/15/2012
Date Made Active in Reports: 09/13/2012
Number of Days to Update: 29

Source: Department of Environmental Conservation
Telephone: 802-241-3443
Last EDR Contact: 07/23/2012
Next Scheduled EDR Contact: 11/05/2012
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 08/19/2011
Date Made Active in Reports: 09/15/2011
Number of Days to Update: 27

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 07/16/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Annually

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: Rextag Strategies Corp.
Telephone: (281) 769-2247
U.S. Electric Transmission and Power Plants Systems Digital GIS Data

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Child Care Facility List
Source: Department of Protective & Regulatory Services
Telephone: 512-438-3269

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

P1
BOCA CHICA BOULEVARD
PORT ISABEL, TX 78578

TARGET PROPERTY COORDINATES

Latitude (North):	25.9856 - 25° 59' 8.16''
Longitude (West):	97.1867 - 97° 11' 12.12''
Universal Tranverse Mercator:	Zone 14
UTM X (Meters):	681515.0
UTM Y (Meters):	2875185.2
Elevation:	7 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	25097-H2 MOUTH OF RIO GRANDE, TX MX28
Most Recent Revision:	1970
North Map:	26097-A2 PORT ISABEL, TX
Most Recent Revision:	1983

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principal investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

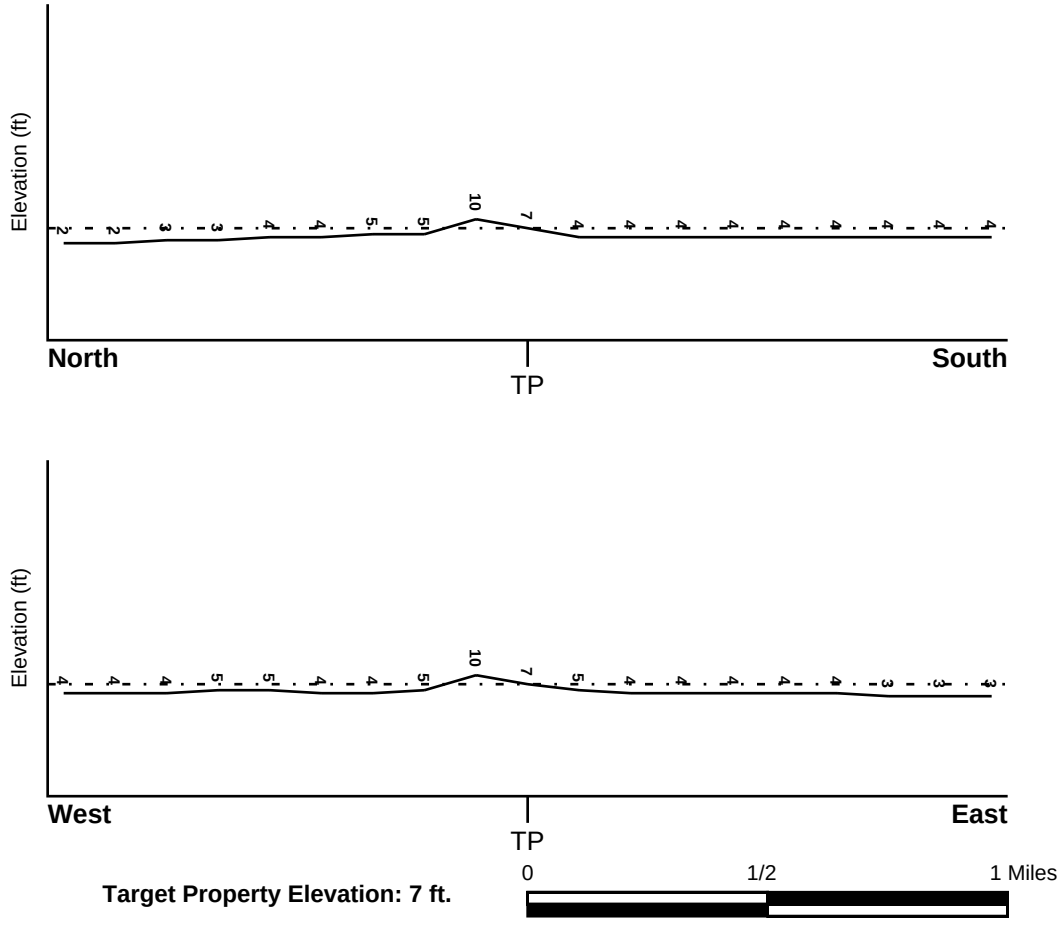
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General South

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
CAMERON, TX	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property: 4801010375D - FEMA Q3 Flood data

Additional Panels in search area: Not Reported

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
MOUTH OF RIO GRANDE	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

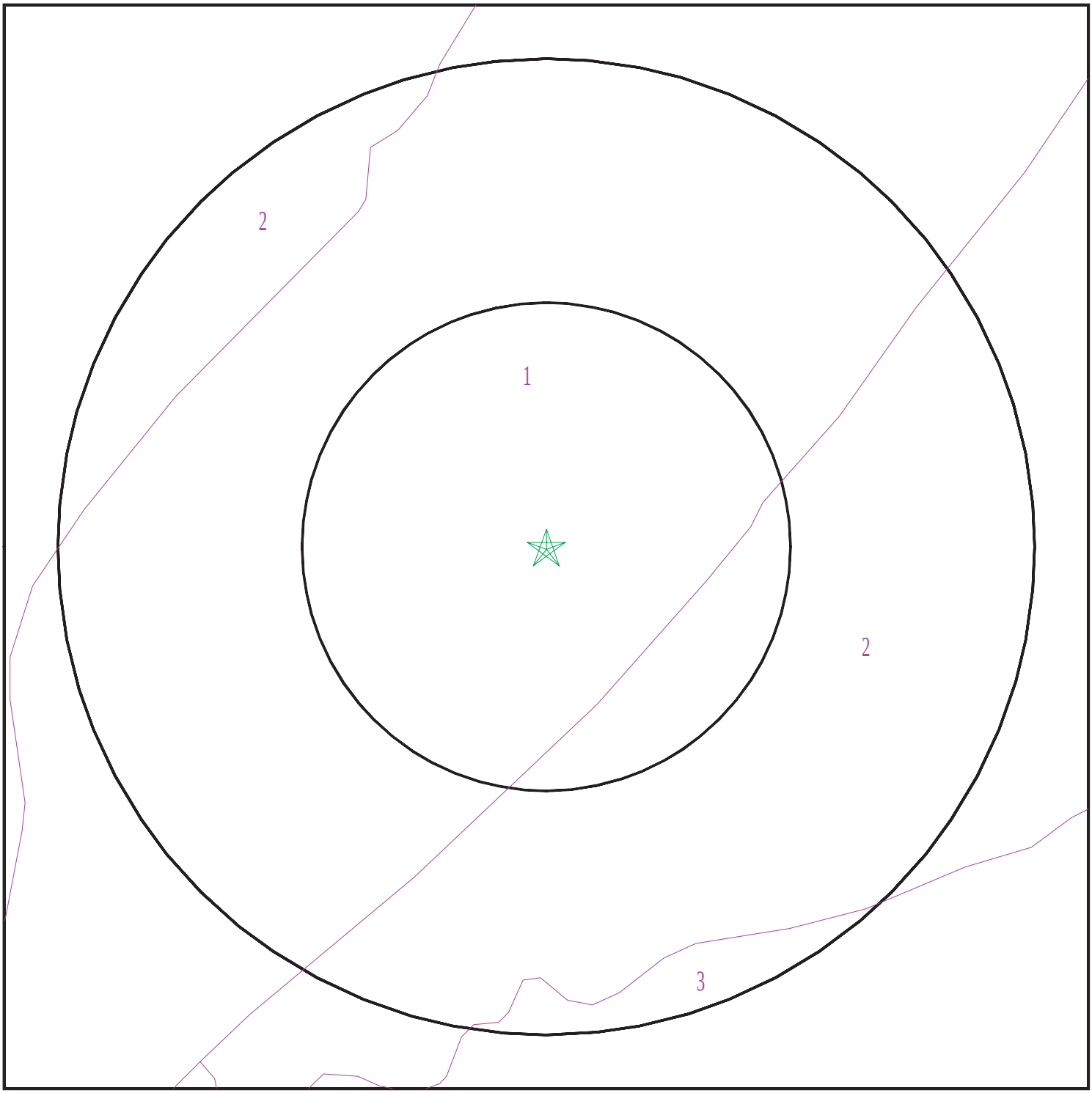
Era:	Cenozoic
System:	Quaternary
Series:	Holocene
Code:	Qh *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 3410419.3s



SITE NAME:	P1	CLIENT:	SpaceX
ADDRESS:	Boca Chica Boulevard Port Isabel TX 78578	CONTACT:	Steve Davis
		INQUIRY #:	3410419.3s
LAT/LONG:	25.9856 / 97.1867	DATE:	September 14, 2012 9:23 am

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Galveston

Soil Surface Texture: fine sand

Hydrologic Group: Class A - High infiltration rates. Soils are deep, well drained to excessively drained sands and gravels.

Soil Drainage Class: Somewhat excessively drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 137 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	5 inches	fine sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Clean Sands, Poorly graded sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 8.4 Min: 5.6
2	5 inches	62 inches	fine sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Clean Sands, Poorly graded sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 8.4 Min: 5.6

Soil Map ID: 2

Soil Component Name: Barrada

Soil Surface Texture: clay

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Very poorly drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	51 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 0.42 Min: 0.01	Max: 9 Min: 7.9
2	51 inches	62 inches	silty clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 0.42 Min: 0.01	Max: 9 Min: 7.9

Soil Map ID: 3

Soil Component Name: Sejita

Soil Surface Texture: silty clay loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Poorly drained

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Hydric Status: All hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	20 inches	silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 9 Min: 7.9
2	20 inches	59 inches	sr to silt loam to silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 9 Min: 7.9

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

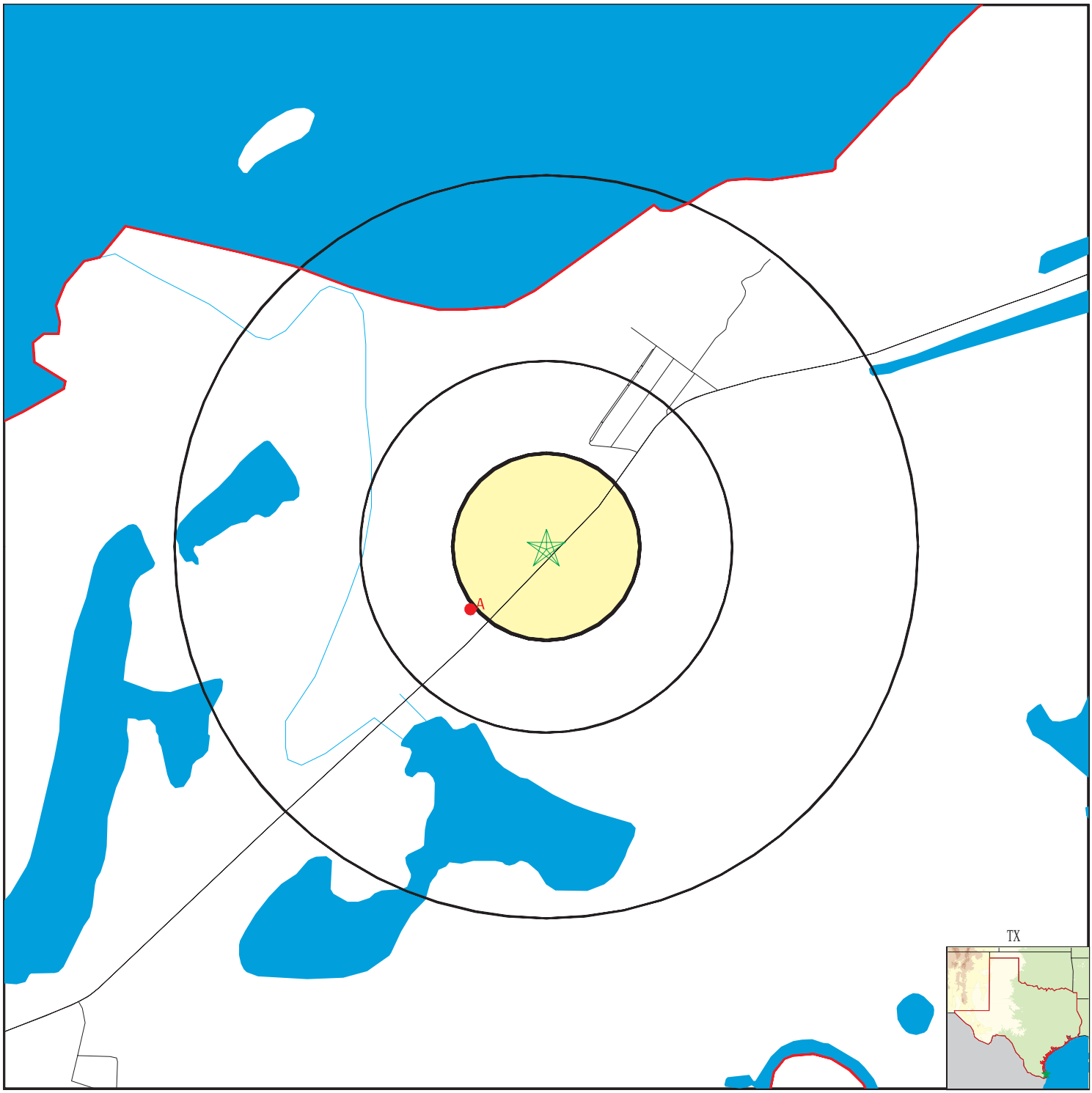
MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

OTHER STATE DATABASE INFORMATION

STATE OIL/GAS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A1	TXOG50000000061	1/8 - 1/4 Mile SW
A2	TXOG50000000060	1/8 - 1/4 Mile SW
A3	TXOG50000000059	1/4 - 1/2 Mile SW
A4	TXOG50000000058	1/4 - 1/2 Mile SW

PHYSICAL SETTING SOURCE MAP - 3410419.3s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil or gas wells

No contour lines were detected within this map area.

SITE NAME: P1	CLIENT: SpaceX
ADDRESS: Boca Chica Boulevard Port Isabel TX 78578	CONTACT: Steve Davis INQUIRY #: 3410419.3s
LAT/LONG: 25.9856 / 97.1867	DATE: September 14, 2012 9:23 am

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance

Database EDR ID Number

A1
SW
1/8 - 1/4 Mile

OIL_GAS **TXOG50000000061**

Surface id:	1211028		
Well Type:	Sidetrack Well Surface Location	Api:	06130526
Reliab:	Coordinate (operator reported).		
Longn:	-97.18924102		
Latn:	25.98325861		
Site id:	TXOG50000000061		

Surface id:	1211028		
Well Type:	Gas Well	Apinum:	4206130526D1
Out fips:	N	Reliab:	Operator reported location (distances and plat).
Cwellnum:	2R	Radioact:	Not Reported
Longn:	-97.18917918		
Latn:	25.97386947		

A2
SW
1/8 - 1/4 Mile

OIL_GAS **TXOG50000000060**

Surface id:	1236669		
Well Type:	Permitted Location	Api:	06130530
Reliab:	Coordinate (operator reported).		
Longn:	-97.18951632		
Latn:	25.98300918		
Site id:	TXOG50000000060		

Surface id:	1236669		
Well Type:	Permitted Location	Apinum:	4206130530
Out fips:	N	Reliab:	Coordinate (operator reported).
Cwellnum:	3	Radioact:	Not Reported
Longn:	-97.18951632		
Latn:	25.98300918		

A3
SW
1/4 - 1/2 Mile

OIL_GAS **TXOG50000000059**

Surface id:	1206112		
Well Type:	Sidetrack Well Surface Location	Api:	06130524
Reliab:	Coordinate (operator reported).		
Longn:	-97.19005837		
Latn:	25.98248608		
Site id:	TXOG50000000059		

Surface id:	1206112		
Well Type:	Dry Hole	Apinum:	4206130524D1
Out fips:	N	Reliab:	Coordinate (operator reported).
Cwellnum:	2	Radioact:	Not Reported
Longn:	-97.18959417		
Latn:	25.97384796		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance

Database | EDR ID Number

A4
SW
1/4 - 1/2 Mile

OIL_GAS | **TXOG50000000058**

Surface id:	1205995		
Well Type:	Sidetrack Well Surface Location	Api:	06130523
Reliab:	Coordinate (operator reported).		
Longn:	-97.19011118		
Latn:	25.98243761		
Site id:	TXOG50000000058		

Surface id:	1205995		
Well Type:	Gas Well	Apinum:	4206130523D1
Out fips:	N	Reliab:	Operator reported location (distances and plat).
Cwellnum:	1	Radioact:	Not Reported
Longn:	-97.19240281		
Latn:	25.98514046		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: TX Radon

Radon Test Results

County	Mean	Total Sites	%>4 pCi/L	%>20 pCi/L	Min pCi/L	Max pCi/L
CAMERON	<.5	11	.0	.0	<.5	1.4

Federal EPA Radon Zone for CAMERON County: 3

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for CAMERON COUNTY, TX

Number of sites tested: 7

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.386 pCi/L	100%	0%	0%
Living Area - 2nd Floor	0.100 pCi/L	100%	0%	0%
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Public Water Supply Sources Databases
Source: Texas Commission on Environmental Quality
Telephone: 512-239-6199
Locations of public drinking water sources maintained by the TCEQ

Groundwater Database
Source: Texas Water Development Board
Telephone: 512-936-0837

Well Report Database
Source: Department of Licensing and Regulation
Telephone: 512-936-0833

Water Well Database
Source: Harris-Galveston Coastal Subsidence District
Telephone: 281-486-1105

Submitted Driller's Reports Database
Source: Texas Water Development Board
Telephone: 512-936-0833
The Submitted Driller's Reports Database is populated from the online Texas Well Report Submission and Retrieval System which is a cooperative Texas Department of Licensing and Regulation (TDLR) and Texas Water Development Board (TWDB) application that registered water-well drillers use to submit their required reports.

OTHER STATE DATABASE INFORMATION

Texas Oil and Gas Wells:
Source: Texas Railroad Commission
Telephone: 512-463-6882
Oil and gas well locations

RADON

State Database: TX Radon
Source: Department of Health
Telephone: 512-834-6688
Rinal Report of the Texas Indoor Radon Survey

PHYSICAL SETTING SOURCE RECORDS SEARCHED

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

STREET AND ADDRESS INFORMATION

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P23
Boca Chica Blvd
Port Isabel, TX 78578

Inquiry Number: 3410419.5s
September 14, 2012

The EDR Radius Map™ Report with GeoCheck®

Environmental Data Resources Inc

440 Wheelers Farms Road
Milford, CT 06461
Toll Free: 800.352.0050
www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

BOCA CHICA BLVD
PORT ISABEL, TX 78578

COORDINATES

Latitude (North):	25.9897000 - 25° 59' 22.92''
Longitude (West):	97.1828000 - 97° 10' 58.08''
Universal Tranverse Mercator:	Zone 14
UTM X (Meters):	681899.2
UTM Y (Meters):	2875645.0
Elevation:	5 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	25097-H2 MOUTH OF RIO GRANDE, TX MX28
Most Recent Revision:	1970
North Map:	26097-A2 PORT ISABEL, TX
Most Recent Revision:	1983

AERIAL PHOTOGRAPHY IN THIS REPORT

Photo Year:	2010
Source:	USDA

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL---------- National Priority List

EXECUTIVE SUMMARY

Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

CERCLIS ---------- Comprehensive Environmental Response, Compensation, and Liability Information System
FEDERAL FACILITY ---------- Federal Facility Site Information listing

Federal CERCLIS NFRAP site List

CERC-NFRAP ---------- CERCLIS No Further Remedial Action Planned

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

US ENG CONTROLS ---------- Engineering Controls Sites List
US INST CONTROL ---------- Sites with Institutional Controls

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State- and tribal - equivalent NPL

SHWS ---------- State Superfund Registry

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ---------- Permitted Solid Waste Facilities
CLI ---------- Closed Landfill Inventory
WasteMgt ---------- Commercial Hazardous & Solid Waste Management Facilities

State and tribal leaking storage tank lists

LPST ---------- Leaking Petroleum Storage Tank Listing
INDIAN LUST ---------- Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

UST ---------- Petroleum Storage Tank Database

AST ---- Petroleum Storage Tank Database
INDIAN UST ---- Underground Storage Tanks on Indian Land
FEMA UST ---- Underground Storage Tank Listing

State and tribal institutional control / engineering control registries

AUL ---- Sites with Controls

State and tribal voluntary cleanup sites

VCP ---- Voluntary Cleanup Program Database
INDIAN VCP ---- Voluntary Cleanup Priority Listing

State and tribal Brownfields sites

BROWNFIELDS ---- Brownfields Site Assessments

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ---- A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

ODI ---- Open Dump Inventory
DEBRIS REGION 9 ---- Torres Martinez Reservation Illegal Dump Site Locations
INDIAN ODI ---- Report on the Status of Open Dumps on Indian Lands

Local Lists of Hazardous waste / Contaminated Sites

US CDL ---- Clandestine Drug Labs
DEL SHWS ---- Deleted Superfund Registry Sites
PRIORITYCLEANERS ---- Dry Cleaner Remediation Program Prioritization List
US HIST CDL ---- National Clandestine Laboratory Register

Local Land Records

LIENS 2 ---- CERCLA Lien Information
LUCIS ---- Land Use Control Information System
LIENS ---- Environmental Liens Listing
HIST LIENS ---- Environmental Liens Listing

Records of Emergency Release Reports

HMIRS ---- Hazardous Materials Information Reporting System
SPILLS ---- Spills Database

Other Ascertainable Records

RCRA-NonGen ---- RCRA - Non Generators
DOT OPS ---- Incident and Accident Data
DOD ---- Department of Defense Sites
FUDS ---- Formerly Used Defense Sites

CONSENT	Superfund (CERCLA) Consent Decrees
ROD	Records Of Decision
UMTRA	Uranium Mill Tailings Sites
MINES	Mines Master Index File
TRIS	Toxic Chemical Release Inventory System
TSCA	Toxic Substances Control Act
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
SSTS	Section 7 Tracking Systems
ICIS	Integrated Compliance Information System
PADS	PCB Activity Database System
MLTS	Material Licensing Tracking System
RADINFO	Radiation Information Database
FINDS	Facility Index System/Facility Registry System
RAATS	RCRA Administrative Action Tracking System
IOP	Innocent Owner/Operator Program
NPDES	NPDES Facility List
UIC	Underground Injection Wells Database Listing
DRYCLEANERS	Drycleaner Registration Database Listing
ENF	Notice of Violations Listing
Ind. Haz Waste	Industrial & Hazardous Waste Database
ED AQUIF	Edwards Aquifer Permits
AIRS	Current Emission Inventory Data
MSD	Municipal Settings Designations Database
TIER 2	Tier 2 Chemical Inventory Reports
RWS	Radioactive Waste Sites
INDIAN RESERV	Indian Reservations
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
2020 COR ACTION	2020 Corrective Action Program List
GCC	Groundwater Contamination Cases
EPA WATCH LIST	EPA WATCH LIST
FINANCIAL ASSURANCE	Financial Assurance Information Listing
PCB TRANSFORMER	PCB Transformer Registration Database
PRP	Potentially Responsible Parties
COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
US FIN ASSUR	Financial Assurance Information

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants	EDR Proprietary Manufactured Gas Plants

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were not identified.

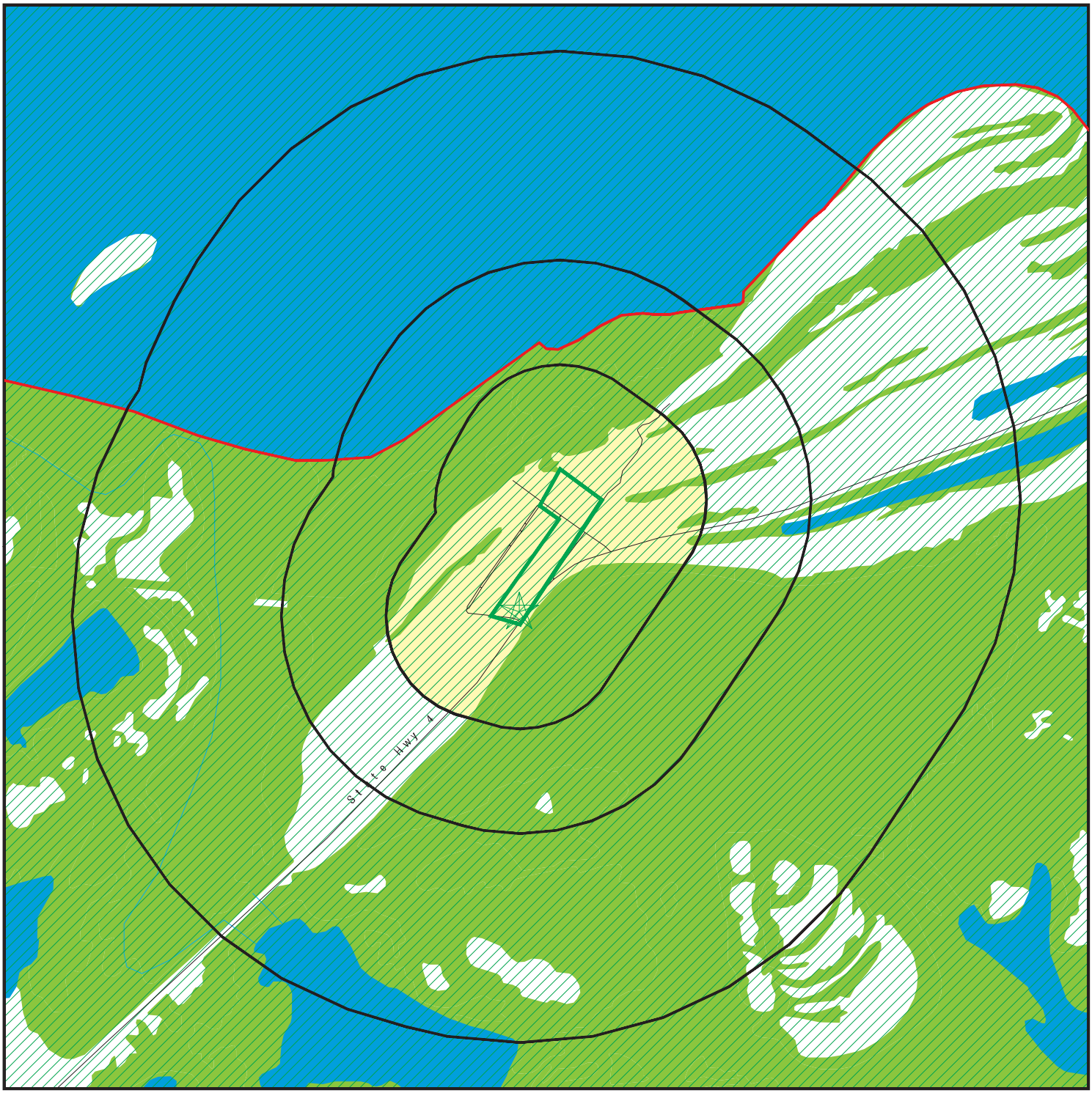
Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 6 records.

Site Name	Database(s)
BAYSIDE NET & TWINE CO	CERC-NFRAP
CITY OF PORT ISABEL LANDFILL	SWF/LF
CAMERON COUNTY FWSD NO 1 TRANSFER	SWF/LF
CAMERON COUNTY FWSD NO 1 TRANSFER	SWF/LF
CITY OF PORT ISABEL LANDFILL	SWF/LF
VALLEY FISHERIES	AST

OVERVIEW MAP - 3410419.5s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites

0 1/4 1/2 1 Miles

- Indian Reservations BIA
- County Boundary
- Oil & Gas pipelines from USGS
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: P23 ADDRESS: Boca Chica Blvd Port Isabel TX 78578 LAT/LONG: 25.9897 / 97.1828	CLIENT: SpaceX CONTACT: Steve Davis INQUIRY #: 3410419.5s DATE: September 14, 2012 9:21 am

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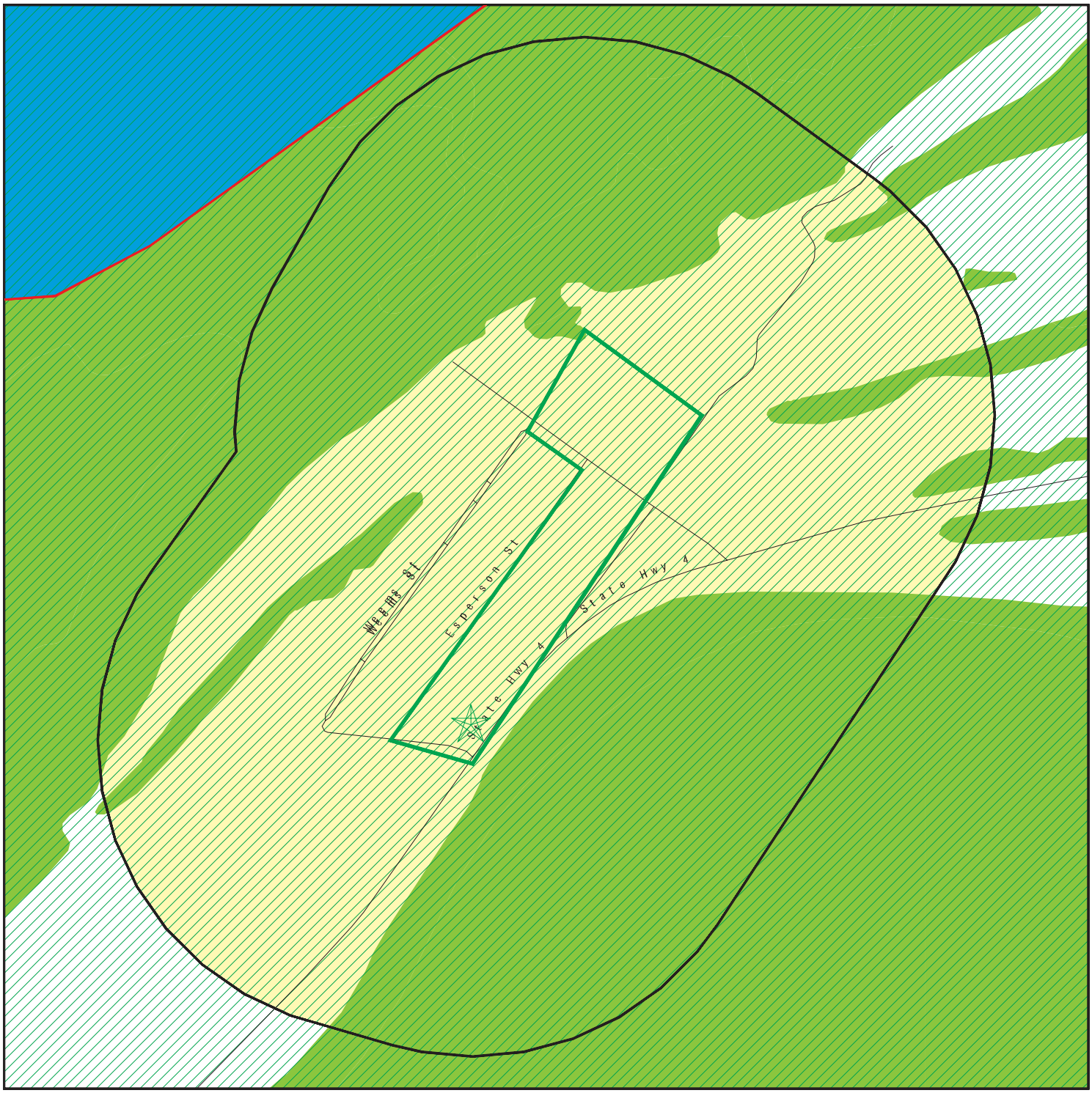
DETAIL MAP - 3410419.5s



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites

0 1/16 1/8 1/4 Miles

- Indian Reservations BIA
- County Boundary
- Oil & Gas pipelines from USGS
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: P23 ADDRESS: Boca Chica Blvd Port Isabel TX 78578 LAT/LONG: 25.9897 / 97.1828	CLIENT: SpaceX CONTACT: Steve Davis INQUIRY #: 3410419.5s DATE: September 14, 2012 9:23 am

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
CERCLIS	0.500		0	0	0	NR	NR	0
FEDERAL FACILITY	1.000		0	0	0	0	NR	0
Federal CERCLIS NFRAP site List								
CERC-NFRAP	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
SHWS	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
CLI	0.500		0	0	0	NR	NR	0
WasteMgt	TP		NR	NR	NR	NR	NR	0
State and tribal leaking storage tank lists								
LPST	0.500		0	0	0	NR	NR	0
INDIAN LUST	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
UST	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
FEMA UST	0.250		0	0	NR	NR	NR	0
State and tribal institutional control / engineering control registries								
AUL	0.500		0	0	0	NR	NR	0
State and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US CDL	TP		NR	NR	NR	NR	NR	0
DEL SHWS	1.000		0	0	0	0	NR	0
PRIORITYCLEANERS	0.500		0	0	0	NR	NR	0
US HIST CDL	TP		NR	NR	NR	NR	NR	0
Local Land Records								
LIENS 2	TP		NR	NR	NR	NR	NR	0
LUCIS	0.500		0	0	0	NR	NR	0
LIENS	TP		NR	NR	NR	NR	NR	0
HIST LIENS	TP		NR	NR	NR	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0
SPILLS	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA-NonGen	0.250		0	0	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
DOD	1.000		0	0	0	0	NR	0
FUDS	1.000		0	0	0	0	NR	0
CONSENT	1.000		0	0	0	0	NR	0
ROD	1.000		0	0	0	0	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
UMTRA	0.500		0	0	0	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
IOP	TP		NR	NR	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
ENF	TP		NR	NR	NR	NR	NR	0
Ind. Haz Waste	TP		NR	NR	NR	NR	NR	0
ED AQUIF	TP		NR	NR	NR	NR	NR	0
AIRS	TP		NR	NR	NR	NR	NR	0
MSD	0.500		0	0	0	NR	NR	0
TIER 2	TP		NR	NR	NR	NR	NR	0
RWS	TP		NR	NR	NR	NR	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
GCC	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
FINANCIAL ASSURANCE	TP		NR	NR	NR	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants	1.000		0	0	0	0	NR	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

MAP FINDINGS

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number

NO SITES FOUND

Count: 6 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
PORT ISABEL	1003875881	BAYSIDE NET & TWINE CO	HWY 100 N (P.O. BOX 959)	78578	CERC-NFRAP
PORT ISABEL	S108425080	CITY OF PORT ISABEL LANDFILL	15TH MILES SW OF INTERSECTION		SWF/LF
PORT ISABEL	S109515052	CAMERON COUNTY FWSD NO 1 TRANSFER	ADJACENT TO W BOUNDARY OF PRT		SWF/LF
PORT ISABEL	S109515053	CAMERON COUNTY FWSD NO 1 TRANSFER	ADJACENT TO W BOUNDRY OF PRT		SWF/LF
PORT ISABEL	A100190419	VALLEY FISHERIES	S JUNCTION HWY 48TH &	78578	AST
PORT ISABEL	S109978523	CITY OF PORT ISABEL LANDFILL	PORT RD		SWF/LF

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 05/08/2012
Date Data Arrived at EDR: 05/10/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 5

Source: EPA
Telephone: N/A
Last EDR Contact: 07/05/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 03/30/2012
Date Data Arrived at EDR: 04/05/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 40

Source: EPA
Telephone: N/A
Last EDR Contact: 07/05/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 03/30/2012
Date Data Arrived at EDR: 04/05/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 40

Source: EPA
Telephone: N/A
Last EDR Contact: 07/05/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Quarterly

Federal CERCLIS list

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 12/27/2011
Date Data Arrived at EDR: 02/27/2012
Date Made Active in Reports: 03/12/2012
Number of Days to Update: 14

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 08/28/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Quarterly

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 12/10/2010
Date Data Arrived at EDR: 01/11/2011
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 36

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Varies

Federal CERCLIS NFRAP site List

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 12/28/2011
Date Data Arrived at EDR: 02/27/2012
Date Made Active in Reports: 03/12/2012
Number of Days to Update: 14

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 08/28/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 08/19/2011
Date Data Arrived at EDR: 08/31/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 132

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/15/2012
Date Data Arrived at EDR: 04/04/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 41

Source: Environmental Protection Agency
Telephone: 214-665-6444
Last EDR Contact: 08/16/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/15/2012
Date Data Arrived at EDR: 04/04/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 41

Source: Environmental Protection Agency
Telephone: 214-665-6444
Last EDR Contact: 08/16/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/15/2012
Date Data Arrived at EDR: 04/04/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 41

Source: Environmental Protection Agency
Telephone: 214-665-6444
Last EDR Contact: 08/16/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/15/2012
Date Data Arrived at EDR: 04/04/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 41

Source: Environmental Protection Agency
Telephone: 214-665-6444
Last EDR Contact: 08/16/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal institutional controls / engineering controls registries

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 12/30/2011
Date Data Arrived at EDR: 12/30/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 11

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 12/30/2011
Date Data Arrived at EDR: 12/30/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 11

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 04/02/2012
Date Data Arrived at EDR: 04/03/2012
Date Made Active in Reports: 06/14/2012
Number of Days to Update: 72

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 07/02/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Annually

State- and tribal - equivalent NPL

SHWS: State Superfund Registry

State Hazardous Waste Sites. State hazardous waste site records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. Available information varies by state.

Date of Government Version: 05/01/2012
Date Data Arrived at EDR: 06/21/2012
Date Made Active in Reports: 08/21/2012
Number of Days to Update: 61

Source: Texas Commission on Environmental Quality
Telephone: 512-239-5680
Last EDR Contact: 06/14/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Semi-Annually

State and tribal landfill and/or solid waste disposal site lists

SWF/LF: Permitted Solid Waste Facilities

Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 08/02/2012
Date Data Arrived at EDR: 08/03/2012
Date Made Active in Reports: 08/23/2012
Number of Days to Update: 20
Source: Texas Commission on Environmental Quality
Telephone: 512-239-6706
Last EDR Contact: 07/27/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Quarterly

CLI: Closed Landfill Inventory
Closed and abandoned landfills (permitted as well as unauthorized) across the state of Texas.

Date of Government Version: 08/30/1999
Date Data Arrived at EDR: 09/28/2000
Date Made Active in Reports: 10/30/2000
Number of Days to Update: 32
Source: Texas Commission on Environmental Quality
Telephone: 512-239-6016
Last EDR Contact: 07/05/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Varies

H-GAC CLI: Houston-Galveston Closed Landfill Inventory
Closed Landfill Inventory for the Houston-Galveston Area Council Region. In 1993, the Texas Legislature passed House Bill (HB) 2537, which required Councils of Governments (COGs) to develop an inventory of closed municipal solid waste landfills for their regional solid waste management plans.

Date of Government Version: 03/23/2011
Date Data Arrived at EDR: 03/25/2011
Date Made Active in Reports: 04/22/2011
Number of Days to Update: 28
Source: Houston-Galveston Area Council
Telephone: 832-681-2518
Last EDR Contact: 07/05/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Varies

WASTEMGT: Commercial Hazardous & Solid Waste Management Facilities
This list contains commercial recycling facilities and facilities permitted or authorized (interim status) by the Texas Natural Resource Conservation Commission.

Date of Government Version: 07/01/2011
Date Data Arrived at EDR: 10/13/2011
Date Made Active in Reports: 11/15/2011
Number of Days to Update: 33
Source: Texas Commission on Environmental Quality
Telephone: 512-239-2920
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Varies

State and tribal leaking storage tank lists

LPST: Leaking Petroleum Storage Tank Database
An inventory of reported leaking petroleum storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 06/08/2012
Date Data Arrived at EDR: 07/03/2012
Date Made Active in Reports: 08/23/2012
Number of Days to Update: 51
Source: Texas Commission on Environmental Quality
Telephone: 512-239-2200
Last EDR Contact: 07/03/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 05/07/2012
Date Data Arrived at EDR: 05/08/2012
Date Made Active in Reports: 07/10/2012
Number of Days to Update: 63
Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Quarterly

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 05/25/2012
Date Data Arrived at EDR: 05/25/2012
Date Made Active in Reports: 07/16/2012
Number of Days to Update: 52
Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Quarterly

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 09/12/2011
Date Data Arrived at EDR: 09/13/2011
Date Made Active in Reports: 11/11/2011
Number of Days to Update: 59
Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 08/18/2011
Date Data Arrived at EDR: 08/19/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 25
Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Quarterly

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 02/07/2012
Date Data Arrived at EDR: 02/17/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 88
Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 12/14/2011
Date Data Arrived at EDR: 12/15/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 26
Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Semi-Annually

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/12/2012
Date Data Arrived at EDR: 05/09/2012
Date Made Active in Reports: 07/10/2012
Number of Days to Update: 62
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 08/03/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

State and tribal registered storage tank lists

UST: Petroleum Storage Tank Database
Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 06/08/2012
Date Data Arrived at EDR: 07/03/2012
Date Made Active in Reports: 08/21/2012
Number of Days to Update: 49
Source: Texas Commission on Environmental Quality
Telephone: 512-239-2160
Last EDR Contact: 07/03/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

AST: Petroleum Storage Tank Database
Registered Aboveground Storage Tanks.

Date of Government Version: 06/08/2012
Date Data Arrived at EDR: 07/03/2012
Date Made Active in Reports: 08/21/2012
Number of Days to Update: 49

Source: Texas Commission on Environmental Quality
Telephone: 512-239-2160
Last EDR Contact: 07/03/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 05/07/2012
Date Data Arrived at EDR: 05/08/2012
Date Made Active in Reports: 07/16/2012
Number of Days to Update: 69

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 11/28/2011
Date Data Arrived at EDR: 11/29/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 42

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Quarterly

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 08/18/2011
Date Data Arrived at EDR: 08/19/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 25

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Quarterly

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 02/07/2012
Date Data Arrived at EDR: 02/17/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 88

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 05/10/2011
Date Data Arrived at EDR: 05/11/2011
Date Made Active in Reports: 06/14/2011
Number of Days to Update: 34

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Semi-Annually

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 02/28/2012
Date Data Arrived at EDR: 02/29/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 76

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 12/14/2011
Date Data Arrived at EDR: 12/15/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 26

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 07/26/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 04/12/2012
Date Data Arrived at EDR: 05/02/2012
Date Made Active in Reports: 07/16/2012
Number of Days to Update: 75

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 08/03/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

FEMA UST: Underground Storage Tank Listing

A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 07/12/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Varies

State and tribal institutional control / engineering control registries

AUL: Sites with Controls

Activity and use limitations include both engineering controls and institutional controls.

Date of Government Version: 06/27/2012
Date Data Arrived at EDR: 07/13/2012
Date Made Active in Reports: 08/23/2012
Number of Days to Update: 41

Source: Texas Commission on Environmental Quality
Telephone: 512-239-5891
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R1: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 02/17/2012
Date Data Arrived at EDR: 04/03/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 42

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 07/02/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Varies

VCP RRC: Voluntary Cleanup Program Sites

The Voluntary Cleanup Program (RRC-VCP) provides an incentive to remediate Oil & Gas related pollution by participants as long as they did not cause or contribute to the contamination. Applicants to the program receive a release of liability to the state in exchange for a successful cleanup.

Date of Government Version: 04/26/2012
Date Data Arrived at EDR: 07/13/2012
Date Made Active in Reports: 08/23/2012
Number of Days to Update: 41

Source: Railroad Commission of Texas
Telephone: 512-463-6969
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP TCEQ: Voluntary Cleanup Program Database

The Texas Voluntary Cleanup Program was established to provide administrative, technical, and legal incentives to encourage the cleanup of contaminated sites in Texas.

Date of Government Version: 06/27/2012
Date Data Arrived at EDR: 07/13/2012
Date Made Active in Reports: 08/23/2012
Number of Days to Update: 41

Source: Texas Commission on Environmental Quality
Telephone: 512-239-5891
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Quarterly

State and tribal Brownfields sites

BROWNFIELDS: Brownfields Site Assessments

Brownfield site assessments that are being cleaned under EPA grant monies.

Date of Government Version: 06/27/2012
Date Data Arrived at EDR: 07/13/2012
Date Made Active in Reports: 08/21/2012
Number of Days to Update: 39

Source: TCEQ
Telephone: 512-239-5872
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Semi-Annually

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 06/27/2011
Date Data Arrived at EDR: 06/27/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 78

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 06/25/2012
Next Scheduled EDR Contact: 10/08/2012
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137
Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 07/03/2012
Next Scheduled EDR Contact: 10/08/2012
Data Release Frequency: No Update Planned

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39
Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52
Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 08/03/2012
Next Scheduled EDR Contact: 11/19/2012
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US CDL: Clandestine Drug Labs
A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 03/16/2012
Date Data Arrived at EDR: 06/12/2012
Date Made Active in Reports: 07/16/2012
Number of Days to Update: 34
Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 12/17/2012
Data Release Frequency: Quarterly

DEL SHWS: Deleted Superfund Registry Sites
Sites have been deleted from the state Superfund registry in accordance with the Act, ?361.189

Date of Government Version: 05/01/2012
Date Data Arrived at EDR: 06/21/2012
Date Made Active in Reports: 08/21/2012
Number of Days to Update: 61
Source: Texas Commission on Environmental Quality
Telephone: 512-239-0666
Last EDR Contact: 06/14/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Quarterly

PRIORITY CLEANERS: Dry Cleaner Remediation Program Prioritization List
A listing of dry cleaner related contaminated sites.

Date of Government Version: 04/12/2012
Date Data Arrived at EDR: 06/13/2012
Date Made Active in Reports: 08/21/2012
Number of Days to Update: 69
Source: Texas Commisision on Environmenatl Quality
Telephone: 512-239-5658
Last EDR Contact: 09/12/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Varies

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/01/2007
Date Data Arrived at EDR: 11/19/2008
Date Made Active in Reports: 03/30/2009
Number of Days to Update: 131

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

Local Land Records

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/16/2012
Date Data Arrived at EDR: 03/26/2012
Date Made Active in Reports: 06/14/2012
Number of Days to Update: 80

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 07/27/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/09/2005
Date Data Arrived at EDR: 12/11/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 31

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/21/2012
Next Scheduled EDR Contact: 09/03/2012
Data Release Frequency: Varies

LIENS: Environmental Liens Listing

The listing covers TCEQ liens placed against either State Superfund sites or Federal Superfund sites to recover cost incurred by TCEQ.

Date of Government Version: 08/24/2012
Date Data Arrived at EDR: 08/29/2012
Date Made Active in Reports: 09/12/2012
Number of Days to Update: 14

Source: Texas Commission on Environmental Quality
Telephone: 512-239-2209
Last EDR Contact: 08/23/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Varies

HIST LIENS: Environmental Liens Listing

This listing contains information fields that are no longer tracked in the LIENS database.

Date of Government Version: 03/23/2007
Date Data Arrived at EDR: 03/23/2007
Date Made Active in Reports: 05/02/2007
Number of Days to Update: 40

Source: Texas Commission on Environmental Qualilty
Telephone: 512-239-2209
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 04/01/2012
Date Data Arrived at EDR: 04/03/2012
Date Made Active in Reports: 06/14/2012
Number of Days to Update: 72

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 07/02/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Annually

SPILLS: Spills Database

Spills reported to the Emergency Response Division.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 07/03/2012
Date Made Active in Reports: 08/29/2012
Number of Days to Update: 57

Source: Texas Commission on Environmental Quality
Telephone: 512-239-2507
Last EDR Contact: 08/23/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Quarterly

Other Ascertainable Records

RCRA-NonGen: RCRA - Non Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/15/2012
Date Data Arrived at EDR: 04/04/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 41

Source: Environmental Protection Agency
Telephone: 214-665-6444
Last EDR Contact: 08/16/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Varies

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/29/2011
Date Data Arrived at EDR: 08/09/2011
Date Made Active in Reports: 11/11/2011
Number of Days to Update: 94

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/19/2012
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 08/12/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 112

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 09/10/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 01/25/2012
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 36

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 06/27/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 02/27/2012
Date Data Arrived at EDR: 03/14/2012
Date Made Active in Reports: 06/14/2012
Number of Days to Update: 92

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 09/12/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 09/14/2010
Date Data Arrived at EDR: 10/07/2011
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 146

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 08/28/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Varies

MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 08/18/2011
Date Data Arrived at EDR: 09/08/2011
Date Made Active in Reports: 09/29/2011
Number of Days to Update: 21

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 09/04/2012
Next Scheduled EDR Contact: 12/17/2012
Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 09/01/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 131

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 08/31/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 09/29/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 64

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 06/29/2012
Next Scheduled EDR Contact: 10/08/2012
Data Release Frequency: Every 4 Years

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/22/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/22/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

SSTS: Section 7 Tracking Systems
Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77
Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 07/27/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 07/20/2011
Date Data Arrived at EDR: 11/10/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 61

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 06/21/2012
Next Scheduled EDR Contact: 10/08/2012
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 11/01/2010
Date Data Arrived at EDR: 11/10/2010
Date Made Active in Reports: 02/16/2011
Number of Days to Update: 98

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 06/21/2011
Date Data Arrived at EDR: 07/15/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 60

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 09/05/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 01/10/2012
Date Data Arrived at EDR: 01/12/2012
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 49

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 07/11/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 10/23/2011
Date Data Arrived at EDR: 12/13/2011
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 79

Source: EPA
Telephone: (214) 665-2200
Last EDR Contact: 09/11/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 03/01/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 62

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 08/31/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Biennially

IOP: Innocent Owner/Operator Program

Contains information on all sites that are in the IOP. An IOP is an innocent owner or operator whose property is contaminated as a result of a release or migration of contaminants from a source or sources not located on the property, and they did not cause or contribute to the source or sources of contamination.

Date of Government Version: 06/27/2012
Date Data Arrived at EDR: 07/13/2012
Date Made Active in Reports: 08/23/2012
Number of Days to Update: 41

Source: Texas Commission on Environmental Quality
Telephone: 512-239-5894
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Quarterly

NPDES: NPDES Facility List

Permitted wastewater outfalls.

Date of Government Version: 03/02/2012
Date Data Arrived at EDR: 05/24/2012
Date Made Active in Reports: 06/11/2012
Number of Days to Update: 18

Source: Texas Commission on Environmental Quality
Telephone: 512-239-4591
Last EDR Contact: 08/24/2012
Next Scheduled EDR Contact: 12/03/2012
Data Release Frequency: Varies

UIC: Underground Injection Wells Database Listing

Class V injection wells regulated by the TCEQ. Class V wells are used to inject non-hazardous fluids underground. Most Class V wells are used to dispose of wastes into or above underground sources of drinking water and can pose a threat to ground water quality, if not managed properly.

Date of Government Version: 07/23/2012
Date Data Arrived at EDR: 07/26/2012
Date Made Active in Reports: 08/29/2012
Number of Days to Update: 34

Source: Texas Commission on Environmental Quality
Telephone: 512-239-6627
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 11/05/2012
Data Release Frequency: Varies

DRYCLEANERS: Drycleaner Registration Database Listing

A listing of drycleaning facilities.

Date of Government Version: 03/31/2012
Date Data Arrived at EDR: 06/13/2012
Date Made Active in Reports: 08/17/2012
Number of Days to Update: 65

Source: Texas Commission on Environmental Quality
Telephone: 512-239-2160
Last EDR Contact: 09/12/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Varies

ENFORCEMENT: Notice of Violations Listing

A listing of permit violations.

Date of Government Version: 03/16/2012
Date Data Arrived at EDR: 03/22/2012
Date Made Active in Reports: 04/06/2012
Number of Days to Update: 15

Source: Texas Commission on Environmental Quality
Telephone: 512-239-6012
Last EDR Contact: 09/06/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Semi-Annually

Ind. Haz Waste: Industrial & Hazardous Waste Database

Summary reports reported by waste handlers, generators and shippers in Texas.

Date of Government Version: 05/31/2012
Date Data Arrived at EDR: 07/13/2012
Date Made Active in Reports: 08/23/2012
Number of Days to Update: 41

Source: Texas Commission on Environmental Quality
Telephone: 512-239-0985
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/22/2012
Data Release Frequency: Annually

ED AQUIF: Edwards Aquifer Permits

A listing of permits in the Edwards Aquifer Protection Program database. The information provided is for the counties located in the Austin Region (Hays, Travis, and Williamson counties).

Date of Government Version: 07/19/2012
Date Data Arrived at EDR: 07/26/2012
Date Made Active in Reports: 08/23/2012
Number of Days to Update: 28

Source: Texas Commission on Environmental Quality, Austin Region
Telephone: 512-339-2929
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Varies

AIRS: Current Emission Inventory Data

The database lists by company, along with their actual emissions, the TNRCC air accounts that emit EPA criteria pollutants.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 01/12/2012
Date Made Active in Reports: 02/06/2012
Number of Days to Update: 25

Source: Texas Commission on Environmental Quality
Telephone: N/A
Last EDR Contact: 06/22/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Semi-Annually

MSD: Municipal Settings Designations Database

An MSD is an official state designation given to property within a municipality or its extraterritorial jurisdiction that certifies that designated groundwater at the property is not use as potable water, and is prohibited from future use as potatable water because that groundwater is contaminated in excess of the applicable potable-water protective concentration level.

Date of Government Version: 06/25/2012
Date Data Arrived at EDR: 06/29/2012
Date Made Active in Reports: 08/21/2012
Number of Days to Update: 53

Source: Texas Commission on Environmental Quality
Telephone: 512-239-4982
Last EDR Contact: 06/22/2012
Next Scheduled EDR Contact: 10/08/2012
Data Release Frequency: Varies

TIER 2: Tier 2 Chemical Inventory Reports

A listing of facilities which store or manufacture hazardous materials and submit a chemical inventory report.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 06/13/2012
Date Made Active in Reports: 08/21/2012
Number of Days to Update: 69

Source: Department of State Health Services
Telephone: 512-834-6603
Last EDR Contact: 08/23/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Annually

RWS: Radioactive Waste Sites

Sites in the State of Texas that have been designated as Radioactive Waste sites.

Date of Government Version: 07/24/2006
Date Data Arrived at EDR: 12/14/2006
Date Made Active in Reports: 01/23/2007
Number of Days to Update: 40

Source: Texas Commission on Environmental Quality
Telephone: 512-239-0859
Last EDR Contact: 08/24/2012
Next Scheduled EDR Contact: 12/03/2012
Data Release Frequency: Semi-Annually

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Semi-Annually

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 03/07/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 11/05/2012
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 05/24/2012
Date Data Arrived at EDR: 06/05/2012
Date Made Active in Reports: 06/14/2012
Number of Days to Update: 9

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 08/14/2012
Next Scheduled EDR Contact: 12/03/2012
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 03/31/2012
Date Data Arrived at EDR: 05/17/2012
Date Made Active in Reports: 06/14/2012
Number of Days to Update: 28

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 08/07/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Quarterly

GCC: Groundwater Contamination Cases

Texas Water Code, Section 26.406 requires the annual report to describe the current status of groundwater monitoring activities conducted or required by each agency at regulated facilities or associated with regulated activities. The report is required to contain a description of each case of groundwater contamination documented during the previous calendar year. Also to be included, is a description of each case of contamination documented during previous periods for which voluntary clean up action was incomplete at the time the preceding report was issued. The report is also required to indicate the status of enforcement action for each listed case.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 12/20/2011
Date Made Active in Reports: 02/01/2012
Number of Days to Update: 43
Source: Texas Commission on Environmental Quality
Telephone: 512-239-5690
Last EDR Contact: 09/07/2012
Next Scheduled EDR Contact: 12/17/2012
Data Release Frequency: Annually

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 02/27/2012
Date Data Arrived at EDR: 04/04/2012
Date Made Active in Reports: 05/15/2012
Number of Days to Update: 41
Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 07/02/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

FEDLAND: Federal and Indian Lands
Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339
Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: N/A

2020 COR ACTION: 2020 Corrective Action Program List
The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 11/11/2011
Date Data Arrived at EDR: 05/18/2012
Date Made Active in Reports: 05/25/2012
Number of Days to Update: 7
Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 08/16/2012
Next Scheduled EDR Contact: 11/26/2012
Data Release Frequency: Varies

FINANCIAL ASSURANCE 2: Financial Assurance Information Listing
Financial Assurance information for underground storage tank facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay

Date of Government Version: 06/08/2012
Date Data Arrived at EDR: 07/03/2012
Date Made Active in Reports: 08/21/2012
Number of Days to Update: 49
Source: Texas Commission on Environmental Quality
Telephone: 512-239-0986
Last EDR Contact: 07/03/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Quarterly

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 02/01/2011
Date Data Arrived at EDR: 10/19/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 83
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 08/03/2012
Next Scheduled EDR Contact: 11/12/2012
Data Release Frequency: Varies

COAL ASH DOE: Sleam-Electric Plan Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 07/16/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 08/17/2010
Date Data Arrived at EDR: 01/03/2011
Date Made Active in Reports: 03/21/2011
Number of Days to Update: 77
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 06/12/2012
Next Scheduled EDR Contact: 09/24/2012
Data Release Frequency: Varies

FINANCIAL ASSURANCE 1: Financial Assurance Information Listing
Financial assurance information.

Date of Government Version: 07/02/2012
Date Data Arrived at EDR: 07/03/2012
Date Made Active in Reports: 08/21/2012
Number of Days to Update: 49
Source: Texas Commission on Environmental Quality
Telephone: 512-239-6239
Last EDR Contact: 06/29/2012
Next Scheduled EDR Contact: 10/15/2012
Data Release Frequency: Varies

EDR PROPRIETARY RECORDS

EDR Proprietary Records

Manufactured Gas Plants: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A
Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

COUNTY RECORDS

TRAVIS COUNTY:

Historic Tank Records
A listing of historic records from the City of Austin.

Date of Government Version: 06/25/2012
Date Data Arrived at EDR: 06/29/2012
Date Made Active in Reports: 08/23/2012
Number of Days to Update: 55
Source: Department of Planning & Development Review
Telephone: 512-974-2715
Last EDR Contact: 09/06/2012
Next Scheduled EDR Contact: 12/24/2012
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data

Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 05/21/2012
Date Data Arrived at EDR: 05/22/2012
Date Made Active in Reports: 05/31/2012
Number of Days to Update: 9

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 08/20/2012
Next Scheduled EDR Contact: 12/03/2012
Data Release Frequency: Annually

NJ MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 07/19/2012
Date Made Active in Reports: 08/28/2012
Number of Days to Update: 40

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data

Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 05/01/2012
Date Data Arrived at EDR: 05/09/2012
Date Made Active in Reports: 06/14/2012
Number of Days to Update: 36

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 08/09/2012
Next Scheduled EDR Contact: 11/19/2012
Data Release Frequency: Annually

PA MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 04/27/2012
Date Made Active in Reports: 06/05/2012
Number of Days to Update: 39

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 07/19/2012
Next Scheduled EDR Contact: 11/05/2012
Data Release Frequency: Annually

RI MANIFEST: Manifest information

Hazardous waste manifest information

Date of Government Version: 12/31/2011
Date Data Arrived at EDR: 06/22/2012
Date Made Active in Reports: 07/31/2012
Number of Days to Update: 39

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 08/23/2012
Next Scheduled EDR Contact: 12/10/2012
Data Release Frequency: Annually

VT MANIFEST: Hazardous Waste Manifest Data

Hazardous waste manifest information.

Date of Government Version: 08/09/2012
Date Data Arrived at EDR: 08/15/2012
Date Made Active in Reports: 09/13/2012
Number of Days to Update: 29

Source: Department of Environmental Conservation
Telephone: 802-241-3443
Last EDR Contact: 07/23/2012
Next Scheduled EDR Contact: 11/05/2012
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2010
Date Data Arrived at EDR: 08/19/2011
Date Made Active in Reports: 09/15/2011
Number of Days to Update: 27

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 07/16/2012
Next Scheduled EDR Contact: 10/01/2012
Data Release Frequency: Annually

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data
Source: Rextag Strategies Corp.
Telephone: (281) 769-2247
U.S. Electric Transmission and Power Plants Systems Digital GIS Data

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Child Care Facility List
Source: Department of Protective & Regulatory Services
Telephone: 512-438-3269

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

P23
BOCA CHICA BLVD
PORT ISABEL, TX 78578

TARGET PROPERTY COORDINATES

Latitude (North):	25.9897 - 25° 59' 22.92''
Longitude (West):	97.1828 - 97° 10' 58.08''
Universal Tranverse Mercator:	Zone 14
UTM X (Meters):	681899.2
UTM Y (Meters):	2875645.0
Elevation:	5 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	25097-H2 MOUTH OF RIO GRANDE, TX MX28
Most Recent Revision:	1970
North Map:	26097-A2 PORT ISABEL, TX
Most Recent Revision:	1983

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principal investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

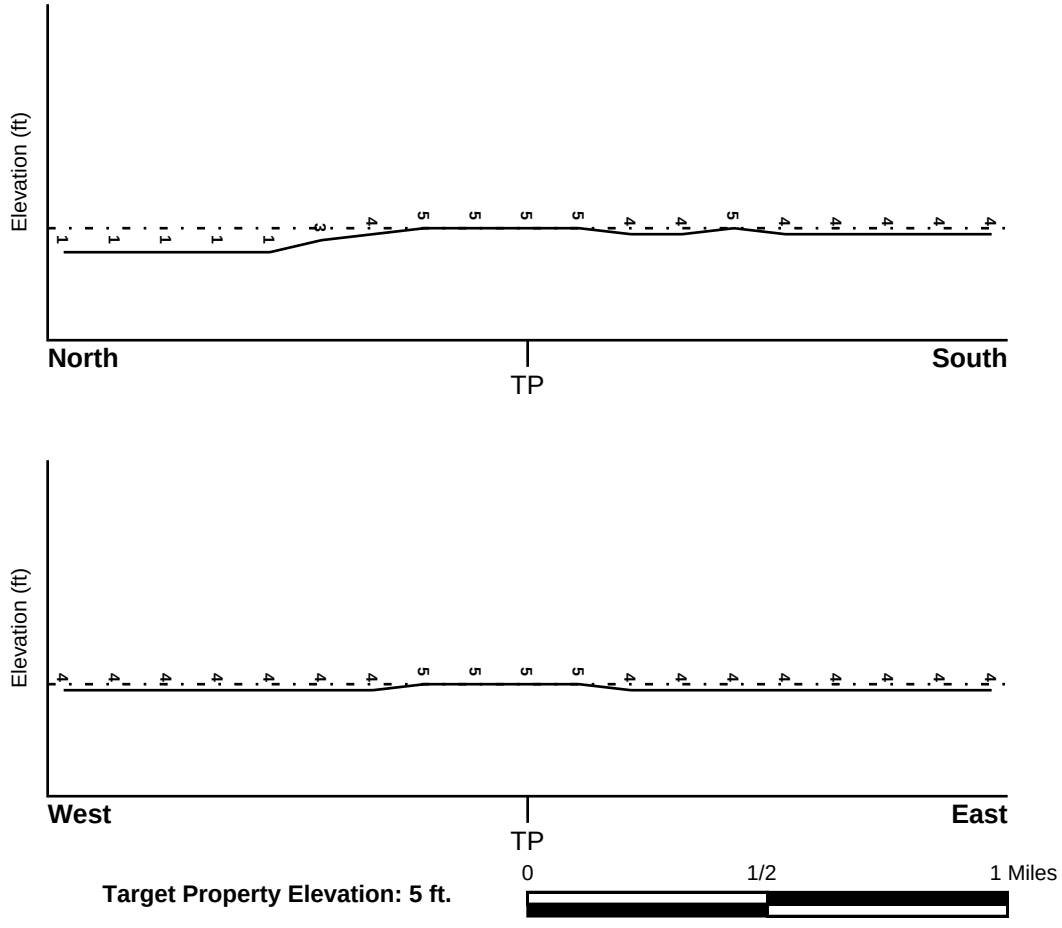
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General SE

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Target Property County	FEMA Flood Electronic Data
CAMERON, TX	YES - refer to the Overview Map and Detail Map

Flood Plain Panel at Target Property: 4801010375D - FEMA Q3 Flood data

Additional Panels in search area: Not Reported

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
MOUTH OF RIO GRANDE	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

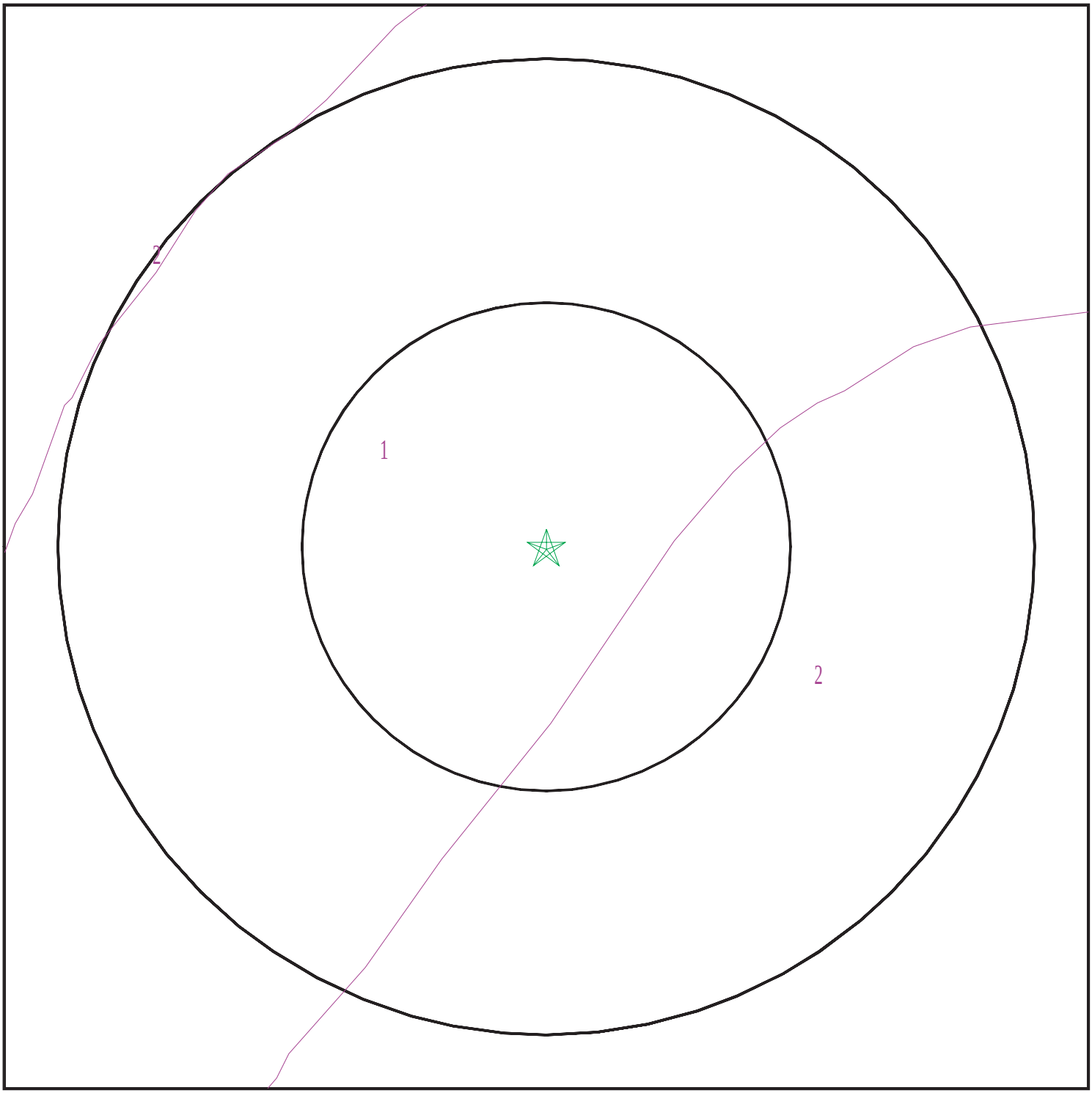
Era:	Cenozoic
System:	Quaternary
Series:	Holocene
Code:	Qh *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 3410419.5s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	P23	CLIENT:	SpaceX
ADDRESS:	Boca Chica Blvd Port Isabel TX 78578	CONTACT:	Steve Davis
		INQUIRY #:	3410419.5s
LAT/LONG:	25.9897 / 97.1828	DATE:	September 14, 2012 9:23 am

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Galveston

Soil Surface Texture: fine sand

Hydrologic Group: Class A - High infiltration rates. Soils are deep, well drained to excessively drained sands and gravels.

Soil Drainage Class: Somewhat excessively drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 137 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	5 inches	fine sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Clean Sands, Poorly graded sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 8.4 Min: 5.6
2	5 inches	62 inches	fine sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Clean Sands, Poorly graded sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 8.4 Min: 5.6

Soil Map ID: 2

Soil Component Name: Barrada

Soil Surface Texture: clay

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Very poorly drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	51 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 0.42 Min: 0.01	Max: 9 Min: 7.9
2	51 inches	62 inches	silty clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 0.42 Min: 0.01	Max: 9 Min: 7.9

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

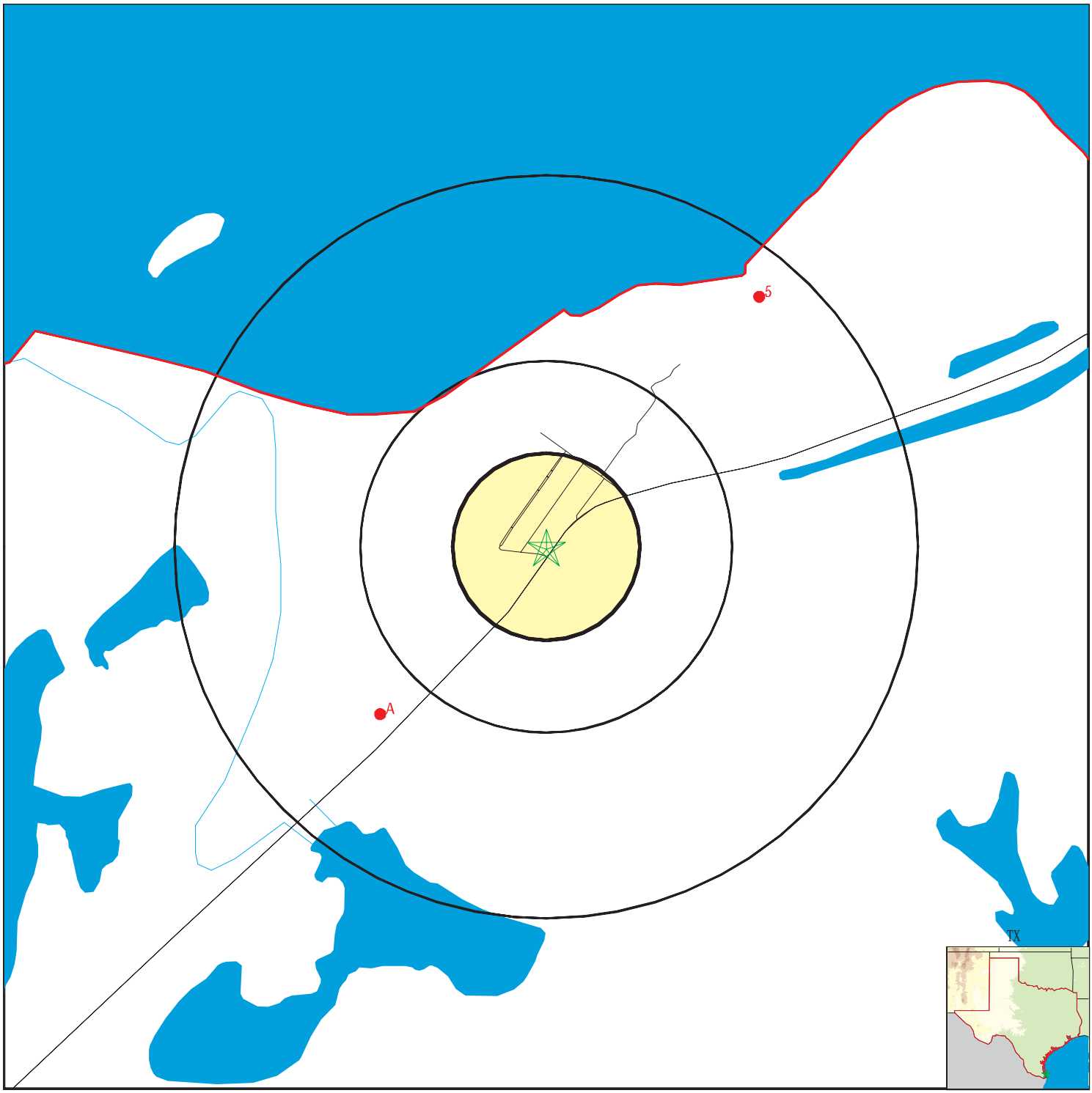
MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

OTHER STATE DATABASE INFORMATION

STATE OIL/GAS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A1	TXOG50000000061	1/2 - 1 Mile SW
A2	TXOG50000000060	1/2 - 1 Mile SW
A3	TXOG50000000059	1/2 - 1 Mile SW
A4	TXOG50000000058	1/2 - 1 Mile SW
5	TXOG50000000067	1/2 - 1 Mile NE

PHYSICAL SETTING SOURCE MAP - 3410419.5s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil or gas wells

No contour lines were detected within this map area.

SITE NAME: P23	CLIENT: SpaceX
ADDRESS: Boca Chica Blvd Port Isabel TX 78578	CONTACT: Steve Davis INQUIRY #: 3410419.5s
LAT/LONG: 25.9897 / 97.1828	DATE: September 14, 2012 9:23 am

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance

Database EDR ID Number

A1
SW
1/2 - 1 Mile

OIL_GAS **TXOG50000000061**

Surface id:	1211028		
Well Type:	Sidetrack Well Surface Location	Api:	06130526
Reliab:	Coordinate (operator reported).		
Longn:	-97.18924102		
Latn:	25.98325861		
Site id:	TXOG50000000061		

Surface id:	1211028		
Well Type:	Gas Well	Apinum:	4206130526D1
Out fips:	N	Reliab:	Operator reported location (distances and plat).
Cwellnum:	2R	Radioact:	Not Reported
Longn:	-97.18917918		
Latn:	25.97386947		

A2
SW
1/2 - 1 Mile

OIL_GAS **TXOG50000000060**

Surface id:	1236669		
Well Type:	Permitted Location	Api:	06130530
Reliab:	Coordinate (operator reported).		
Longn:	-97.18951632		
Latn:	25.98300918		
Site id:	TXOG50000000060		

Surface id:	1236669		
Well Type:	Permitted Location	Apinum:	4206130530
Out fips:	N	Reliab:	Coordinate (operator reported).
Cwellnum:	3	Radioact:	Not Reported
Longn:	-97.18951632		
Latn:	25.98300918		

A3
SW
1/2 - 1 Mile

OIL_GAS **TXOG50000000059**

Surface id:	1206112		
Well Type:	Sidetrack Well Surface Location	Api:	06130524
Reliab:	Coordinate (operator reported).		
Longn:	-97.19005837		
Latn:	25.98248608		
Site id:	TXOG50000000059		

Surface id:	1206112		
Well Type:	Dry Hole	Apinum:	4206130524D1
Out fips:	N	Reliab:	Coordinate (operator reported).
Cwellnum:	2	Radioact:	Not Reported
Longn:	-97.18959417		
Latn:	25.97384796		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance

Database | EDR ID Number

A4
SW
1/2 - 1 Mile

OIL_GAS **TXOG50000000058**

Surface id:	1205995		
Well Type:	Sidetrack Well Surface Location	Api:	06130523
Reliab:	Coordinate (operator reported).		
Longn:	-97.19011118		
Latn:	25.98243761		
Site id:	TXOG50000000058		

Surface id:	1205995		
Well Type:	Gas Well	Apinum:	4206130523D1
Out fips:	N	Reliab:	Operator reported location (distances and plat).
Cwellnum:	1	Radioact:	Not Reported
Longn:	-97.19240281		
Latn:	25.98514046		

5
NE
1/2 - 1 Mile

OIL_GAS **TXOG50000000067**

Surface id:	58		
Well Type:	Dry Hole	Api:	061
Reliab:	RRC Hardcopy Map		
Longn:	-97.17334312		
Latn:	25.99911608		
Site id:	TXOG50000000067		

Surface id:	58		
Well Type:	Dry Hole	Apinum:	42061
Out fips:	N	Reliab:	RRC Hardcopy Map
Cwellnum:	1	Radioact:	Not Reported
Longn:	-97.1733431		
Latn:	25.9991161		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: TX Radon

Radon Test Results

County	Mean	Total Sites	%>4 pCi/L	%>20 pCi/L	Min pCi/L	Max pCi/L
CAMERON	<.5	11	.0	.0	<.5	1.4

Federal EPA Radon Zone for CAMERON County: 3

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for CAMERON COUNTY, TX

Number of sites tested: 7

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.386 pCi/L	100%	0%	0%
Living Area - 2nd Floor	0.100 pCi/L	100%	0%	0%
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Scanned Digital USGS 7.5' Topographic Map (DRG)
Source: United States Geologic Survey
A digital raster graphic (DRG) is a scanned image of a U.S. Geological Survey topographic map. The map images are made by scanning published paper maps on high-resolution scanners. The raster image is georeferenced and fit to the Universal Transverse Mercator (UTM) projection.

HYDROLOGIC INFORMATION

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 2003 & 2011 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Services (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Services, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Public Water Supply Sources Databases
Source: Texas Commission on Environmental Quality
Telephone: 512-239-6199
Locations of public drinking water sources maintained by the TCEQ

Groundwater Database
Source: Texas Water Development Board
Telephone: 512-936-0837

Well Report Database
Source: Department of Licensing and Regulation
Telephone: 512-936-0833

Water Well Database
Source: Harris-Galveston Coastal Subsidence District
Telephone: 281-486-1105

Submitted Driller's Reports Database
Source: Texas Water Development Board
Telephone: 512-936-0833
The Submitted Driller's Reports Database is populated from the online Texas Well Report Submission and Retrieval System which is a cooperative Texas Department of Licensing and Regulation (TDLR) and Texas Water Development Board (TWDB) application that registered water-well drillers use to submit their required reports.

OTHER STATE DATABASE INFORMATION

Texas Oil and Gas Wells:
Source: Texas Railroad Commission
Telephone: 512-463-6882
Oil and gas well locations

RADON

State Database: TX Radon
Source: Department of Health
Telephone: 512-834-6688
Rinal Report of the Texas Indoor Radon Survey

PHYSICAL SETTING SOURCE RECORDS SEARCHED

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

STREET AND ADDRESS INFORMATION

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Appendix I
Airspace

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I.1 AIRSPACE

I.1.1 DEFINITION AND DESCRIPTION

Airspace management considers how airspace is designated, used, and administered to best accommodate the individual and common needs of military, commercial, and general aviation. The FAA considers multiple and sometimes competing demands for airspace in relation to airport operations, federal airways, jet routes, military flight training activities, and other special needs to determine how the National Airspace System (NAS) can be best structured to address all user requirements.

The FAA designs and manages the NAS based on the Code of Federal Regulations (CFRs). The FAA has designated four types of airspace above the U.S.: controlled airspace, Special Use Airspace (SUA), other airspace, and uncontrolled airspace.

- **Controlled airspace** is categorized into five separate classes: Classes A, B, C, D, and E airspace (Exhibit I.1-1). These classes identify airspace that is controlled, airspace supporting airport operations, and designated airways affording en route transit from place-to-place. The classes also dictate pilot qualification requirements, rules of flight that must be followed, and the type of equipment necessary to operate within that airspace.
- **SUA** consists of airspace within which specific activities must be confined, or where limitations are imposed on aircraft not participating in those activities. The FAA has designated SUA areas that are listed in FAA Order 7400.8U. These SUA areas are also charted on Instrument Fight Rules (IFR) and Visual Flight Rules (VFR) en route charts. Prohibited Areas, Restricted Areas, Warning Areas, and Military Operations Areas (MOAs) are examples of SUA. Most SUA areas have specific hours of operations, and users must obtain permission from the using agency or the controlling agency before flight through the defined areas.
- **Other airspace** consists of advisory areas, areas that have specific flight limitations or designated prohibitions, areas designated for parachute jump operations, military training routes (MTRs), and aerial refueling tracks. This category also includes Air Traffic Control Assigned Airspace (ATCAA) and airspace designated for altitude reservations.
- **Uncontrolled airspace** is designated Class G airspace and has no specific prohibitions associated with its use.

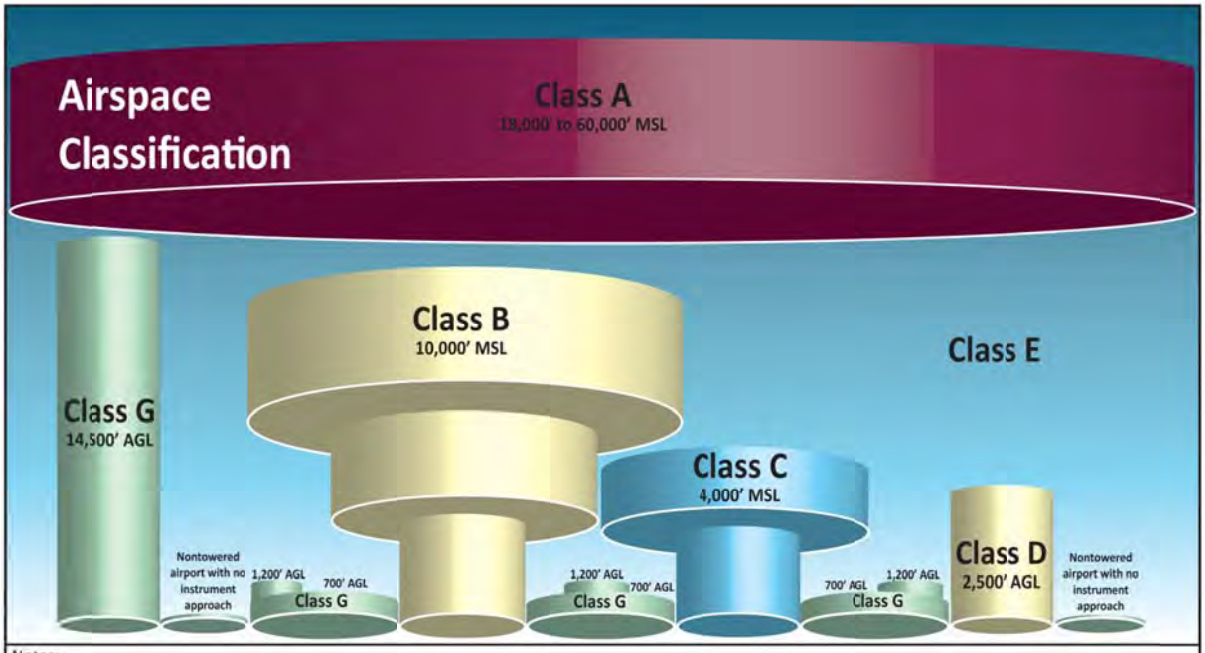

Exhibit I.1-1. Cross Section of Controlled and Uncontrolled Airspace Classes

I.1.2 REGULATORY SETTING

The FAA regulates the airspace above the proposed vertical launch area pursuant to regulations at 14 CFR 71, which defines the airspace classes and designations as discussed above in Section I.1.1., and the classification of air traffic service and jet routes. Airspace management is defined as the direction, control, and handling of flight operations in the "navigable airspace" that overlies the geopolitical borders of the U.S. and its territories. Navigable airspace is defined as airspace above the minimum altitudes of flight prescribed by regulations under 49 U.S.C. 40102, and includes airspace needed to ensure safety in the take-off and landing of aircraft. Under 49 U.S.C. 40101 et seq., the U.S. Government has exclusive sovereignty over the nation's airspace. The FAA is responsible for developing plans and policies for the use of navigable airspace. The FAA assigns use of airspace necessary to ensure its efficient use, as well as the safety of aircraft (49 U.S.C. 40103(b); FAA Order JO 7400.8U).

I.1.3 REGION OF INFLUENCE

The ROI for airspace includes the airspace above the proposed vertical launch area, the airspace surrounding the launch trajectory, and the airspace associated with any hazard areas that must be protected to ensure public safety. The airspace above the proposed vertical launch area is controlled by the Houston Air Route Traffic Control Center (ARTCC). The Houston ARTCC encompasses the southern portion of Texas, and Mississippi, the southwestern portion of Alabama, all of Louisiana, and portions of the Gulf of Mexico. All launch trajectories would be to the east over the open ocean of the Gulf of Mexico. For each mission, SpaceX would establish hazard areas to ensure public safety according to regulations in 14 CFR 400. The size, location, and extent of these areas would vary mission-to-mission based on launch vehicle and mission specific parameters. Hazard areas could extend beyond the boundaries of the airspace controlled by the FAA and into airspace controlled by Mexico. 14 CFR 400 regulations require the launch operator to establish agreements with air traffic control facilities with jurisdiction over the airspace to be used. As part of the licensing process, the FAA would require SpaceX to establish agreements with the Mexican Ministry of Communications and Transportation or its designee and the FAA to coordinate the use of the required airspace.

I.1.4 EXISTING CONDITIONS

The airspace directly above the proposed vertical launch area is not designated as SUA. However, Warning Areas 228C and D (W-228C, W-228D) are located over the Gulf of Mexico directly to the east of the proposed vertical launch area, and they extend from the surface up to 45,000 feet (ft) mean sea level (MSL). While the Houston ARTCC is the controlling agency, the using agency of this 12,574 square mile area is the US Navy Commander Training Air Wing FOUR of the Naval Air Station Corpus Christi. This airspace is active on a continuous basis (FAA Order 7400.8U).

Further from shore, there are additional warning areas: W-147E (26,000 ft MSL up to 50,000 ft MSL) and W-602 (surface up to 25,000 ft MSL). Both of these warning areas are controlled by the FAA Houston ARTCC. W-147E is used by the 147th Fighter Group, Ellington Field from 0800 to 2200 daily. W-602 is used on a continuous basis by the US Navy Commanding Officer Strategic Communications Wing (STRATCOMMWING) 1 of Tinker Air Force Base (FAA Order 7400.8U). Exhibit I.1-2 shows the warning areas. SpaceX would coordinate, as appropriate, with the respective agencies if operations or hazard areas extend into the Warning Areas.

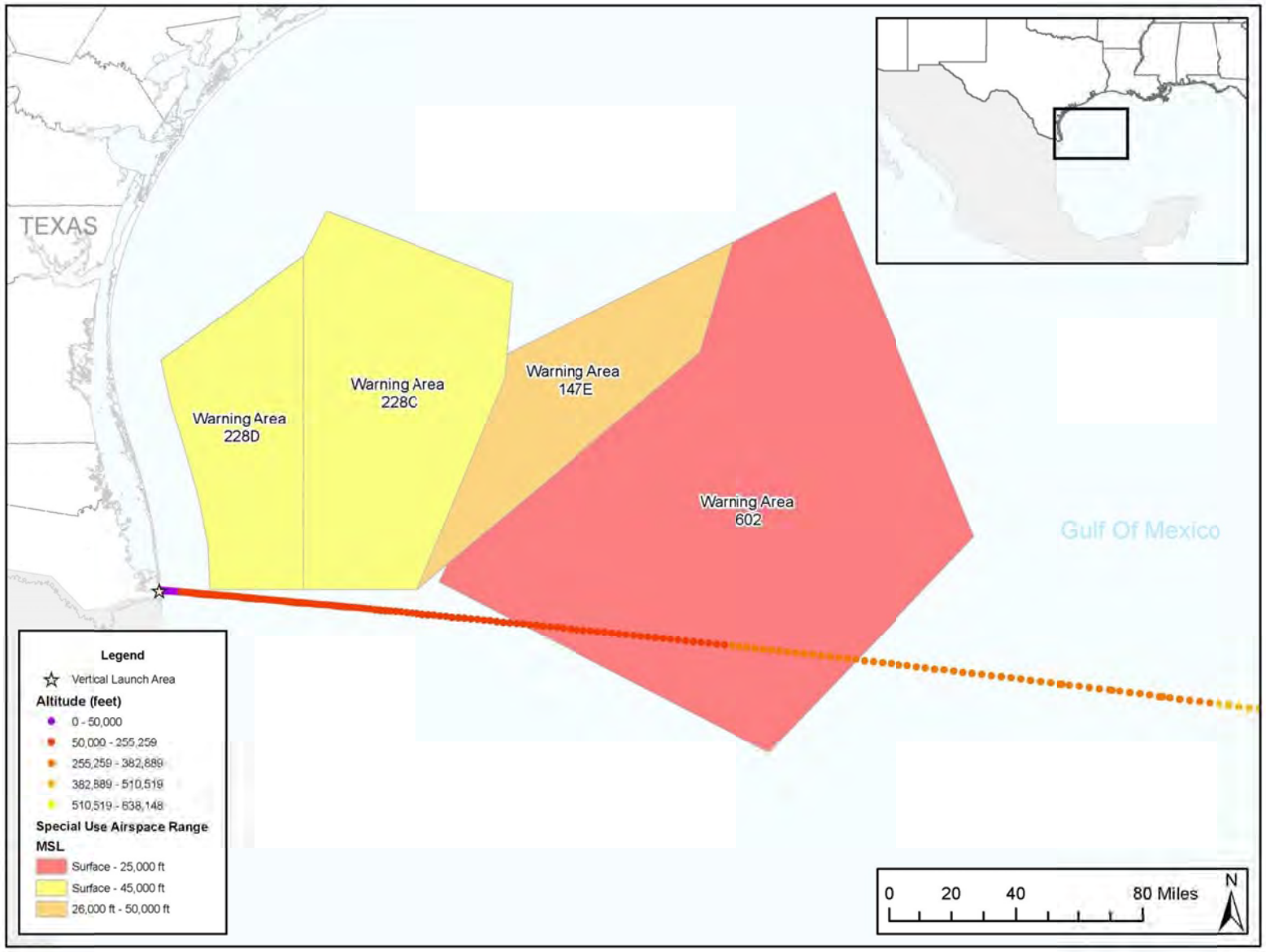

Exhibit I.1-2 Special Use Areas in the Potential Trajectories for Falcon 9 and Falcon Heavy

I.2 AIRSPACE USE

I.2.1 PROPOSED ACTION

I.2.1.1 Construction

Under the Proposed Action, construction activities would use ground equipment that could obstruct the navigable airspace. Prior to construction, SpaceX would be required to consult 14 CFR 77 and FAA Advisory Circular 7460 to determine if an obstruction evaluation is required. The use of cranes and the construction of the water tower and lighting towers may require an obstruction analysis.

I.2.1.2 Operation

Under the Proposed Action, the FAA would issue launch licenses and/or experimental permits that would allow SpaceX to launch the Falcon 9 and Falcon Heavy orbital vertical launch vehicles and a variety of suborbital launch vehicles. Airspace use would be coordinated by the FAA and the appropriate SUA using agencies, depending on the trajectory and hazard area of the launch vehicles. SpaceX must obtain Letters of Agreement (LOA) from the Houston ARTCC and these using agencies to operate the Falcon 9 and Falcon Heavy in the proposed airspace before any launches could commence.

Under the Proposed Action, the FAA would not alter the dimensions (shape and altitude) of the airspace. However, temporary closures of existing airspace may be necessary to ensure the safety of the proposed operations. The LOAs will include notification requirements, including requirements for the issuance of a Notices to Airmen (NOTAMs), which provide notice of unanticipated or temporary changes to components of, or hazards in, the National Airspace System (FAA Order 7930.2M).

Because there would be few launches each year and the launches would only last for a few minutes, temporary closures of existing airspace would not impact the performance and capability of the NAS. In addition, even if the protection of the required airspace lasted longer than the launches themselves, there would be few launches per year and therefore it is not anticipated that there would be a significant impact on other users of the airspace.

I.2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, the FAA would not issue launch licenses and/or experimental permits that would allow SpaceX to launch the Falcon 9 and Falcon Heavy orbital vertical launch vehicles and a variety of suborbital launch vehicles. Therefore, the level of airspace use would not change and there would be no impacts to airspace.

I.3 CUMULATIVE IMPACTS

The cumulative impacts of operations on regional airspace are currently unknown. However, no new restricted airspace would be required and operations at the proposed launch site would be in accordance with the established LOA with the Houston ARTCC.

I.4 MITIGATION

FAA policy provides equitable access to the NAS for all stakeholders. Prior to each mission, the FAA would assess the effect of the launch on the performance and capacity of the NAS. Where necessary, alternative strategies may be identified and implemented. The goal of these strategies is to reduce the effect of the operation on the system without reducing SpaceX's opportunity to successfully accomplish its mission.

References

FAA. 2008. Pilot's Handbook of Aeronautical Knowledge. FAA-H-8083-25A.

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Appendix J
Health and Safety

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J.1 HEALTH AND SAFETY

J.1.1 DEFINITION AND DESCRIPTION

Health and safety includes consideration of any activities, occurrences, or operations that have the potential to affect the well-being, safety, or health of workers or members of the public. Health and safety can be divided into occupational health and safety and environmental health and safety. Occupational health and safety is concerned with work sites and operational areas where workers could be located. Hazard analyses can be used to identify and assess credible accident scenarios at work and to establish procedures to prevent accidents and to respond to any accidents that do occur. Environmental health and safety considers environmental risks and hazards, both on and off the worksite, which could affect the health of the general public. Risk assessments can be used to identify, characterize, quantify, and evaluate risks to human health and the environment, and to establish preventive and mitigating measures that would reduce risk.

The mission of the FAA commercial space transportation licensing program is to ensure protection of the public, property, and the national security and foreign policy interests of the U.S. during commercial space launches and reentry activities. Protection of public health and safety and the safety of property is the objective of the FAA licensing, compliance monitoring, and safety inspection process. As part of the licensing process, SpaceX will include the appropriate documentation in its launch license and/or experimental permit application per the FAA statutory and regulatory requirements as described in 14 CFR Parts 400-450. The FAA would only issue a launch license and/or experimental permit if it was determined that SpaceX's launch activities would not jeopardize public health and safety, safety of property, U.S. national security or foreign policy interests, or U.S. international obligations.

J.1.2 REGULATORY SETTING

Overall public health and safety is controlled by many laws that regulate the transportation of hazardous cargo, provide for the protection of workers in the workplace, protect the public from exposure to hazardous materials, and provide for emergency preparedness.

Federal

CEQ regulations for implementing NEPA direct agencies to evaluate health effects (40 CFR § 1508.8) and to consider "…the degree to which the Proposed Action affects public health and safety" (40 CFR § 1508.27). The Occupational Safety and Health Administration (OSHA) regulates occupational health and safety. OSHA regulations at 29 CFR Part 1910 (Occupational Safety and Health Standards) and 29 CFR Part 1926 (Safety and Health Regulations for Construction) "…assure safe and healthful working conditions for working men and women" during construction and operational activities. FAA regulations at 14 CFR Parts 400-450 contain licensing requirements that include health and safety provisions (the role of the FAA is further described in Section 1.2.1 of the EIS).

The transport of hazardous materials by roadway vehicles to and from the proposed launch site falls under the purview of the DOT's Hazardous Materials Regulations (49 CFR Parts 171-173).

State

Congress requires each state to appoint a State Emergency Response Commission as part of the Emergency Planning and Community Right-to-Know Act (EPCRA) (42 U.S.C. § 11001 et seq.). TCEQ includes at least ten member agencies of the Emergency Management Council of Texas. TCEQ is responsible for receiving reports about accidental releases and the updating the Toxic Release Inventory in order to protect the health and safety of the environment and the public from chemical hazards.

Other applicable state regulations include Chapter 401 of the Texas Labor Code, enforced by the Texas Department of Insurance, Division of Worker's Compensation, which provides workplace safety and health guidelines for Texas employers. The Hazard Communication Act (Texas Healthy and Safety Code, Title 6, Subtitle D, Chapter 502) states that all personnel that may be exposed to hazardous chemicals during normal employment activities must have access to information and knowledge of exposure to said hazardous chemicals.

J.1.3 REGION OF INFLUENCE

The ROI includes the vertical launch area and the control center area during construction, payload processing, transport, and launch operations, as well as the nearby areas that would be exposed to noise from launch activities. In the event of a launch failure, the ROI would be expanded to include coastal waters in the Gulf of Mexico under the trajectory of the launch vehicle.

J.1.4 EXISTING CONDITIONS

The proposed vertical launch area and control center area are in a sparsely populated coastal area off the Gulf of Mexico comprised mostly of sand and mud flats. Boca Chica Village, a small residential subdivision with a transient population, is directly adjacent to the three parcels that comprise the control center area and approximately 2 miles from the vertical launch area. The area surrounding the proposed vertical launch and control center areas is primarily used for recreational purposes (e.g., national wildlife refuge and state parks).

The proposed vertical launch and control center areas are located within Zones A8 and V10 of the Flood Insurance Rate Map for Cameron County, Texas (for more information on flood hazards, see Volume I, Section 3.7.4.4, *Floodplains*, of the EIS).

J.2 HEALTH AND SAFETY

J.2.1 Proposed Action

J.2.1.1 Construction

Under the Proposed Action, SpaceX plans to construct new facilities, structure and utility connections in two areas in order to support up to 12 launches per year with a maximum of two Falcon Heavy launches. The proposed schedule for construction activities would be a 24 month period. Visitors and the general public would not be exposed to health and safety hazards during construction unless they trespassed into the construction sites. Therefore, no impacts to the health and safety of the public are expected from construction activities. Construction personnel would be contractually required to strictly adhere to all OSHA, other Federal, State, and local health and safety standards.

J.2.1.2 Operation

Personnel and the general public within the ROI could be exposed to potential hazards from operational activities, such as chemicals, propellants, fires, and launch noise. These hazards would be minimized by following applicable Federal and State regulations and guidelines (see Section J.1.2). To minimize the risk of fire or explosion, all propellants would be stored and used in accordance with Federal and State regulations. In addition, all site personnel who perform propellant loading operations would be properly trained to safely use and store propellants. Therefore, propellant-loading activities associated with a launch would not be anticipated to affect the health and safety of site personnel or the surrounding public.

There could be risks to personnel and the general public within the ROI from launch failures, such as flying or falling debris. A launch failure could occur on the launch pad or after the launch vehicle has traveled several miles into the atmosphere. However, all reasonable and feasible measures would be taken by SpaceX operators and the FAA to minimize accidents. To minimize the risk of accidents, SpaceX would fully comply with safety requirements set forth in 14 CFR Parts 400-450, for both ground safety and flight safety, and any other applicable regulations or guidance from the FAA. In addition, the security, fire, safety, and emergency response capabilities exist through Cameron and Willacy counties (see Section 3.10.3.4, *Emergency Response,* of the EIS). SpaceX may enter into agreements with local security service providers, or may rely on local police and fire departments. Also, hazards to the public would be minimized during launch events by the strict enforcement of closures and checkpoints by the U.S. Customs and Border Protection and Cameron County and State of Texas law enforcement agencies (see Section 2.1.1.5, *Pre-Launch Activities,* of the EIS).

As part of the launch license and/or experimental permit application process, SpaceX must prepare an analysis that identifies and characterizes the hazards and assesses the risk to public health and safety and property from each licensed or permitted flight. The FAA safety review ensures that the SpaceX application correctly assesses the possible hazards associated with the proposed operations and that

SpaceX is able to comply with the FAA regulations for safety of the public. Therefore, the Proposed Action would not be expected to result in significant impacts to public health and safety.

In addition to the health and safety impacts described here, the increased traffic resulting from construction and operation of the proposed vertical launch and control center areas could impact public health and safety due to an increase in the number of traffic accidents. Ground traffic and transportation are analyzed in Appendix K of the EIS.

J.2.2 No Action Alternative

Under the No Action Alternative, the FAA would not issue launch licenses and/or experimental permits that would allow SpaceX to launch the Falcon 9 and Falcon Heavy orbital vertical launch vehicles and a variety of suborbital launch vehicles. The vertical launch area and control center area would not be constructed. There would be no impacts to the health and safety of SpaceX personnel and the general public from the No Action Alternative.

J.3 CUMULATIVE IMPACTS

The FAA is not aware of any past, present, and reasonably foreseeable projects that have the potential to affect the health and safety of the general public within the ROI. Therefore, no cumulative health and safety impacts to the general public or SpaceX personnel would be expected from the Proposed Action.

J.4 MITIGATION

SpaceX would educate the public on safe and lawful areas where they could view launches to prevent impacts to health and safety as a result of the Proposed Action. In addition, hazards to the general public would be minimized by strict safety and distance requirements set by the FAA during its safety review.

Appendix K
Ground Traffic and Transportation

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K.1 GROUND TRAFFIC AND TRANSPORTATION

K.1.1 DEFINITION AND DESCRIPTION

The analysis of ground traffic and transportation describes vehicle movement throughout a road and highway network. The American Association of Highway and Transportation Officials classifies roadways as principal arterials, minor arterial streets, collector streets, and local streets. Principal arterials (i.e., arterial highways and interstates) serve the movement of traffic regionally and between population and activity centers with a minimal level of access to adjacent properties. Collector roadways (i.e., minor arterial and collector streets) serve the movement of traffic from population and activity centers and funnel vehicles onto principal arterials with a moderate level of access to adjacent properties. Local roadways provide access to adjacent properties and move traffic onto collector and arterial roadways.

Average daily traffic (ADT) and design capacity of the roadway represent two parameters to measure traffic. Using these two measures of traffic, each roadway segment receives a corresponding level of service (LOS). The LOS designation is a professional industry standard used to describe the operating conditions of a roadway segment or intersection. The LOS is defined on a scale of A to F that describes the range of operating conditions on a particular type of roadway facility. LOS A or LOS B indicates free flow travel, LOS C indicates stable traffic flow, LOS D indicates the beginning of traffic congestion, LOS E indicates the nearing of traffic breakdown conditions, and LOS F indicates stop-and-go traffic conditions (Transportation Research Board 2010).

K.1.2 Regulatory Setting

The Texas Department of Transportation (TxDOT) regulates speed and other vehicle operations safety parameters (TxDOT 2012a). Additionally, the U.S. Customs and Border Protection operates a checkpoint along Texas State Highway 4 between Brownsville and the proposed vertical launch area and control center area. Traffic operating along this stretch of State Highway 4 is subject to the U.S. Customs and Border Protection laws as established in 8 Code of Federal Regulations (CFR) Part 287 (U.S. Customs and Border Protection 2012). All vehicles transporting hazardous materials are also subject to U.S. Department of Transportation (DOT) regulations in 49 CFR Parts 171–179 for the transport of hazardous materials.

K.1.3 Region of Influence

The region of influence (ROI) for ground traffic and transportation includes the roadways that provide access to the proposed vertical launch and control center areas. State Highway 4 is the only major corridor that provides access to the proposed vertical launch and control center areas. Boca Chica Village is also in the ROI, with local roads (including Esperson Street and Eichorn Boulevard) providing access to the control center area.

K.1.4 Existing Conditions

K.1.4.1 Local and Regional Traffic Circulation

The vertical launch area would be located directly adjacent to the eastern terminus of State Highway 4 (Boca Chica Boulevard), and the control center area would be located approximately 2 miles west of the launch area, north of State Highway 4 in the community of Boca Chica Village. The entire route of State Highway 4 is located in Cameron County, TX and is 24.4 miles long. It originates at the Gateway International Bridge in downtown Brownsville, TX and ends at Boca Chica Beach on the Gulf Coast. Approximately 6.3 miles of State Highway 4 is an arterial road running through the city of Brownsville. The last intersection on State Highway 4 in Brownsville is Indiana Avenue (FM 511). The remaining 18.1 miles is a two-lane connector road running northeast to Boca Chica Beach. Much of this corridor is located within the Lower Rio Grande Valley National Wildlife Refuge (NWR). The speed limit along the 18.1 miles of the two-lane highway is 55 mph, and based on traffic counts provided by the TxDOT Department of Traffic for 2010, this section of State Highway 4 is not a heavily travelled corridor (TxDOT 2012b). The annual ADT along the corridor within the Lower Rio Grande Valley NWR is estimated at 380 vehicles (190 vehicles assumed in each direction), and the annual ADT along the corridor past the NWR to Boca Chica Beach, in the vicinity of the proposed vertical launch area, is estimated at 190 vehicles (95 vehicles assumed in each direction).

Based on these ADT counts, State Highway 4 is categorized as LOS A through both the NWR section and the approach to Boca Chica Beach, as indicated in Table K.1-1. It should be noted that the ADT counts are reported in vehicles per day and the Maximum Flow Rate in Table K.1-1 is listed in vehicles per hour. Therefore, traffic along this corridor is well below the capacity of this two-lane highway.

Table K.1-1. Maximum Flow Rate for Different Levels of Service

LOS	Maximum Flow Rate (vehicles per hour)	
	Both Directions combined	One Direction Only
A	490	245
B	780	390
C	1190	595
D	1830	915
E	3200	1600

Source: Goswami 2009a.

K.2 GROUND TRAFFIC AND TRANSPORTATION

K.2.1 Proposed Action

The implementation of the Proposed Action would have the potential to impact the local ground traffic and transportation during construction of the proposed facilities as well as during program operations. Due to the location of the Proposed Action at the eastern terminus of State Highway 4, approximately 18 miles from the closest intersection in Brownsville, traffic impacts are assessed only along the main access corridor and within Boca Chica Village. It is anticipated that the Proposed Action would have no significant impacts to traffic within the City of Brownsville.

K.2.1.1 Construction

The Proposed Action includes the construction of a number of facilities at the vertical launch area and the control center area, as identified in Section 2.1.2, *Construction Activities*, of this EIS. The construction period to complete both areas is estimated to be 24 months. During the construction period, additional traffic associated with the Proposed Action would include daily construction worker traffic, transportation of construction equipment, and delivery of construction materials. It is assumed that the construction equipment would remain on-site during the construction period and transportation of the equipment to and from the site would have negligible impacts to traffic.

Due to its remote location at the terminus of State Highway 4, all construction worker traffic and material delivery is assumed to come from Brownsville and other surrounding communities, such that all traffic to the construction sites would be along State Highway 4. At some construction sites, small plants for mixing concrete are established on-site or nearby, limiting truck traffic associated with transporting concrete. However, for the purposes of this assessment, it is assumed that concrete would be trucked to the construction sites from the Brownsville area. Based on the construction material requirements outlined in Appendix E, *Air Quality,* delivery of these materials to the site would require an average of 18 trucks per day as estimated in Table K.2-1.

Table K.2-1. Construction Material Delivery Requirements

Construction Material	Unit of Measure	Total Volume Required	Delivery Size (per truck)	Total # of Trucks
Asphalt	CY	4,328	12 CY	361
Gravel	CY	18,719	12 CY	1560
Fill	CY	57,924	12 CY	4827
Concrete	CY	15,396	9 CY	1,711
Building Construction	-	-	-	650[1]
TOTAL Number of Trucks (over 2 year period)				**9,109**
Average Number of Trucks Per Day[2]				**18**

[1] Based on 1 delivery truck for every 250 SF of building space constructed with a total of 162,476 SF of building space required.
[2] Assumes deliveries are made on weekdays only (260 work days per year).

Although, on average, truck traffic is estimated at 18 trucks per day, it is anticipated that over the period of construction, some days would require significantly more trucks and some days would require significantly fewer trucks to transport construction material to the site. The construction of the large concrete structures would require the greatest number of heavy trucks in a single day. It is assumed that the maximum number of trucks that would transport concrete to the site would be 60 per day. Larger structures such as the hangars would be the only structures necessitating large pours of concrete. The majority of the concrete structures would be much smaller and would require less than 20 trucks per structure.

It is assumed that the maximum number of construction workers travelling to the site in a single day would be 47. Table K.2-2 summarizes the existing and daily vehicular construction traffic, as well as the heavy truck traffic associated with the transport of the concrete required for the largest pours.

Table K.2-2. State Highway 4 Existing Traffic and Proposed Daily and Maximum Construction Traffic

Traffic Source	NWR Corridor (vehicles per day each direction)	Boca Chica Beach Corridor (vehicles per day each direction)
Existing	190	95
Construction worker vehicles	47	47
Typical Daily Vehicular Traffic	**237**	**142**
Concrete Truck Traffic	60	60
Construction Traffic during Heavy Construction Projects	**297**	**202**

As seen in Table K.2-2, vehicular traffic during the construction period would increase to approximately 237 vehicles per day in each direction within the Lower Rio Grande Valley NWR corridor during typical construction activities and to approximately 142 vehicles per day in each direction within the corridor providing access to Boca Chica Beach and the vertical launch area. During the construction of the large concrete structures such as the launch pad and the hangar, traffic would increase by 107 vehicles (47 worker vehicles plus 60 concrete trucks) to 297 vehicles per day in each direction within the Lower Rio Grande Valley NWR corridor and 202 vehicles per day in each direction within the corridor providing access to Boca Chica Beach and the vertical launch area. Assuming 60 trucks per day are transporting concrete to the site, and approximately 470 trucks would be required to transport the necessary concrete to complete each of the large structures, the heavy truck traffic would continue for approximately 8 work days for each large project.

Access to the vertical launch area would be directly from State Highway 4, in the vicinity of the entrance to Boca Chica Beach. Although there is ample space inside the fence line of the parcel for queuing vehicles, significant numbers of construction vehicles entering the vertical launch area during peak

periods are likely to create some congestion on State Highway 4. To avoid potential impacts to traffic during daily rush hour, construction truck access could be scheduled throughout other parts of the day to avoid any potential conflicts. With some flexibility to schedule major truck-intensive efforts such as concrete pours during off-peak times, it is anticipated that congestion issues in the vicinity of the vertical launch area could be minimized. Although scheduling truck-intensive efforts during off-peak times would help to minimize potential traffic congestion, there is still potential for the additional traffic associated with peak construction to create some congestion at the U.S. Customs and Border Protection checkpoint and within the Boca Chica Village community. It is expected that there may be occasional brief periods of congestion at these locations, but there would not be permanent or significant traffic congestion.

During construction, hazardous materials such as fuel, compressed gases, paints, and epoxies would be transported to the vertical launch and control center areas. The transportation of these and all other hazardous materials would be required to meet DOT Hazardous Materials Regulations, 49 CFR 100-199. These requirements include DOT-approved packaging, with containers properly marked and labeled for shipment over public roadways. The shipment of hazardous materials is very common and in fact, the DOT reports that the likelihood of accidents involving hazardous material transport is 0.32 accidents per million vehicle miles, which is half the likelihood of accidents involving vehicles transporting non-hazardous materials (DOT 2001). With the traffic volume increases estimated in Table K.2-2 and assuming vehicles would travel 46.8 miles round trip (23.4 miles one-way along State Highway 4) each day, there is a potential increase of 1 accident involving non-hazardous materials along State Highway 4 every 714 days and a potential increase of 1 accident involving hazardous materials along the same stretch every 3,700 days. This assumes the likelihood of 0.64 accidents per million vehicle miles for the transport of non-hazardous materials and .32 accidents per million vehicle miles for the transport of hazardous materials. This accident potential indicates there would be minimal additional risk associated with construction under the Proposed Action. Therefore, the transport of hazardous materials and the increased likelihood of accidents involving hazardous or non-hazardous materials during construction are not anticipated to significantly impact the traffic and transportation in the vicinity of the vertical launch area and control center area.

K.2.1.2 Operation

Operations would include up to 12 launch operations per year, with each launch campaign expected to last up to two weeks. There would be differing levels of ground traffic and transportation associated with operations during a launch campaign compared to typical vehicular traffic associated with regular operations by the facility's full-time personnel. Table 2.1-2 in Section 2.1.3, *Personnel Levels*, of this EIS, identifies the anticipated maximum number of employees and contractors working on-site for the next 10 years (2016 - 2025). In addition to the full-time on-site personnel, each launch campaign would require up to 100 local or transient workers. Based on Table 2.1-2, the maximum number of full-time on-

site employees is anticipated to be 30 in 2016, increasing to 150 by 2025. During launch campaigns, the number of full-time and transient employees is estimated at a maximum of 130 in 2016 and 250 in 2025.

Launch operations would also include the delivery of propellants, fuel, and water. This analysis assumes all water would be delivered by truck rather than sourced from a groundwater well and therefore represents the maximum condition for delivery of water. Table K.2-3 includes estimates of the volumes of propellants, fuel, and water needed and the annual number of trucks that would be required for the delivery of the various products required for launch operations.

Table K.2-3. Annual Propellant, Water and Fuel Deliveries

Product	Unit of Measure	Typical Volume Req'd per Launch Operation	Annual # of Launch Operations	Annual Volume	Delivery Size (per truck)	Annual # of Trucks
$Water_{Potable}$	gallons	n/a	n/a	1,000,000[1]	9,000	112
Hydrazine	n/a	-	-	-	-	2
Fuel (gasoline and diesel)	n/a	-	-	-	-	12
Falcon 9 Launch Operation Requirements						
LOX_{F9}	gallons	77,000	10	770,000	9,000	86
$RP\text{-}1_{F9}$	gallons	47,000	10	470,000	9,000	53
$Water_{F9}$[2]	gallons	100,000[3]	10	1,000,000	9,000	112
$Helium_{F9}$	lbm	1,700	10	17,000	1,400	13
$Nitrogen_{F9}$	lbm	100,000	10	1,000,000	33,000	31
Falcon Heavy Launch Operation Requirements						
LOX_{FH}	gallons	333,400	2	666,800	9,000	74
$Water_{FH}$[2]	gallons	200,000[3]	2	400,000	9,000	45
$RP\text{-}1_{FH}$	gallons	200,000	2	400,000	9,000	45
$Helium_{FH}$	lbm	4,300	2	8,600	1,400	7
$Nitrogen_{FH}$	lbm	150,000	2	300,000	33,000	10
TOTAL Number of Trucks Annually						**602**
Average Number of Trucks Per Month						**50.2**
Average Number of Trucks Per Day[4]						**2.5**

Notes: F9 = Falcon 9; FH = Falcon Heavy; lbm = $pounds_{mass}$
[1] Based on build out year 2025
[2] Optional sources of water for deluge purposes include transportation by truck and construction of an on-site well. For the purposes of this analysis, deluge water is assumed to be trucked in.
[3] For the purposes of calculating water deliveries, the volume required for the Falcon 9 was assumed to be 100,000 gallons and Falcon Heavy was assumed to be 200,000.
[4] Assumes deliveries are made on weekdays only (20 work days per month).
Source: SpaceX. 2013.

Although listed separately in Table K.2-3, potable water and deluge water would typically be delivered concurrently. All water delivered to the site would be pumped to the 250,000 gallon water tank for use as needed. Details of the water tower and collection system are provided under Section 2.1.2.1, *Vertical Launch Area,* of this EIS. Prior to each launch operation, to ensure the required volume of deluge water is available, trucks would deliver the amount of water necessary to fill the water tank. In the periods between launches, water would be delivered for potable use as the level in the tank drops below the predetermined minimum level.

It is assumed that the 12 annual launch operations would be uniformly scheduled such that each launch operation is about 1 month apart. To maintain the propellants, fuels and water at the necessary levels to support each launch operation, it is assumed that deliveries of the various products would be made intermittently, throughout the month. As calculated in Table K.2-3, an average of 50.2 trucks would be required to make the necessary deliveries, and assuming the deliveries are spread evenly over the weekdays included in the 1 month timeframe, 2-3 trucks would be expected to make deliveries each day. It is likely that deliveries would be greater twice a year as preparations for the Falcon Heavy launch operations are made and it is anticipated that deliveries may be more concentrated within the two week period prior to each launch operation. However, since the shelf-life for the fuels and propellants are greater than 1 month, it is possible for deliveries to be made at any point within the 1 month window, and therefore the estimated truck traffic is estimated on an average daily basis. Table K.2-4 summarizes the additional vehicle traffic associated with SpaceX Operations along the NWR Corridor and the Boca Chica Beach Corridor.

Table K.2-4. Estimated Average Daily Traffic Associated with Proposed SpaceX Operations

Traffic Source	**NWR Corridor (vehicles per day each direction)**		**Boca Chica Beach Corridor (vehicles per day each direction)**	
	2016	**2025**	**2016**	**2025**
Existing Vehicles per day (each direction)	190	190	95	95
SpaceX Employees/Contractors	130	250	130	250
Propellant/Fuel	2.5	2.5	2.5	2.5
Average Daily Operations Traffic	**322.5**	**442.5**	**227.5**	**347.5**

Initially, traffic is anticipated to increase to 322.5 vehicles per day in each direction on typical operations days in the NWR Corridor and 227.5 vehicles per day in each direction in the Beach Corridor, increasing to 442.5 vehicles per day and 347.5 vehicles per day, respectively, as operations ramp up to the anticipated 2025 levels.

During the launch operations, State Highway 4 would be closed between the control center area and the vertical launch area, and SpaceX would work with the U.S. Customs and Border Protection and County and State law enforcement officials to limit public access to State Highway 4 at pre-defined checkpoints.

As discussed in Section 2.1.1.5, *Pre-Launch Activities*, of this EIS, a soft checkpoint would be established on State Highway 4, just west of the U.S. Customs and Border Protection checkpoint (approximately 14–16 miles west of the State Highway 4 terminus at Boca Chica Beach). At this soft checkpoint, government personnel, SpaceX personnel, property owners, and emergency personnel would be allowed to pass. A hard checkpoint would be established at the boundary of the FAA approved hazard area. No one would be permitted to pass by this hard checkpoint during launch operations. These closures would be in effect for up to 15 hours for each launch operation. With the relatively low traffic counts for this corridor and the advanced notice that would be provided to the public prior to each launch operation, these closures are not anticipated to have a significant impact on the traffic in the vicinity. Therefore, no significant impacts are anticipated to traffic and transportation associated with the implementation of the Proposed Action.

Under the Proposed Action, the risks to traffic associated with the transport of hazardous material and the likelihood of increased accidents during operation are comparable to those identified during construction. Although there may be some additional risk, the risk is anticipated to be minimal. Therefore, the transport of hazardous and non-hazardous materials during operation is not anticipated to significantly impact the traffic or transportation in the vicinity of the vertical launch area and the control center area.

K.2.1.3 LOS Impacts

As noted in Section K.1.4, the LOS condition for both traffic corridors is LOS A, and the maximum flow rate for an LOS A corridor is approximately 245 vehicles per hour in each direction. To assess the impacts of construction and operations traffic on the LOS of the travel corridors, it is necessary to apply a heavy truck equivalence factor of 1.5 (Goswami 2009b.) to the number of trucks traveling along each corridor to estimate the impacts of an equivalent number of vehicles. To assess project related traffic flow on LOS, some additional assumptions are made:

- Maximum number of concrete trucks making deliveries in one day during construction is 60
- To compare traffic impacts to current LOS conditions, it is necessary to convert average daily traffic to hourly traffic estimates. To account for the fact that much of the project-related traffic will have similar start and end times, it is assumed that one-half of all the average daily traffic will travel the corridors in a 1 hour timeframe

To evaluate the impacts of the increased traffic on the calculation of LOS, the results of the average conditions listed in Tables K.2-2 (Construction) and K.2-4 (Operations) need to be revised to reflect the assumptions above and the application of the heavy truck equivalence factor. The results are summarized below:

- Construction – Typical Vehicular Traffic
    - Assuming half of the traffic listed in Table K.2-2 travels within a one hour window, traffic flow would be 119 vehicles per hour in the NWR Corridor and 71 vehicles per hour in the Beach Corridor for the typical Daily Vehicular Traffic condition.
- Construction – Heavy Construction Projects
    - Applying the heavy truck equivalence factor, 60 concrete trucks are equivalent to 90 vehicles. Assuming half of the traffic listed in Table K.2-2 travels within a one hour window, traffic flow would be 164 vehicles per hour in the NWR Corridor and 116 vehicles per hour in the Beach Corridor during Heavy Construction Projects.
- Operations – 2016
    - Based on applying the above assumptions to Table K.2-4 for 2016, the estimated flow in 2016 is not anticipated to exceed 162 vehicles in an hour along the NWR Corridor and 115 vehicles per hour in the Beach Corridor.
- Operation 2025
    - Based on applying the above assumptions to Table K.2-4 for 2025, the estimated flow in 2025 is not anticipated to exceed 222 vehicles in an hour along the NWR Corridor and 175 vehicles per hour in the Beach Corridor.

These results indicate that the traffic increases associated with the construction and operation of the Proposed Action should not cause hourly vehicular traffic to exceed 245 vehicles per hour and therefore would not have any significant impact to the current LOS.

K.2.2 No Action Alternative

Under the No Action Alternative, the FAA would not issue launch licenses and/or experimental permits to SpaceX for launch operations from the private site in Cameron County, TX. SpaceX would not construct the vertical launch area and the control center area. Therefore, there would be no impacts to ground traffic and transportation. Traffic along State Highway 4 would remain as it is today.

K.3 CUMULATIVE IMPACTS

The cumulative impacts of operations on traffic and transportation would be negligible. There are currently no other known projects occurring or proposed along State Highway 4.

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Appendix L
Climate

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L.1 CLIMATE

Greenhouse gases (GHG) are gas emissions that trap heat in the atmosphere. These emissions occur from natural processes and human activities. Scientific evidence indicates a trend of increasing global temperature over the past century due to an increase in GHG emissions from human activities. The climate change associated with this global warming is expected to produce negative economic and social consequences across the globe.

L.1.1 Affected Environment

Although not required by Federal Aviation Administration (FAA) Order 1050.1E, the FAA has developed interim guidance for considering GHGs and climate under the National Environmental Policy Act (NEPA), in a memorandum dated January 12, 2012 (FAA Order 1050.1E, Change 1, *Guidance Memo #3*). Additionally, in February 2010, the Council on Environmental Quality issued draft NEPA guidance for considering the effects of climate change and GHG emissions.

Region of Influence

Climate change due to GHG emissions is a global phenomenon, so the affected environment is the global climate (United States [U.S.] Environmental Protection Agency [EPA] 2009).

Existing Conditions

Research has shown there is a direct correlation between fuel combustion and GHG emissions. In terms of U.S. contributions, the Government Accountability Office (GAO) reports that domestic aviation contributes about three percent of total Carbon Dioxide (CO_2) emissions, according to EPA data, compared with other industrial sources including the remainder of the transportation sector (20 percent) and power generation (41 percent) (GAO 2009). The International Civil Aviation Organization estimates that GHG emissions from aircraft account for roughly 3 percent of all anthropogenic GHG emissions globally (Melrose 2010).

L.1.2 Environmental Consequences

Each GHG (CO_2, methane [CH4], and nitrous oxide [N_2O]), is assigned a global warming potential (GWP). The GWP is the ability of a gas or aerosol to trap heat in the atmosphere. The GWP rating system is standardized to CO_2, which has a value of one. For example, methane has a GWP of 21, which means that it has a global warming effect 21 times greater than CO_2 on an equal-mass basis. The equivalent CO_2 rate (CO_2e) is calculated by multiplying the emission of each GHG by its GWP and adding the results together to produce a single, combined emission rate representing all GHGs.

Potential GHG emissions were calculated for construction and operation of the new facilities within the vertical launch area and control center area and from conducting up to 12 launches per year. Determining potential impacts involves estimating emissions generated from launches, commuting vehicles, delivery trucks, and generators. The emissions associated with the Proposed Action are compared to U.S. and global CO_2 emissions.

Construction

Construction GHG emissions were calculated to be less than 800 metric tons per year CO_2 for the two years when construction would occur (refer to calculations and assumptions in **Attachment 1**). GHG emissions would be minimal and the source of emissions would be temporary, occurring only during the period of construction.

Operations

Annual GHG emissions associated with the Proposed Action operations are compared to U.S. 2011 GHG emissions (EPA 2012) and the 2011 global CO_2 emissions in Table L.1-1. The calculations and assumptions are provided in Attachment 1. The estimated CO_2 emissions from the proposed annual operations at the vertical launch area and control center area would be less than a thousandth of 1 percent of the total GHG emissions generated by the U.S. in 2010 and less than a millionth of 1 percent of the total CO_2 emissions generated worldwide (European Commission–Joint Research Centre 2012).

Table L.1-1. Estimated CO_2e Emissions from the Proposed Action

Annual Emissions	Metric Tons CO_2e per Year
U.S. 2011 Total GHG Emissions	$6{,}708.3 \times 10^6$
Global Total CO_2 Emissions	$3{,}400 \times 10^7$
10 Falcon 9 Launches	3,871
2 Falcon Heavy Launches	4,074
Commuting Staff	460
Supply/Delivery Truck	44
Generator Operations	757
Total	**9,206**
Percentage of U.S. 2010 GHG Emissions	0.00014
Percentage of Global CO_2 Emissions	0.00003

L.1.3 Cumulative Impacts

The cumulative impact of the Proposed Action on the global climate in conjunction with other past, present, and reasonably foreseeable future actions is not currently scientifically predictable. Aviation has been calculated to contribute approximately 3 percent of global CO_2 emissions; this contribution may grow to 5 percent by 2050. Actions are underway within the U.S. and by other nations to reduce aviation's contribution through such measures as new aircraft technologies to reduce emissions and improve fuel efficiency, renewable alternative fuels with lower carbon footprints, more efficient air traffic management, market-based measures and environmental regulations including an aircraft CO_2 standard. The U.S. has ambitious goals to achieve carbon-neutral growth for aviation by 2020 compared to a 2005 baseline, and to gain absolute reductions in GHG emissions by 2050. At present, there are no calculations of the extent to which measures individually or cumulatively may affect aviation's CO_2 emissions. Moreover, there are large uncertainties regarding aviation's impact on climate. The FAA, with support from the U.S. Global Change Research Program (USGCRP) and its participating Federal agencies (e.g., National Aeronautics and Space Administration, National Oceanic and Atmospheric Administration,

and U.S. Department of Energy), developed the Aviation Climate Change Research Initiative in an effort to advance scientific understanding of regional and global climate impacts of aircraft emissions, with quantified uncertainties for current and projected aviation scenarios under changing atmospheric conditions (Brown 2010).

Emissions of GHGs from the Proposed Action alone would not cause appreciable global warming that would lead to climate changes. However, these emissions would increase the atmosphere's concentration of GHGs, and, in combination with other past, present and reasonably foreseeable future project emissions from all other sources, contribute incrementally to the global warming that produces the adverse effects of climate change. Adverse climate change impacts to the southwest U.S. where the Proposed Action would occur include increasing scarcity of water supplies; increasing temperature, drought, wildfire, and invasive species. All of these impacts would accelerate landscape transformation; increased frequency and altered timing of flooding; and degradation of unique tourism and recreation resources (USGCRP 2009). At present, no methodology exists that would enable estimating the specific impacts (if any) that this increment of warming would produce locally or globally.

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ATTACHMENT 1: CONSTRUCTION GREEN HOUSE GAS CALCULATIONS

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TAB A. EMISSIONS SUMMARY

Vertical Launch Area

YEAR	CO2 MT/yr
2014	**391**
2015	**391**

Control Center Area

YEAR	CO2 MT/yr
2014	**377**
2015	**377**

TOTALS

YEAR	CO2 MT/yr
2014	**768**
2015	**768**

TAB B. CONSTRUCTION EMISSIONS - VERTICAL LAUNCH AREA

Basic Conversions

453.59	grams per pound
43,560	Conversion from Acre to SF
0.03704	Cubic feet to Cubic Yards
0.1111	Square Feet to Square Yards
1.4	tons/CY for Gravel
80,000	lbs/Truck Load for Delivery
1.66	CY for each CY of asphalt/concrete demo
0.333333333	asphalt thickness for demolition
0.333333333	asphalt thickness for pavement
2000	pounds per ton
145	lb/ft^3 density of Hot Mix Asphalt
0.666666667	asphalt thickness for pavement on runways

Table 1. Vertical Launch Area, All Areas - Clearing - 2014 and 2015

9.7 Acres

Off-road Equipment	Cumulative Hours of Operation[1]	Engine HP	Load Factor	CO_2[2] g/hp-hr	CO_2 lb
Dozer	28	145	0.58	535.69	2,781
Loader w/ integral Backhoe	112	87	0.21	691.66	3,121
Small backhoe	28	55	0.21	691.66	493
On-road Equipment	**Cumulative Hours of Operation[1]**	**Engine HP**	**Productivity based Speed (miles/hour)**	**CO_2[3] lb/mile**	**CO_2 lb**
Dump Truck	13	230	16	3.42	710
				Subtotal (lbs):	**7,105**

Table 2. Vertical Launch Area Site Prep - Excavate/Fill - Trenching - Grading 2014 and 2015

Site Prep - Excavate/Fill (CY)	81,033 CY	Assume 100% hauled in or out	81,033 CY hauled	
Trenching (LF)	2,285 LF	Assume 2 ft deep trench, 2 feet wide	339 CY	Assume 100% hauled in or out 339 CY hauled
Grading (SY)	420,634 SF	Convert	46,732 SY	Assume compact 0.5 feet (0.166 yards) 7,789 CY compacted

Off-road Equipment	Cumulative Hours of Operation[1]	Engine HP	Load Factor	CO_2[2] g/hp-hr	CO_2 lb
Backhoe Excavator	270	243	0.59	535.79	45,743.30
Skid Steer Loader	324	160	0.23	535.67	14,086.46
Dozer	294	145	0.59	535.69	29,663.41
Scraper Hauler Excavator	294	365	0.58	535.69	73,404.13
Compactor	58	103	0.58	535.63	4,070.08
Grader	17	285	0.58	535.79	3,240.33
Trenching with backhoe loader	5	87	0.59	535.77	293.23
On-road Equipment	**Cumulative Hours of Operation[1]**	**Engine HP**	**Productivity based Speed (miles/hour)**	**CO_2[3] lb/mile**	**CO_2 lb**
Dump Truck (12 CY capacity)	4,861	230	16	3.42	269,194.21
Delivery Truck	6	365	45	3.42	877.89
				Subtotal (lbs):	**440,573**

Table 3. Vertical Launch Area Gravel Work - 2014 and 2015

8,760 CY

Off-road Equipment	Cumulative Hours of Operation[1]	Engine HP	Load Factor	CO_2[2] g/hp-hr	CO_2 lb
Dozer	88	185	0.59	535.79	11,293.85
Wheel Loader for Spreading	109	87	0.59	535.77	6,638.77
Compactor	65	100	0.43	535.74	3,295.45
On-road Equipment	**Cumulative Hours of Operation[1]**	**Engine HP**	**Productivity based Speed (miles/hour)**	**CO_2[3] lb/mile**	**CO_2 lb**
Dump Truck (gravel delivery)	1,131	230	26	3.42	99,716.54
				Subtotal (lbs):	**120,945**

TAB C. CONSTRUCTION EMISSIONS - CONTROL CENTER AREA

Basic Conversions

453.59	grams per pound
43,560	Conversion from Acre to SF
0.03704	Cubic feet to Cubic Yards
0.1111	Square Feet to Square Yards
1.4	tons/CY for Gravel
80,000	lbs/Truck Load for Delivery
1.66	CY for each CY of asphalt/concrete demo
0.333333333	asphalt thickness for demolition
0.333333333	asphalt thickness for pavement
2000	pounds per ton
145	lb/ft^3 density of Hot Mix Asphalt

Table 1. Control Center Area, All Areas - Clearing - 2014 and 2015 8.6 Acres

Off-road Equipment	Cumulative Hours of Operation[1]	Engine HP	Load Factor	CO_2[2] g/hp-hr	CO_2 lb
Dozer	25	145	0.58	535.69	2,488
Loader w/ integral Backhoe	25	87	0.21	691.66	698
Small backhoe	25	55	0.21	691.66	441
On-road Equipment	**Cumulative Hours of Operation[1]**	**Engine HP**	**Productivity based Speed (miles/hour)**	**CO_2[3] lb/mile**	**CO_2 lb**
Dump Truck	11	230	16	3.42	635
				Subtotal (lbs):	**4,262**

Table 2. Control Center Area Site Prep - Excavate/Fill - Trenching - Grading - 2014 and 2015

Site Prep - Excavate/Fill (CY)	16,665 CY	Assume 60% hauled in or out	9,999 CY hauled		
Trenching (LF)	12,815 LF	Assume 2 ft deep trench, 2 feet wide	1,899 CY	Assume 60% hauled in or out	1,139 CY hauled
Grading (SY)	376,285 SF	Convert	41,805 SY	Assume compact 0.5 feet (0.166 yards)	6,968 CY compacted

Off-road Equipment	Cumulative Hours of Operation[1]	Engine HP	Load Factor	CO_2[2] g/hp-hr	CO_2 lb
Backhoe Excavator	33	243	0.59	535.79	5,644.51
Skid Steer Loader	40	160	0.23	535.67	1,738.20
Dozer	36	145	0.59	535.69	3,660.33
Scraper Hauler Excavator	36	365	0.58	535.69	9,057.73
Compactor	52	103	0.58	535.63	3,640.96
Grader	15	285	0.58	535.79	2,898.69
Trenching with backhoe loader	27	87	0.59	535.77	1,644.53
On-road Equipment	**Cumulative Hours of Operation[1]**	**Engine HP**	**Productivity based Speed (miles/hour)**	**CO_2[3] lb/mile**	**CO_2 lb**
Dump Truck (12 CY capacity)	665	230	16	3.42	36,847.84
Delivery Truck	32	365	45	3.42	4,923.48
				Subtotal (lbs):	**70,056**

Table 3. Control Center Area Gravel Work - 2014 and 2015

9,959 CY

Off-road Equipment	Cumulative Hours of Operation[1]	Engine HP	Load Factor	CO_2[2] g/hp-hr	CO_2 lb
Dozer	100	185	0.59	535.79	12,840.15
Wheel Loader for Spreading	124	87	0.59	535.77	7,547.71
Compactor	74	103	0.43	535.74	3,859.04
On-road Equipment	**Cumulative Hours of Operation[1]**	**Engine HP**	**Productivity based Speed (miles/hour)**	**CO_2[3] lb/mile**	**CO_2 lb**
Dump Truck (gravel delivery)	1,286	230	26	3.42	113,369.19
				Subtotal (lbs):	**137,616**

Table 4. Control Center Area Concrete Work - Foundations and Sidewalks - 2014 and 2015

Total Concrete 4,244 CY

Off-road Equipment	Cumulative Hours of Operation[1]	Engine HP	Load Factor	CO_2[2] g/hp-hr	CO_2 lb
Concrete Mixer (3 mixers total to one truck)	223	3.5	0.43	588.29	436.19
Concrete Truck	202	300	0.43	529.89	30,453.38
				Subtotal (lbs):	**30,890**

Table 5. Control Center Area Building Construction - 2014 and 2015

31,647 SF

Off-road Equipment	Cumulative Hours of Operation[1]	Engine HP	Load Factor	CO_2[2] g/hp-hr	CO_2 lb
Crane	158	330	0.58	530.30	35408.46
Concrete truck	158	300	0.43	536.26	24133.03
Diesel Generator (Assume 5 generators at 40 HP each)	127	40	0.43	536.20	2573.87
On-road Equipment	**Cumulative Hours of Operation[1]**	**Engine HP**	**Productivity based Speed (miles/hour)**	**CO_2[3] lb/mile**	**CO_2 lb**
Diesel Pickup Truck	11	400	30	3.42	1,167
Delivery Truck	760	365	60	3.42	155,633
				Subtotal (lbs):	**218,916**

Footnotes for Tables 1 through 5

[1]Complied from 2010 National Estimator, Equipment Manufacture's websites such as Freightliner and Cat, PACES, U.S. EPA. Open Burning and Construction Activities: Improved PM Fine Emission Estimation Techniques in the Nation Emissions Inventory, Ohio Emergency Management Agency. Appendix F Debris Estimating Guides, and Henderson, Chris. Project Management for Construction. Fundamental Concepts for Owners, Engineers, Architects, and Builders. Version 2.2. 2008

[2] EPA NONROAD2008a Model

[3]MOVES (Motor Vehicle Emission Simulator) 2010

Table 6. Control Center Area Hangar Building Construction (Payload Processing Facility and Vehicle Launch Preparation Hangar) - 2014 and 2015

59,629 SF

Off-road Equipment	Cumulative Hours of Operation	Engine HP	Load Factor	CO_2[1] g/hp-hr	CO_2 lb
Crane	358	330	0.58	530.2987216	80,059
Diesel Generator for on-site power tools and office support (Assume 5 generators at 40 HP each)	279	40	0.43	589.0709388	6,230
Telehandler	596	99	0.59	594.613562	45,658
Scissors Lift	477	83	0.59	594.613562	30,623
Skid steer loader	298	67	0.59	690.8722008	17,951
Pile Driver	294	260	0.43	529.6372363	38,441
All Terrain Forklift	294	85	0.59	594.613562	19,359
On-road Equipment	**Cumulative Hours of Operation**	**Engine HP**	**Speed (miles/hour)**	**CO_2[2] lb/mile**	**CO_2 lb**
Diesel Pickup Truck	404	400	30.00	3.42	41,397
Concrete truck	279	300	0.43	3.42	270.88
Delivery Truck	1,732	365	30.00	3.42	177,405
				Subtotal (lbs):	**457,393**

Table 7. Control Center Area Paving - 2014 and 2015

Pavement - Surface Area 211,702 SF 2,614 CY

Paving - HMA 70,567 CF

Off-road Equipment	Cumulative Hours of Operation	Engine HP	Load Factor	CO_2[1] g/hp-hr	CO_2 lb
Grader	648	145	0.59	535.69	65,504.47
Steel drum roller/vibratory roller	973	401	0.59	535.80	271,784.41
Paving Machine	1,297	164	0.59	535.68	148,172.58
Asphalt Curbing Machine	130	130	0.59	535.63	11,744.39
On-road Equipment	**Cumulative Hours of Operation**	**Engine HP**	**Productivity based Speed (miles/hour)**	**CO_2[2] lb/mile**	**CO_2 lb**
Dump Truck	521	230	17	3.41508	29,755
Water Truck	21	230	10	3.41508	709
Hot Mix Asphalt (HMA)	**Volume of HMA (ft^3)**	**Weight of HMA (tons)**		**CO_2 lb/ton of asphalt**	**CO_2 lb**
Standard Hot Mix Asphalt	70,567	5,116		-	-
				Subtotal (lbs):	**527,669**

Footnotes for Tables 6 and 7

[1] EPA NONROAD2008a Model

[2]MOVES (Motor Vehicle Emission Simulator) 2010

[3]California Air Resources Board (CARB) 2005. Comparison of Asphalt Paving Emission Factors

Table 8. Vertical Launch Area Annual Construction Worker POVs 2014 and 2015 [1]

24 construction workers

Vehicles	# vehicles	# days	[1]mi/day	[3,4]CO_2 g/mi	[3,4]CH_4 g/mi	[3,4]N_2O g/mi	CO_2 g	CH_4 g	N_2O g
passenger vehicles	47	240	46	182.00	0.02	0.02	94,436,160	8,302	8,302
						Metric Tons per Year	**94**	**0.01**	**0.01**
						CO2e in metric tons/year	**97**		

[1] while onsite only

[2] Emission factors from MOVES2010

[3]Emission Factors from *Federal Greenhouse Gas Accounting and Reporting Guidance: Technical Support Document* (CEQ. 2010), Table D-11

[4]Emission Factors from *Federal Greenhouse Gas Accounting and Reporting Guidance: Technical Support Document* (CEQ. 2010), Table D-12

Table 9. Control Center Area Construction Summary

YEAR	CO_2 MT/yr
2014	377
2015	377

TAB D. CONSTRUCTION SUMMARY BY PROJECT

Project Name	Building Number	Type (Renov or Const)	Year	FootPrint (AC)	Clearing (AC)	Grading (sf)	Demo Bldgs (SF)	Demo asphalt/ concrete (SF)	Site Prep - Excavate/Fill (CY)	Trenching (LF)	Building Construction - Total Size (sf)	Building Construction- foundation footprint (sf)	# Stories	Paving - Surface area (SF)	Pavement type, vehicle or aircraft	Paving - HMA (CF)	Sidewalks (sf)	Gravel Work (CY)	Concrete Work - sidewalks, etc (CY)	Concrete Work - foundation (CY)	Runway Construction (Concrete and Asphalt) (SF)	Concrete Pilings Required
CONSTRUCTION PROJECTS																						
Vertical Launch Area 2014 - 2015																						
General																						
Clearing within 20-acre facility	NA	Construction	2014	7.8	7.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fill & Grading for 9-acre building area	NA	Construction	2014	7.8	N/A	339,986	N/A	N/A	57,924	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Trenching for Utilities	NA	Construction	2014	0.1	N/A	N/A	N/A	N/A	N/A	2,285	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Buildings/Structures																						
Security Gate Guard Buildings (2)	NA	Construction	2014	N/A	N/A	N/A	N/A	N/A	178	N/A	3,200	3,200	1	N/A	N/A	N/A	320	6.5	4.0	118.5	N/A	N/A
Perimeter Fence	NA	Construction	2014	1.0	1.0	44,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Integration and Processing Hangar	NA	Construction	2014	1.0	N/A	N/A	N/A	N/A	4,000	N/A	43,200	43,200	1	N/A	N/A	N/A	4,320	1,760	53	2,400	N/A	Yes
Parts Storage Warehouse (Hangar Construction)	NA	Construction	2014	0.2	N/A	N/A	N/A	N/A	600	N/A	10,800	10,800	1	N/A	N/A	N/A	1,080	22	13	400	N/A	N/A
Workshop (Hangar Construction)	NA	Construction	2014	0.2	N/A	N/A	N/A	N/A	600	N/A	10,800	10,800	1	N/A	N/A	N/A	1,080	22	13	400	N/A	N/A
Office Building	NA	Construction	2014	0.1	N/A	N/A	N/A	N/A	178	N/A	3,200	3,200	1	N/A	N/A	N/A	320	7	4	119	N/A	N/A
Launch Pad	NA	Construction	2014	0.3	N/A	N/A	N/A	N/A	2,668	N/A	N/A	N/A	N/A	N/A	N/A		N/A	445	N/A	2,223	12,004	Yes
Launch Pad Retention Basin	NA	Construction	2014	0.0	N/A	N/A	N/A	N/A	440	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20	N/A	33	N/A	N/A
Propellant Tank Area	NA	Construction	2014	0.4	N/A	N/A	N/A	N/A	867	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	289	N/A	622	N/A	N/A
Roads/Parking																						
Entrance Road	NA	Construction	2014	0.3	N/A	N/A	N/A	N/A	604	N/A	N/A	N/A	N/A	12,229	asphalt	4,076	N/A	453	N/A	N/A	N/A	N/A
Hangar Parking	NA	Construction	2014	0.8	N/A	N/A	N/A	N/A	1,692	N/A	N/A	N/A	N/A	34,267	asphalt	11,422	N/A	1,269	N/A	N/A	N/A	N/A
Runway from Hangar to Launch Pad	NA	Construction	2014	3.4	N/A	N/A	N/A	N/A	8,346	N/A	N/A	N/A	N/A	37,555	50% concrete, 50% asphalt	12,518	N/A	2,782	N/A	4,173	75,110	N/A
Propellant Tank Resupply Road & Parking Pad	NA	Construction	2014	0.9	N/A	N/A	N/A	N/A	2,533	N/A	N/A	N/A	N/A	18,651	50% concrete, 50% asphalt	15,542	N/A	1,382	N/A	576	N/A	N/A
Perimeter Security Road	NA	Construction	2014	0.8	0.8	36,648	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Dirt	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Road From Launch Pad to Perimeter Fence Road	NA	Construction	2014	0.2	N/A	N/A	N/A	N/A	405	N/A	N/A	N/A	N/A	8,200	asphalt	2,733	N/A	304	N/A	N/A	N/A	N/A
TOTALS					**9.7**	**420,634**			**81,033**	**2,285**	**71,200**	**71,200**		**110,902**		**46,292**	**7,120**	**8,760**	**88**	**11,064**	**87,114**	**0**
Control Center Area 2014 - 2015																						
General																						
Clearing within fenceline	NA	Construction	2014	8.6	8.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grading within fenceline	NA	Construction	2014	8.6	N/A	376,285	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Trenching for Utilities	NA	Construction	2014	0.6	N/A	N/A	N/A	N/A	N/A	12,815	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Buildings/Structures																						
Control Center Building	NA	Construction	2014	0.7	N/A	N/A	N/A	N/A	1,603	N/A	28,855	28,855	1	N/A	N/A	N/A	2,886	588	36	1,069	N/A	N/A
Payload Processing Facility	NA	Construction	2014	0.7	N/A	N/A	N/A	N/A	1,603	N/A	28,855	28,855	1	N/A	N/A	N/A	2,886	588	36	1,069	N/A	Yes
Launch Vehicle Processing Hangar	NA	Construction	2014	0.7	N/A	N/A	N/A	N/A	2,849	N/A	30,774	30,774	1	N/A	N/A	N/A	N/A	3,077	627	38	1,710	N/A	Yes
Satellite Fuels Storage	NA	Construction	2014	0.0	N/A	N/A	N/A	N/A	22	N/A	400	400	1	N/A	N/A	N/A	N/A	N/A	N/A	18	N/A	N/A
Generator Facility	NA	Construction	2014	0.0	N/A	N/A	N/A	N/A	69	N/A	1,250	1,250	1	N/A	N/A	N/A	N/A	125	25	2	46	N/A	N/A
Diesel Storage Area	NA	Construction	2014	0.0	N/A	N/A	N/A	N/A	25	N/A	452	452	1	N/A	N/A	N/A	45	9	1	17	N/A	N/A
Security Gate Guard Buildings (3)	NA	Construction	2014	0.0	N/A	N/A	N/A	N/A	38	N/A	690	690	1	N/A	N/A	N/A	69	14	1	26	N/A	N/A
Roads/Parking																						
All Roads	NA	Construction	2014	1.6	N/A	N/A	N/A	N/A	3,334	N/A	N/A	N/A	N/A	67,518	asphalt	22,506	N/A	2,501	N/A	N/A	N/A	N/A
All Parking Areas (Payload Processing, Launch Control, and Hangar Parking)	NA	Construction	2014	3.3	N/A	N/A	N/A	N/A	7,120	N/A	N/A	N/A	N/A	144,184	asphalt	48,061	14,418	5,607	178	N/A	N/A	N/A
TOTALS					**8.6**	**376,285**			**16,665**	**12,815**	**91,276**	**91,276**		**211,702**		**70,567**	**23,506**	**9,959**	**290**	**3,953**		**0**

TAB E. CONSTRUCTION ASSUMPTIONS

General

Concrete Pilings

Four structures within the vertical launch and control center areas would require pilings in the foundation due to heavy loads: the launch pad, Integration and Processing Hangar, Payload Processing facility, and the Launch Vehicle Processing Hangar.
The pilings would be pre-cast concrete and metal. They would be installed through use of a rotary auger drill rig and a pile driver. All pilings would be installed to a depth of 40 feet and at a spacing of 9 feet on center

General Construction Assumptions

For all buildings and parking lots, it has been assumed that the area to be covered with sidewalks and curbing would be 10% of the building or lot square footage, and that the thickness of gravel beneath buildings would be 6 inches (0.5 feet)
Also, the thickness of the concrete slab beneath builidngs would be 1 foot, unless the building requires ar additional thickness of concrete due to the heavy loads on it (e.g., Integration & Processing Hangar).
Areas for buildings and roadways would still need to be excavated, once the site had been cleared, graded, and fil added to raise the surface elevation by 4.6 feet (see Level of Fill above). Building sites would be excavated to a depth to account for the thickness of concrete and gravel projected for the site; roadways would be excavated to a depth of 1 foot for gravel plus the thickness of asphalt or concrete for the road.

Vertical Launch Area

Area to be Cleared:

According to EIS Section 2, the area inside the fence line around the launch pad and associated structures is 7.805 acres. It is this area that would be cleared, graded, and filled prior to construction.
Area to be cleared = 7.805 acres
Note that because it has been assumed that the entire area around the buildings and roadways would be cleared, clearing has not been calculated for individual projects such as specific buildings or roads, except for the area around the perimeter fence and security road.
Calculations for clearing productivity rates were based on clearing in heavily wooded areas. As the vertical launch area is not heavily wooded, the clearing productivity rates were adjusted to 25% of the standard values. (with the exception of the loader, which would level the entire site)

Area to be Graded:

Basically, this would be the same 7.805 acres that would need to be cleared.
Note that because it has been assumed that the entire area around the buildings and roadways would be graded, grading has not been calculated for individual projects such as specific buildings or roads, except for the area around the perimter fence and security road.

Level of Fill:

The entire area to be graded (7.805 acres)
SpaceX personnel estimate the land surface would be raised 4 feet above current levels prior to construction.
http://tidesandcurrents.noaa.gov/sltrends/sltrends.shtml
provides the following information on projected sea level rises in the area around Port Isabel:
"The mean sea level trend is 3.64 mm/year with a 95% confidence interval of +/- 0.44 mm/year based on monthly mean sea level data from 1944 to 2006 which is equivalent to a change of 1.19 feet in 100 years."
Assuming that the SpaceX Texas Launch Site has a lifespan of 50 years, based on these figures, an additiona 06. feet of elevation rise would be need to account for sea level rise. These figures do not account for storm surges.
Level of fill = 4.6 feet

Utility Trenches

According to EIS Section 2, there are no buildings or utilities on site, and all utilities would have to be brought in from State Highway 4. Assumed one trench for all utilities, and this trench was excavated along the road and Hangar Parking Lot, with branches off to the buildings. The main trench would then run down the Runway from the Hangar t the Launch Pad, with branches off to the Propellant tanks and the Security Gate and Guard Building.
Measurements were taken from Exhibit 2-1 of Section 2 to determine the length of the main trench and branches
Assumed a width of 2 feet and a depth of 2 feet for the utility trench.

Security Gate Guard Buildings

According to EIS Section 2, two sets of gates would allow entry to the vertical launch area, and each gate would have a "small" guard shack. GIS measurements from SpaceX information show the two buildings to have a total square footage of 3,200.
Guard Shack Building Foundation Areas = 3200 square feet

Perimeter Fencing and Roadway

Information received from SpaceX and from EIS Section 2 indicates that the perimeter fence would enclose
20 acres and would consist of a double fence separated by 10 feet. The security road would be inside the second fence
and would be a 7-foot wide dirt road. Based on Exhibit 2-1 of the EIS, the fence line is approximately 4,400 feet long
Allowing for the 10-foot distance between fences, the area to cleared/graded for the fencing is

4400 feet long by 10 feet wide = 44000 square feet

The security road is 7 feet wide and runs along the inner perimeter of the fencing, but does not extend for the entire
perimeter. The length of the roadway has been measured at 3,054 feet using GIS. Adding approx. 5 feet between the
inner fence and the roadway itself that would need to be cleared and graded, the width of the area is 12 feet
Area to be cleared/graded for perimeter road = 12 ft wide X 3054 ft long = 36648 square ft
It has been assumed that no excavation is necessary for the fence or the road, and that these areas would not be filled in
to raise the current land surface by 4.6 feet.

Integration and Processing Hangar

Information from the client and GIS measurements indicates this Hangar would be 43,200 square feet in area (360 x 120 ft)
The thickness of concrete beneath this hangar would be 1.5 feet. The gravel thickness would be increased from 0.5 (standard
for other buildings) to 1.0 feet.
Depth of excavation at this site would therefore be 2.5 feet
Amount of concrete needed for foundation and pilings has been included in the hangar construction calculations

Warehouse, Workshop, and Office Buildings

Both the Warehouse and Workshop would be 10,800 square feet, with concrete foundation thickness of 1 foot.
Gravel thickness would be the standard 0.5 feet. Depth of excavation would therefore be 1.5 feet
The Office building would have the same thickness of foundation and gravel.
Note that a description of the Warehouse is not provided in the EIS; however, client-provided data shows the
Warehouse to be the same size and have the same foundation thickness as the Workshop. All construction for the
Warehouse is therefore assumed to be similar to the construction details for the Workshop.
The EIS does not provide the number of stories for the Office; however, as the heights of other buildings, such
as the Workshop and the Hangar, are provided, it has been assumed that the Office is a standard 1-story building
It has been assumed that the Warehouse and Workshop would have construction similar to a Hangar; therefore the
Hangar Construction module has been used for air emissions calculations for these buildings, even though they do
not require concrete pilings (emissions for installation of the pilings have been removed from the calculations).

Launch Pad

Based on information from SpaceX, the Launch Pad would have a footprint of 12,004 square feet, and the
thickness of the concrete would be approximately 5 feet
It has been assumed that the thickness of gravel (road bed) beneath this pad would be the same as for the Integration
and Processing Hangar, which is 1 foot. Total depth of excavation in the Launch Pad area would be the thickness of the
concrete and the gravel: 5 feet + 1 foot = 6 feet
The pad area is approximately 110 x 110 ft. With pilings installed every 8 ft, that means 14 pilings each way o
a total of 196 pilings.

Launch Pad Retention Basin

Based on information from the EIS and other Falcon 9 EAs, the retention basin would be 30 ft by
36 ft = 1080 square feet in area. The basin depth would be 10 feet. Assume a 6 inch (0.5 ft) thickness of concrete
for the basin, with a 6 inch (0.5 ft) thickness of gravel beneath the concrete.
The volume of concrete for the basin would be the volume in the basal slab plus the volume in the basin walls

540 cubic ft volume of basal slab (30 x 36 x 0.5)
360 cubic ft volume of side walls (10 ft x perimeter of basin [72 ft] x 0.5 ft)
900 cubic ft total volume of concrete

Propellant Tank Area

http://www.michigan.gov/documents/Vol2-35UIP11Tanks_121080_7.pdf
The above reference provides the volumes in gallons per foot of tanks of specified diameters.
Based on the numbers in this table, SpaceX could install 4 20-foot diameter tanks with a height of 25 feet, and each
tank would contain approximately 50,000 gallons. These four tanks would hold the projected 200,000 gallons of RP-1.
The containment area for the tanks would have to contain the entire volume of the largest tank plus sufficient room
for precipitation (40 CFR 112 regulations for SpillPrevention Control and Countermeasure plans).
The amount of concrete for the containment area would be

Pad	70	ft wide x	70	ft long x	1 ft deep =	4900 cubic ft
Wall of	3	ft high x	400	ft long x	1 ft thick =	1200 cubic ft
containment structure				Total		6100 cubic ft

According to SpaceX, only the RP-1 tanks would require containment.
The remaining area in the Propellant Tank Area would need concrete pads for the storage tanks for helium, nitrogen
and liquid oxygen. Based on Exhibit 2-1 in the EIS, the area outside the RP-1 tanks
consists of a 180 ft by 80 ft area north of the runway between the Hangar and the Launch Pad, and a 100 ft by 70 f
area south of the runway. The tanks would occur inside an area 14,400 square feet (north) and 7,000 square feet (south)
Assume that roughly half of this area would need to be covered by concrete pads used to anchor the aboveground
storage tanks, and that the concrete would be 1 foot thick in all of the pads. The amount of concrete needed would be

10700 sf of area 1 ft thick = 10700 cubic feet of concrete

Total concrete in the Propellant Tank Area would be RP-1 tanks + all other tank pads = 16800 cubic feet
The total square footage to be excavated would then be 10700 SF, half of tanks area

plus 4900 SF for RP-1 tanks & containment
Total 15600 SF for area to be excavated

Assume that all of the excavated area would have 0.5 feet of gravel beneath, with 1 foot thick concrete pads, for a tota
depth of excavation = 1.5 feet

Entrance Road

Based on information from SpaceX, Entrance Road would be 12, 229 square feet and would have 12 inches (1 foot) of gravel for roadbed. The assumption has been made that the asphalt would be 4 inches (0.333333 ft) thick
Depth of excavation : 1 ft for gravel + 0.333333 ft for asphalt = 1.333333 ft
Based on the road area provided by SpaceX and Figure 2-1 of the EIS, this Entrance Road runs from the front gate into the Hangar Area Parking Lot, and from the end of the parking lot north to the property boundary

Hangar Parking

Based on information fromSpaceX and Exhibit 2-1 of the EIS, the area of the Hangar parking lot is 34, 267 square feet. The same assumptions have been made for this parking lot as were made for the Entrance Road.

Runway from Hangar to Launch Pad (Pad Access)

Based on measurements from GIS, the estimated area for the Runway is 75,110 square feet.
All other assumptions (thickness of gravel, asphalt, and concrete, type of base material, equipment used, etc.) are industry standard numbers and are provided in the footnotes for the table calculating runway construction air emissions.

Propellant Tank Resupply Road and Parking Pads

Based on information from SpaceX, the estimated area for the tank resupply road/parking is 37,301 square feet with half asphalt and half concrete. The aphalt and concrete would be 10 inches (0.833333 feet) thick with a 12 inch gravel road base: 1 ft thick gravel + 0.833333 ft thick asphalt or concrete = 1.833333 depth
The concrete volume would be: 18650.5 ft2 area x 0.83333 ft thick = 15542.02117 cubic feet

Road From Launch Pad to Perimeter Fence Road

From Exhibit 2-1 of the EIS,this road has a small parking area near the Launch Pad and runs from the north side of the pad to the perimeter road. The road is 30 ft wide by 220 ft long with a 20 ft by 80 ft parking area, for a total o 8,200 square feet. It is assumed this road would be constructed similarly to the Entrance Road (12 inch gravel roadbed 4 inches of asphalt).

Control Center Area

Area to be Cleared:

According to the EIS, most of the land area inside the proposed fence line at the Control Center Area would be disturbed during construction. Calculations done through GIS for the Biological Assessment portion of the EIS show that the area inside the fence line is 8.638 acres. It is this area that would be cleared and graded prior to construction
Area to be cleared = 8.63831 acres
Note that because it has been assumed that the entire area within the fence line would be cleared, clearing has not been calculated for individual projects such as specific buildings or roads.

Area to be Graded:

Basically, this would be the same 8.638 acres that would need to be cleared.
Note that because it has been assumed that the entire area within the fence line would be graded, grading has not been calculated for individual projects such as specific buildings or roads.
It has been assumed that fill would not be necessary for the site.

General Construction Assumptions

For all buildings and parking lots, it has been assumed that the area to be covered with sidewalks and curbing would be 10% of the building square footage, and that the thickness of gravel beneath buildings would be 6 inches (0.5 feet)
Also, the thickness of the concrete slab beneath builidngs would be 1 foot, unless the building requires ar additional thickness of concrete due to the heavy loads on it (e.g., Payload Processing Facility).
Areas for buildings and roadways would still need to be excavated, once the site had been cleared and graded
Building sites would be excavated to a depth to account for the thickness of concrete and gravel projected for the site; roadways would be excavated to a depth of 1 foot for gravel plus the thickness of asphalt or concrete for the road.

Control Center Building

Based on information from GIS measurements, this building on Parcel 2 is 14,669 square feet in size and has a concrete foundation 1 foot thick. It would be a one-story building. For Parcel 1, the proposed size of the same facility is 14,186 SF
To account for the worst-case scenario, both structures were used in the calculations, for a total of 28855 SF

Payload Processing Facility

Based on information from GIS measurements, this building on Parcel 3 is 14,669 square feet in size and has a concrete foundation 1 foot thick. It would be a one-story hangar-type building that would require concrete pilings to be used
The amount of concrete needed for the foundation and pilings have been included in the hangar construcion calcs
For Parcel 1, the proposed size of the same facility is 14,186 SF. To account for the worst-case scenario, both structures were used in the calculations, for a total of 28855 SF

Launch Vehicle Processing Hangar

Based on information from GIS measurements, this building is 30,774 square feet in size. Additional information from the client indicates a concrete foundation 1.5 feet in thickness. It is assumed that the thickness of gravel under the building would increase to 1 foot due to the thickness of the concrete slab. The depth of excavation for this structure would therefore be 2.5 feet (1.5 feet concrete plus 1 foot gravel). This would be a 1-story hangar-type structure.
The amount of concrete needed for the foundation and pilings have been included in the hangar construcion calcs

Satellite Fuels Storage Building

According to the EIS, this structure is 20 ft by 20 ft with a roof, secondary containment, and floor to ceiling fencing
It is assumed that the foundation would be concrete of a thickness of 1 foot, with a 0.5-foot gravel underlayment. It is
also assumed that the structure would not require sidewalks, curbing, etc. For the secondary containment, a 1-foot
thick and 1 foot high concrete riser would run along the perimeter of the floor, for an additional 80 cubic feet of concrete

Generator Facility

Based on the EIS Section 2 site maps, the size of the Generator Facility has been calculated at approximately 1,250 square ft.
It is assumed that the foundation would be concrete of a thickness of 1 foot, with a 0.5-foot gravel underlayment.

Diesel Storage Area

Based on the EIS Section 2 site maps, the size of the Diesel Storage Area has been calculated at approximately 452.4 square ft.
It is assumed that the foundation would be concrete of a thickness of 1 foot, with a 0.5-foot gravel underlayment.

Security Gate Guard Buildings (3)

A total of three Guard Buildings would be required for the Control Center Area. Based on GIS measurements, the tota
area for all three structures would be 690 SF. These buildings would have concrete foundations 1 ft thick and a standarc
layer of gravel beneath them (0.5 feet).

Roads and Parking Areas

The total areas for all roads at the Control Center Area and for all parking areas have been calculated for the Biological
Assessment for the EIS. The BA figures have been used in these calculations. It has also been assumed that standard
project thicknesses for asphalt (0.33333 feet) and gravel road bed thickness (1 foot) apply.
Concrete curbing/sidewalk areas have been calculated for the parking areas at 10% of the parking surface area.

Road surface area:	1.55	acres	=	67518	square feet		
Parking lot area:	3.31	acres	=	144184	square feet		
Depth of excavation :		1	ft for gravel +	0.333333	ft for asphalt =	1.333333	ft

Utility Trench

Using GIS measurements determined from the Biological Assessment for the EIS, the measured linear feet for utility
trenches is 12815 LF
A standard width and depth of 2 feet by 2 feet has been assumed for all trenches.

TAB F. CONSTRUCTION WORKER POV ASSUMPTIONS

The number of construction workers for the Proposed Action was calculated as a percentage
of the number of workers determined for the Final EIS for the Spaceport America Commercial Launch Site (FAA 2008).
The Spaceport America facilities footprint was calculated to be 145 acres.
The total SpaceX facilities footprint has been calculated at 9.42 acres, or 6.5% of the Spaceport America facilties.
For the Spaceport project, a total number of 725 workers were projected for the 3-year life of the project.
6.5% of 725 equals 47 workers for the Proposed Action.

ATTACHMENT 2: OPERATION GREEN HOUSE GAS CALCULATIONS

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Launch Site Annual Operation Emissions

Table 1. Falcon 9 and Falcon Heavy Launch Emissions

Launch Vehicle	Max # launches/yr	RP-1 Use gal/launch	RP-1 MMBtu/gal	[2]CO2 kg/MMBtu	[3]CH4 kg/MMBtu	[3]N2O kg/MMBtu	CO2 kg	CH4 kg	N2O kg	CO2e MT/yr
Falcon 9	10	38,000	0.135	75.2	0.003	0.0006	3857760	153.9	30.78	3,871
Falcon Heavy	2	200,000	0.135	75.2	0.003	0.0006	4060800	162	32.4	4,074
									Total CO2e	**7,945**

[2]Emission Factor from Table C-1 to Subpart C of 40 CFR 98, Mandatory Greenhouse Gas Reporting Rule
[3]Emission Factor from Table C-2 to Subpart C of 40 CFR 98, Mandatory Greenhouse Gas Reporting Rule

Table 2. Generator Operations

Assume the IC engines are typically operated 0.5 hours per week for testing and maintenance = 26 hr/yr
Assume five 24-hour periods of power outages per year for the Launch Site (weather events, etc.) = 120 hr/yr
Assume additional twelve 48-hour operational periods for launches = 576 hr/yr
722 Total

Generator size		CO2
kW	#	lb/yr
300	10	1669423
	Tons/yr	**835**
CO2e in metric tons/yr =		**757**

50% Load Factor

Pollutant	Emission Factors Diesel Fuel [a, b] < 447 kW or < 600 hp
	lb/hp-hr
CO2	1.15
CH4	N.D.

[a] Emission factors used to estimate emissions from the consumption of diesel fuel
[b] Emission factors from U.S. Environmental Protection Agency. Compilation of Air Pollutant Emission Factors - Volume I (AP-42), Section 3.4, 5th Edition; factors based upon power output

Table 3. Staff Commuters

Vehicles	# vehicles	# days	[1]mi/day	[1]CO_2 g/mi	[2]CH_4 g/mi	[2]N_2O g/mi
regular staff	150	245	48	182.00	0.02	0.02
launch event staff	100	144	48	182.00	0.02	0.02
				CO_2 g	**CH_4** g	**N_2O** g
				321,048,000	28,224	28,224
				125,798,400	11,059	11,059
			Metric Tons per Year	**447**	**0.04**	**0.04**
			CO2e in metric tons/year	**460**		

Table 4. Vertical Launch Area Concrete Work - Foundations and Sidewalks - 2014 and 2015

Total Concrete 4,756 CY

Off-road Equipment	Cumulative Hours of Operation[1]	Engine HP	Load Factor	CO_2[2] g/hp-hr	CO_2 lb
Concrete Mixer	250	3.5	0.43	588.29	488.87
Concrete Truck	226	300	0.43	529.89	34,130.96
				Subtotal (lbs):	**34,620**

Table 5. Vertical Launch Area Building Construction - 2014 and 2015

6,400 SF

Off-road Equipment	Cumulative Hours of Operation[1]	Engine HP	Load Factor	CO_2[2] g/hp-hr	CO_2 lb
Crane	3	330	0.58	530.30	716.06
Concrete truck	32	300	0.43	536.26	4880.38
Diesel Generator (Assume 5 generators at 40 HP each)	26	40	0.43	536.20	520.51
On-road Equipment	**Cumulative Hours of Operation[1]**	**Engine HP**	**Productivity based Speed (miles/hour)**	**CO_2[3] lb/mile**	**CO_2 lb**
Diesel Pickup Truck	2	400	30	3.42	236
Delivery Truck	154	365	60	3.42	31,473
				Subtotal (lbs):	**37,826**

Footnotes for Tables 1 through 5

[1]Complied from 2010 National Estimator, Equipment Manufacture's websites such as Freightliner and Cat, PACES, U.S. EPA. Open Burning and Construction Activities: Improved PM Fine Emission Estimation Techniques in the Nation Emissions Inventory, Ohio Emergency Management Agency. Appendix F Debris Estimating Guides, and Henderson, Chris. Project Management for Construction. Fundamental Concepts for Owners, Engineers, Architects, and Builders. Version 2.2. 2008

[2] EPA NONROAD2008a Model

[3]MOVES (Motor Vehicle Emission Simulator) 2010

Table 6. Vertical Launch Area - Launch Pad Construction - 2014 and 2015

Concrete Surface 12,004 SF 0.3 acres

Convert 1,334 SY 1.66666667 yards thick

[1]Off-road Equipment	[2]Cumulative Hours of Operation	[3]Engine HP	[4]Load Factor	[6,7]Emission Factors CO_2 g/hp-hr	Annual Emissions CO_2 lb
Grader (CAT 120M2 or similar)	15	150	0.61	568.30	1,743.10
Steel drum roller/soil compactor	152	401	0.56	568.30	42,779.35
Paving/Concrete Machine	152	164	0.53	568.30	16,558.52
Curbing Machine	8	130	0.59	568.30	730.58
Cement and Motar Mixer 1	152	9	0.56	568.30	960.13
Cement and Motar Mixer 2	152	9	0.56	568.30	960.13
Cement and Motar Mixer 3	152	9	0.56	568.30	960.13
Tractor/Loader/Backhoe	152	75	0.55	568.30	7,858.25
Pile Driver	59	260	0.43	529.64	7,738.52
All Terrain Forklift	59	85	0.59	594.61	3,897.12
[1]On-road Equipment	**[2]Cumulative Hours of Operation**	**[3]Engine HP**	**[5]Speed (miles/hour)**	**CO2 lb/mile**	**CO_2 lb**
Concrete Truck	152	230	20	3.42	10,385
Water Truck/Oil truck	15	230	10	3.42	519
				Subtotal (lbs):	**95,090.40**

Table 7. Vertical Launch Area - Construction of Runway Between Hangar and Launch Pad - 2014 and 2015

Concrete Surface	75,110	SF	1.7 acres
Convert	8,345	SY	1 yards thick

[1]Off-road Equipment	[2]Cumulative Hours of Operation	[3]Engine HP	[4]Load Factor	[6,7]Emission Factors CO_2 g/hp-hr	Annual Emissions CO_2 lb
Grader (CAT 120M2 or similar)	6	145	0.61	568.30	703
Steel drum roller/soil compactor	63	401	0.56	568.30	17,843
Paving/Concrete Machine	63	164	0.53	568.30	6,907
Curbing Machine	3	130	0.59	568.30	305
Cement and Motar Mixer 1	63	9	0.56	568.30	400
Cement and Motar Mixer 2	63	9	0.56	568.30	400
Cement and Motar Mixer 3	63	9	0.56	568.30	400
Tractor/Loader/Backhoe	63	75	0.55	568.30	3,278
[1]On-road Equipment	**[2]Cumulative Hours of Operation**	**[3]Engine HP**	**[5]Speed (miles/hour)**	**CO2 lb/mile**	**CO_2 lb**
Concrete Truck	63	230	20	3.41508	4,332
Water Truck/Oil truck	6	230	10	3.41508	217
				Subtotal (lbs):	**34,784.50**

Footnotes for Tables 6 and 7

[1]Equipment list from National Estimator, PACES and CALEE information.

[2] Productivty of the Equipment is based on a number of sources including PACE and National Estimator. The following is more detail on Productivity Factors:
Assume runway with cement stabilzed base (8 in thick) and asphalt running course (8 in thick)
We are estimating 1.5 yards thick (36" base (PACES) plus flexible upper course of 30 inches (Boeing)
Base productivity factor from PACES/National Estimator is 0.076 hour/CY of runway/taxi way/ Apron that is 1 yard thick. The concrete for NAS Lemoore is estimated to be a total of 1.83yards, which will mean 1.83 times longer
Number of Mortar mixers based on National Estimator File (at least 3)

[3]Engine HP is based on information compiled from CALEE, Caterpillar, and National Estimator.

[4]Load Factor is Offroad Default Load Factor from Page 12, Table 3.3 of "California Emissions Estimator Model Appendix D Default Data Tables"

[5]Estimated speed based on Hendrickson, Chris. Department of Civil and Environmental Engineering, Carnegie Mellon University. Project Management for Construction. Fundamental Concepts for Owners, Engineers, Architects and Builders. Version 2.2. 2008

[6]Emission Factors from Table 3.4 of of "California Emissions Estimator Model Appendix D Default Data Tables" Assume 2005 model year equipment

[7]On-road emission factors are from EMFAC 2007 Version 2.3, Scenario Year 2015 HHDT-DSL

Table 8. Vertical Launch Area Integration and Processing Hangar Construction - 2014 and 2015

43,200 SF

Off-road Equipment	Cumulative Hours of Operation	Engine HP	Load Factor	CO_2[1] g/hp-hr	CO_2 lb
Crane	259	330	0.58	530.2987216	58,001
Diesel Generator for on-site power tools and office support (Assume 5 generators at 40 HP each)	202	40	0.43	589.0709388	4,513
Telehandler	432	99	0.59	594.613562	33,078
Scissors Lift	346	83	0.59	594.613562	22,186
Skid steer loader	216	67	0.59	690.8722008	13,005
Pile driver	213	260	0.43	529.6372363	27,849
All terrain forklift	213	84	0.59	594.613562	13,860
On-road Equipment	**Cumulative Hours of Operation**	**Engine HP**	**Speed (miles/hour)**	CO_2[1] lb/mile	CO_2 lb
Diesel Pickup Truck	293	400	30.00	3.42	29,992
Concrete truck	202	300	0.43	3.42	196.25
Delivery Truck	1,254	365	30.00	3.42	128,526
				Subtotal (lbs):	**331,207**

Table 9. Vertical Launch Area Parts Storage Warehouse and Workshop Hangar Construction - 2014 and 2015

21,600 SF

Off-road Equipment	Cumulative Hours of Operation	Engine HP	Load Factor	CO_2[1] g/hp-hr	CO_2 lb
Crane	130	330	0.58	530.2987216	29,000
Diesel Generator for on-site power tools and office support (Assume 5 generators at 40 HP each)	101	40	0.43	589.0709388	2,257
Telehandler	216	99	0.59	594.613562	16,539
Scissors Lift	173	83	0.59	594.613562	11,093
Skid steer loader	173	67	0.59	690.8722008	10,404
Forklift	108	85	0.59	594.613562	7,100
On-road Equipment	**Cumulative Hours of Operation**	**Engine HP**	**Speed (miles/hour)**	CO_2[2] lb/mile	CO_2 lb
Diesel Pickup Truck	146	400	30.00	3.42	14,996
Concrete truck	101	300	0.43	3.42	98.12
Delivery Truck	627	365	30.00	3.42	64,263
				Subtotal (lbs):	**155,750**

Tables 8 and 9 Footnotes

[1] EPA NONROAD2008a Model

[2] MOVES (Motor Vehicle Emission Simulator) 2010

Table 10. Vertical Launch Area Paving - 2014 and 2015

Pavement - Surface Area 101,322 SF 1,251 CY

Paving - HMA 33,774 CF

Off-road Equipment	Cumulative Hours of Operation	Engine HP	Load Factor	CO_2[1] g/hp-hr	CO_2 lb
Grader	310	150	0.59	535.69	32,432.09
Steel drum roller/vibratory roller	465	401	0.59	535.80	130,078.41
Paving Machine	621	164	0.59	535.68	70,916.70
Asphalt Curbing Machine	62	130	0.59	535.63	5,620.97
On-road Equipment	**Cumulative Hours of Operation**	**Engine HP**	**Productivity based Speed (miles/hour)**	CO_2[2] lb/mile	CO_2 lb
Dump Truck	250	230	17	3.41508	14,241
Water Truck	10	230	10	3.41508	339
				Subtotal (lbs):	**253,628**

[1] EPA NONROAD2008a Model

[2] MOVES (Motor Vehicle Emission Simulator) 2010

[3] California Air Resources Board (CARB) 2005. Comparison of Asphalt Paving Emission Factors

Table 11. Vertical Launch Area Annual Construction Worker POVs 2014 and 2015 [1]

24 construction workers

Vehicles	# vehicles	# days	[1]mi/day	[3,4]CO_2 g/mi	[3,4]CH_4 g/mi	[3,4]N_2O g/mi	CO_2 g	CH_4 g	N_2O g
passenger vehicles	47	240	46	182.00	0.02	0.02	94,436,160	8,302	8,302
						Metric Tons per Year	**94**	**0.01**	**0.01**
						CO2e in metric tons/year	**97**		

[1] while onsite only

[2] Emission factors from MOVES2010

[3]Emission Factors from *Federal Greenhouse Gas Accounting and Reporting Guidance: Technical Support Document* (CEQ. 2010), Table D-11

[4]Emission Factors from *Federal Greenhouse Gas Accounting and Reporting Guidance: Technical Support Document* (CEQ. 2010), Table D-12

Table 12. Vertical Launch Area Construction Summary

YEAR	CO_2 MT/yr
2014	391
2015	391

Appendix M
SpaceX Wetland Mitigation Plan

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Commercial Launch Site

Wetland Mitigation Plan

Revision 5

September 2013

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1.0 Project Information

1.1 Project Name

SpaceX Texas Launch Site

1.2 SWG Permit No.

Depart of the Army Permit Number: SWG-2012-00381. Project Manager: Jayson Hudson (jayson.m.hudson@usace.army.mil; 409-766-3931).

1.3 Project Location:

The approximate 56.5-acre property, leased by SpaceX, is located directly adjacent to the eastern terminus of State Highway 4 (Boca Chica Boulevard), immediately south of Brazos State Park, approximately 5 miles south of Port Isabel and South Padre Island, approximately 18 miles east of Brownsville, and approximately 3 miles north of the U.S./Mexico border on the Gulf Coast of Texas. This is the area where the proposed vertical launch area would be constructed and where the wetland impact would occur. Additionally, SpaceX proposes to construct a Launch Control Center on the north side of State Highway 4 approximately two miles to the west of the Vertical Launch Area. There would be no wetland impact in the Launch Control Center area. A project location map is included in **Attachment A**.

- Vertical Launch Area Project Latitude: 25°59’49.33”N
- Vertical Launch Area Project Longitude: -97°09’17.34”W
- Launch Control Center Project Latitude: 25°59'16.96"N
- Launch Control Center Project Longitude: -97°11'4.20"W

1.4 Mitigation Site Location (if different)

The Port Mitigation Land (50.0 acres) is located approximately 3.9 miles northwest of the Vertical Launch Area and 2.2 miles north of the Launch Control Center, directly to the west of South Bay, directly east of the Loma Preserve (managed by USFWS), and approximately 1 mile south of the Brownsville Ship Channel. A location map is included in **Attachment A**.

- Proposed Mitigation Site Latitude: 26° 0'53.74"N
- Proposed Mitigation Site Longitude: -97°12'18.65"W

1.5 Watershed

The project and proposed mitigation site are both located South Laguna Madre watershed, which is within the Bahia-Grande Brownsville Ship Channel watershed, a 363-square mile subwatershed to the Southwestern Texas Coastal Basin (FAA, 2013)

1.6 County or Counties

Cameron County, Texas

2.0 Compensatory Mitigation

2.1 Goals and Objectives

33 CFR 332 – Compensatory Mitigation for Losses of Aquatic Habitat, establishes sequential process of avoiding, minimizing, and compensating for adverse impacts to the aquatic ecosystem. Compensatory mitigation is required for unavoidable adverse impacts to the aquatic ecosystem that cannot reasonably be avoided or further minimized in order to replace those aquatic ecosystem functions that would be lost or impaired as a result of a USACE-authorized activity.

Compensatory mitigation should generally be located within the same watershed as the impact site, and should be located where it is most likely to successfully replace lost functions and services, taking into account watershed scale features (e.g., aquatic habitat diversity, habitat connectivity, hydrologic sources, land use trends/compatibility, ecological benefits). Pursuant to the 2008 Final Rule on Compensatory Mitigation, the USACE considers the type and location options for compensatory mitigation in the following order:

- Mitigation bank credits, when permitted impacts are located in the service area of an approved mitigation bank with appropriate number and resource type of credits available;
- In-lieu fee program credits, when permitted impacts are located in the service area of approved in-lieu with appropriate number and resource type of credits available;
- Permittee-responsible mitigation under a watershed approach, where likely to be successful and sustainable to maintain and improve the quality and quantity of aquatic resources within the watershed;
- Permittee-responsible mitigation through on-site and in-kind mitigation, when considering the practicability and compatibility with the proposed project; and
- Permittee-responsible mitigation through off-site and/or out-of-kind mitigation, where an opportunity is identified that has a greater likelihood of offsetting the permitted impacts or is environmentally preferable to on-site or in-kind mitigation.

The purpose of this plan is to therefore present an overview of the mitigation development process as well as a framework for the comprehensive mitigation of loses to Waters of the U.S. that would result from the construction of the SpaceX Texas Launch Site. The goals and objectives of this plan are as follows:

Goals:

- Preserve aquatic ecosystem functions and hydrologic conditions in sufficient quantity to offset project associated losses within the contest of the watershed.

Objectives:

- Identify land available for preservation within the South Laguna Madre watershed.
- Offset loss of 3.30 acres of wetlands and the indirect impact to approximately 0.60 acres of wetlands.
- Provide ecologically self-sustaining aquatic resource preservation.

- Secure approximately 50 acres of tidal wetlands for preservation in perpetuity, preferably contiguous to existing protected land.

2.2 Site Selection

Description of the factors considered during the site selection process

SpaceX followed the recommend mitigation hierarchy when considering project mitigation options. During the National Environmental Policy Act (NEPA) process the project team underwent several site redesigns in order to reduce and minimize impacts to Waters of U.S. Wetland avoidance and impact minimization was the only factor driving these redesign initiatives. Some of these initiatives included:

- The relocation of infrastructure within the site in order to maximize the use of upland areas.
- The relocation of structures wherever possible from the Vertical Launch Area to the Control Area.
- The installation of culverts at various locations on the Vertical Launch Area including under the security road and under the roll-out road in order to maintain hydrological connections wherever possible.

Through these efforts SpaceX was able to reduce direct impacts to Waters of the U.S. from 5.79 acres to 3.30 acres. The proposed project would therefore utilize all of the available upland on the project site, eliminating any opportunities for additional onsite mitigation initiatives. In addition, the existing wetland system onsite has a high level of function and value, eliminating opportunities for onsite wetland re-establishment, rehabilitation or enhancement.

Off-site mitigation options included considering land directly adjacent to the Vertical Launch Area. The area consists of an existing wetland system owned by the U.S. Fish and Wildlife Service (USFWS). The wetland system displays a high function and value. Upland within the area is also considered high quality coastal prairie. Both of these habitat types are currently used by a wide variety of species including listed threatened and endangered species as described in the Draft Environmental Impact Statement, SpaceX Texas Launch Site. Volume I, April 2013. The current biological value associated with both the wetland and upland habitat therefore eliminated options for mitigation through re-establishment, rehabilitation or enhancement adjacent to the Vertical Launch Area.

Off-site mitigation options also included considering land directly adjacent to the Control Area. Approximately 0.7 acres of upland property was identified as available for purchase. Based on additional coordination with the USACE, it was determined that the available land did not represent an opportunity to create a fully functioning wetland mitigation site. Concerns central to this determination included the lack of property available, site topography, connectivity to existing wetlands, hydrology and the known use of the area by listed threatened and endangered species.

Mitigation site selection efforts were therefore expanded to consider areas within the general vicinity of the proposed project. Efforts were focused on finding existing wetland systems that

could be rehabilitated or enhanced or upland areas that could be excavated and re-graded to create wetland hydrology. SpaceX engaged the USACE, USFWS, Texas Parks and Wildlife Department (TPWD), City of Brownsville and the Port of Brownsville in extensive consultation to establish what mitigation options were available within the vicinity of the proposed project site. The same constraints, as described above, were encountered during this process. Existing wetland systems display a high function and value eliminating options for re-establishment, rehabilitation or enhancement. Upland areas consist of high quality coastal prairie, and both upland and wetland areas are utilized by listed threatened and endangered species, making further habitat disturbance problematic.

As a result, efforts turned to considering areas for preservation. Through continued coordination efforts, 50-acres of land, currently owned by the Port of Brownsville and managed by USFWS, was identified as a potential mitigation site. The land is located approximately 3.9 miles northwest of the proposed Vertical Launch Area. A map showing the location of the property relative to the proposed project site is included in **Attachment A.**

The site is discussed in more detail in the later sections of this plan, but in general, the preservation of the proposed Port Land mitigation site would:

- Preserve aquatic ecosystem functions and hydrologic conditions in an amount sufficient to offset losses.
- Accomplish ecologically self-sustaining aquatic resource preservation objectives.
- Ensure mitigation success as the land area currently functions within a wetland system.
- Land is adjacent to other protected land which eliminates the potential for surrounding development or adjacent land use changes and extends contiguous protected land.

As the preservation of the Port of Brownsville owned land appears to satisfy the mitigation plan Goals and Objectives, the "Port Mitigation Land" is the preferred mitigation site for the proposed project.

2.3 Site Protection Instrument

The proposed mitigation site is currently owned by the Port of Brownsville and leased to the USFWS. The lease ends in 2023. SpaceX proposes to gain ownership of the land and then donate the land to the USFWS. USFWS ownership of the property would ensure the long-term protection of the compensatory mitigation project site, increasing USFWS's ownership of contiguous protected land within the watershed.

2.4 Baseline Information/ Site History

A description of the proposed project site is incorporated by reference from the Draft Environmental Impact Statement, SpaceX Texas Launch Site. Volume I, April 2013. The proposed project would result in approximately 3.9 acres of wetland impacts which include the direct impact to approximately 3.30 acres of wetlands and the indirect impact to approximately 0.60 acres of wetlands. The impacts would all be a result of the construction of the Vertical Launch Area, the Control Area would not result in any impacts to Waters of the U.S.

The Port Mitigation Land is located approximately 3.9 miles northwest of the Vertical Launch Area, directly to the west of South Bay and approximately one mile south of the Brownsville Ship Channel. The property consists of tidal flats with a small swath of vegetated upland.

Descriptions of Historic and Existing Plant Communities

Vegetation communities in Texas were first mapped in detail by McMahan et al. (1984). The Port Mitigation Land is located within the Western Gulf Coastal Plain (Gulf Coast Prairies and Marshes) Ecoregion. Prior to European settlement, this ecoregion consisted of a mosaic of tallgrass coastal prairie, riparian bottomland hardwood forests, ephemeral freshwater wetlands, canebrake swamps, extensive coastal forests, chenier woodlands, freshwater tidal wetlands, brush mottes and corridors, barrier islands, estuaries, saltwater marshes, hypersaline lagoons, lomas, and associated Tamaulipan thornscrub habitats (The Nature Conservancy [TNC] 2002).

The USFWS currently recognizes 11 biotic communities in the Lower Rio Grande Valley region. The Port Mitigation Land is located within the clay loma/wind tidal flats biotic community. This community is characterized by a matrix of clay dunes interspersed within saline flats, marshes, and shallow bays that are periodically inundated by water from the Gulf of Mexico. Lomas are formed from silt or clay particles deposited by wind on tidal flats.

Dunes often form around the tidal flats. Typical plants found in loma/tidal flats include sea ox-eye (Borrichia frutescens), saltwort (Batis maritima), and glasswort (Salicornia virginica) on vegetated portions of the flats, and gulf cordgrass (Spartina spartinae), Berlandier's fiddlewood (Citharexlyum berlandieri), texas ebony (Pithecellobium ebano) and yucca (Yucca treculeana) on higher lomas (Jahrsdoerfer and Leslie 1988; USFWS 1997).

The Port Mitigation Land consists primarily of unvegetated salt flats.

Description of Historic and Existing Hydrology

The Port Mitigation Land is located in the within South Laguna Madre watershed, which is within the Bahia-Grande Brownsville Ship Channel watershed, a 363-square mile subwatershed to the Southwestern Texas Coastal Basin. South Bay is directly adjacent and to the east of the Port Mitigation Land. South Bay is an inland bay along the Gulf of Mexico located within the Laguna Madre hypersaline lagoon system and is the southernmost bay in Texas. South Bay is separated from the Gulf of Mexico by Brazos Island. On the northern boundary of South Bay is an inlet where water flows freely from South Bay into the Brownsville Shipping Channel, which connects the Port of Brownsville to the Gulf of Mexico. On the southern end of South Bay, is Boca Chica Bay where Boca Chica State Park is located. Boca Chica Bay, is a subdelta of the Rio Grande. The Rio Grande is located approximately 3.8 miles south of the Port Mitigation Land and is located outside of the watershed (FAA, 2013).

According to National Wetland Inventory mapping, the Port Mitigation Land contains the flowing wetland classifications:

- estuarine, intertidal, aquatic bed, algal, regularly flooded.
- estuarine, subtidal, unconsolidated bottom

- estuarine, intertidal, unconsolidated shore, irregularly flooded
- estuarine, intertidal, unconsolidated shore, regularly flooded

Soil Conditions

Based on the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) web soil survey, the soil underlying the mitigation area is Barrada Clay. Barrada clay is commonly found on deflation flats or wind-tidal flats. The parent material is clayey over loamy alluvium and storm washover sediments of holocene age. The soil is very poorly drained and is not considered prime farmland (NRCS 2013).

2.5 Determination of Credits

The Tidal Fringe iHGM was used to estimate the potential impacts to tidally influenced wetlands on the project site and to help establish if the Port Mitigation Land would adequately address the wetland functions that are being impacted. As the wetland systems cover the extent of the project site and the Port Mitigation Land, one WAA was done for each. For the launch area the system reviewed includes the tidal flat and upland areas to the south of Highway 4. For the Port Mitigation Land, the system considered included the the tidal flats and upland system of south bay, generally from the Brownsville Ship Channel to Highway 4. A map showing the areas considered is included in **Attachment A**. An iHGM worksheet is included in **Attachment B**.

The following Functional Capacity Unit (FCUs) were calculated for the Port Mitigation Land. The calculations were based on a total wetland impact is predicted to be 3.30 plus 0.6 for a total of 3.90 acres. The results are presented in the table below.

Pre-Project FCUs (24.5 acres of Wetland)		**Post-Project FCUs (20.6 acres of Wetland)**		**Change (Loss) In FCUs**	
Biota	33.95	Biota	24.42571	Biota	9.524286
Botanical	12.25	Botanical	8.24	Botanical	4.01
Physical	15.435	Physical	11.948	Physical	3.487
Chemical	3.675	Chemical	2.472	Chemical	1.203

SpaceX cannot mitigate impacts to Waters of the U.S. through credit purchase based on the unavailability of credits. In coordination with the USACE, SpaceX there proposes the preservation of approximately 50 acres of wetland in order to offset unavoidable impacts to Waters of the U.S. associated with the construction of the proposed project.

Baseline FCUs were calculated for the Port Mitigation Land. The results are presented in the table below.

Preservation Land FCUs (50.0 acres of Wetland)	
Biota	60.35714
Botanical	5
Physical	37
Chemical	1.5

Based on these results, it appears that Port Mitigation Land had sufficient function, and extent to sufficiently offset unavoidable impacts to Waters of the U.S.

2.6 Mitigation Work Plan

No additional impacts to waters of the US are anticipated as a result of establishing the mitigation site. The site consists of currently functioning wetland habitat. No grading, planting, soil management, erosion control measures or non-native plant species controls are therefore necessary or included in this plan.

2.7 Maintenance Plan

As previously discussed, SpaceX will donate the mitigation land to USFWS. SpaceX would therefore not be responsible for the ongoing maintenance of the property.

2.8 Performance Standards

As previously discussed, SpaceX will donate the mitigation land to USFWS. SpaceX would therefore not be responsible for developing or tracking mitigation performance standards.

2.9 Monitoring Requirements

As previously discussed, SpaceX will donate the mitigation land to USFWS. SpaceX would therefore not be responsible for the ongoing monitoring of the property.

2.10 Long-Term Management Plan

As previously discussed, SpaceX will donate the mitigation land to USFWS. SpaceX would therefore not be responsible for the long-term management of the property.

2.11 Adaptive Management Plan

As previously discussed, SpaceX will donate the mitigation land to USFWS. SpaceX would therefore not be responsible for the long-term management of the property.

2.12 Short-term and Long-term Financial Assurances

As previously discussed, SpaceX will donate the mitigation land to USFWS. SpaceX would therefore not be responsible for providing short and long-term financial assurances.

3.0 References

FAA 2013. Environmental Impact Statement, SpaceX Texas Launch Site. Volume I, Executive Summary and Chapters 1-14. http://www.faa.gov/about/office_org/headquarters_offices/ast/environmental/nepa_docs/review/documents_progress/spacex_texas_launch_site_environmental_impact_statement/. Accessed September 04, 2013.

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South Texas: description, human impacts, and management options. U.S. Fish and Wildlife Service, Biological Report 88(36).

McMahan, C.A., R.G. Frye, and K.L. Brown. 1984. The Vegetation Types of Texas. Including Cropland. Wildlife Division, Texas Parks and Wildlife Department.

NRCS. 2012a. Web Soil Survey: Cameron County, Texas. http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Accessed September 4, 2013.

TNC. 2002. The Gulf Coast Prairies and Marshes Ecoregional Conservation Plan. Gulf Coast Prairies and Marshes Ecoregional Planning Team, San Antonio, Texas.

USFWS. 1997. Final Lower Rio Grande Valley and Santa Ana National Wildlife Refuges. Interim Comprehensive Management Plan. September.

4.0 Attachments

Attachment A – Location Maps and Project Plan Views



Figure 1: Overview map of project site

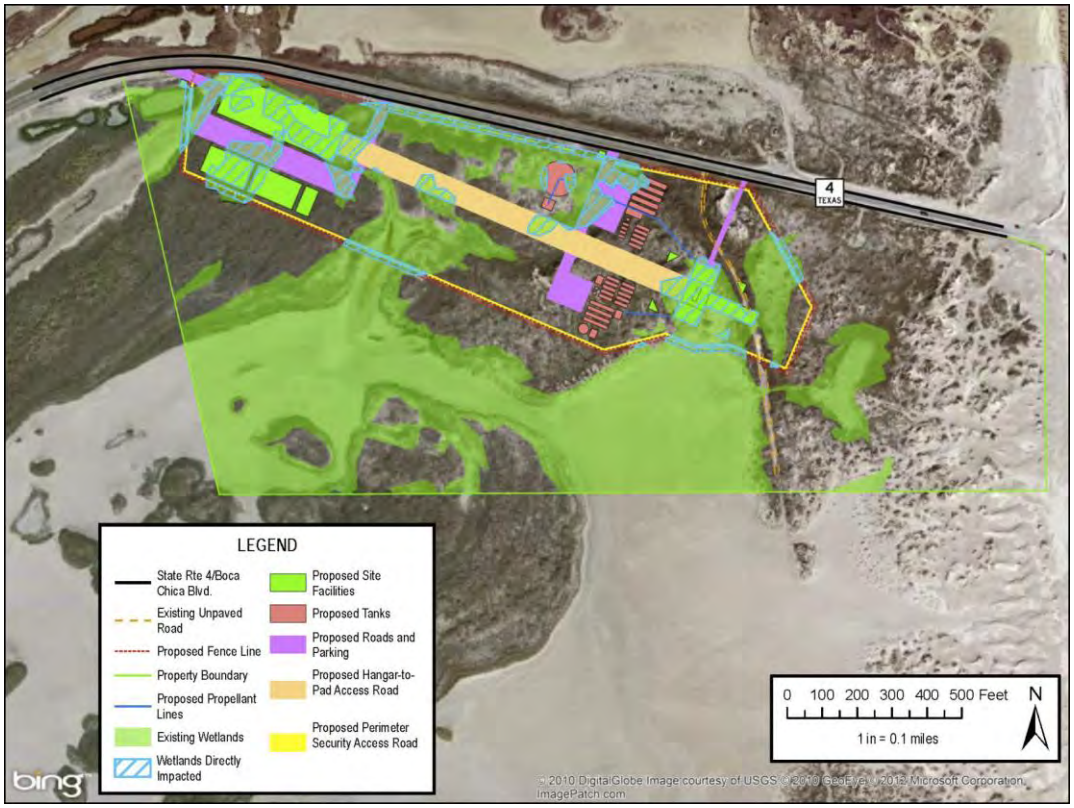

Figure 2: Wetland map of Vertical launch Area



Figure 3: Map of launch Control Center Area



Figure 4: Proposed Mitigation Land



Figure 5: Proposed Mitigation Land (with Launch Control Center Area shown)



Figure 6 – Extent of Wetland System Evaluated – Port Mitigation Site



Figure 7 - Extent of Wetland System Evaluated – Launch Site

Attachment B – iHGM Worksheet

Tidal Fringe HGM (Interim)
(FCI formulas)

Biota:

$[\{V_{edge} + 2\ V_{hydro} + 0.5V_{nhc}/3.5\} + V_{typical}]/2$

Botanical:

$V_{typical}$

Physical:

$[V_{slope} + V_{width} + V_{rough} + V_{soil} + V_{hydro}]/5$

Chemical:

$[\ V_{typical}\ x\ V_{hydro}]1/2$

Need values for: use the existing methods describes in the Tidal fringe model

V_{edge}
V_{hydro}
V_{nhc}
$V_{typical}$
V_{slope}
V_{width}
V_{rough}
V_{soil}

- The tidal fringe geo-region for this model to be used is limited to the western fringes of the Gulf of Mexico WETLANDS and is only to be used for a rapid non-controversial estimate of the potential impacts and to see if the proposed mitigation will adequately address the wetland functions that are being impacted.

Variables for HGM (Interim) Tidal Fringe

V_{edge}: the amount of marsh-water meters/hectare

Site Description	Qualitative	Quantitative	Subindex
Marsh shows deterioration due to subsidence large amounts of open water	Very High	Greater than 800 m/ha	0.8
Well developed tidal drainage network present OR Simple tidal network with isolated ponds & depression in the marsh interior OR Large amount of shallow shoreline in relations to the entire area	High	350—800 m/ha	1.0
Simple tidal drainage network ..isolated ponds and depressions are few & lacking	Moderate	200-350 m/ha	0.7
Marsh lack both tidal creeks & isolated ponds & depressions, shoreline is linear or smooth ...Marsh area is large relative to shoreline length. OR the WAA is a depression that is not affected by the daily tide (i.e. high marsh)	Low	Less than 200 m/ha	0.4

V_{hydro}: site hydroperiod or degree of hydrological modifications

Site Description	Subindex
Site is open, no hydrologic restrictions	1.0
Moderate hydrologic restriction (i.e low level berms that overtop freq. by waves, or has mutli- breeches or large numerous culverts)	0.6
Severe hydrologic restriction (high elevation berm with in freq over-top, small culverts, single opening or breech)	0.3
Site receives water only during extreme storm events	0.1
Site is cut off from tidal exchange	0.0

V_{nhc}: number of nekton habitat types present

Habitat types: within 150 ft of the edge of the WAA

Low Marsh	High Marsh	Subtidal creeks	Intertidal creeks
ponds or depressions	SAVs	Oyster Reef	Unvegetative flats
Algal flats	Mangroves	Coarse woody debris	

Number of habitat types	Variable Subindex
1	0.2
2	0.3
3	0.5
4	0.7
5	0.8
6	1.0

$V_{typical}$: proportion of the site that is covered by vegetation typical of the regional subclass

Invasive species: tallow, alligator weeds, spiny aster, common reed, rattlebox, cattail, flat sedge *(Sapium sabiferum, Alternathera philoxeroides, Aster spinosus, Phragmites drummondii, Sesbania drumondii, Typha sp, Cyperus entranianus)*

Total % Cover by typical species	Variable sub-index
10 %	0.1
20 %	0.1
30 %	0.2
40 %	0.4
50 %	0.5
60 %	0.6
70 %	0.7
80 %	0.9
90 %	1.0
100 %	1.0

V_{slope}: distance to water greater than or equal to 6 feet deep

Distance to Navigation Channel or water greater than or equal to 6 ft deep	Variable Sub Index
Less than 150 ft	0.1
151-450 ft	0.5
Greater than 451 ft	1.0

V_{width}: average marsh width.

Mean Width WAA Distance (ft)	Variable Sub Index
0-30 ft	0.1
31-75 ft	0.25
76-150 ft	0.5
151-225 ft	0.6
226-300 ft	0.8
301-375 ft	0.85
376-450 ft	0.9
451-525 ft	0.95
526-600 ft	1.0
Greater than 600 ft	1.0

V_{rough}: Manning's roughness coefficient

$n_{base} + n_{topo} + n_{veg}$ = manning's end

(n_{base})

Sediment surface	0.025	Base value for bare marsh soil.
	0.03	More than 25% of the sediment surface covered with gravel or broken shell

(n_{topo})

Topographic relief	0.001	WAA is flat no microtopographic or macrotopographic relief
	0.005	WAA has 5-25% topographic relief
	0.010	WAA has 26-50% topographic relief
	0.20	WAA has greater than 50% topographic relief

(n_{veg})

Vegetation	Less 50% cover	50-75% cover	76-100% cover	Description of Conditions
	0.025	0.030	0.035	Predominantly Short flexible stem grass (i.e. Spartina alterniflora, S. patens, Distichlis spicata)
	0.035	0.040	0.050	Predominantly short stiff trailing stems (i.e. Batis & Salicornia)
	0.050	0.060	0.070	Predominantly tall flexible grass (i.e. tall Spartina alterniflora, S. cynosuroides, Scirpus sp).
	0.070	0.100	0.160	Predominantly tall with stiff leaves or mixed with woody shrubs (i.e. Juncus roemerianus, Mangroves, etc.)

FCI variable sub index (rounded appropriately)

Roughness	Variable Sub Index
0.04	0.1
0.05	0.2
0.06	0.4
0.07	0.6
0.08	0.8
0.09	1.0
0.10	1.0

V_{soil}: predominant soil texture

Soil Texture	Variable Sub Index
Sandy	0.2
Sandy loam	0.4
Loam	0.6
Clay loam	0.8
Clay	1.0

Tidal Fringe HGM (Interim) Worksheet

WAA # Project Site Pre

Variable	Subindex
V_{edge}	1
V_{hydro}	0.6
V_{nhc}	0.5
$V_{typical}$	0.5
V_{slope}	1
V_{width}	0.95
V_{rough}	0.4
V_{soil}	0.2

WAA # Project Site Post

Variable	Subindex
V_{edge}	0.7
V_{hydro}	0.6
V_{nhc}	0.5
$V_{typical}$	0.4
V_{slope}	1
V_{width}	0.9
V_{rough}	0.2
V_{soil}	0.2

WAA # Mitigation Site

Variable	Subindex
V_{edge}	1
V_{hydro}	0.6
V_{nhc}	0.8
$V_{typical}$	0.1
V_{slope}	1
V_{width}	1
V_{rough}	0.1
V_{soil}	1

WAA #

Variable	Subindex
V_{edge}	
V_{hydro}	
V_{nhc}	
$V_{typical}$	
V_{slope}	
V_{width}	
V_{rough}	
V_{soil}	

Tidal Fringe (Interim HGM) Worksheet
Functional Capacity Index (FCI)

Biota:

$[\{V_{edge} + 2\ V_{hydro} + 0.5V_{nhc}/3.5\} + V_{typical}]/2$

Pre: [{ 1 + 2 0.6 + 0.5 x 0.5 /3.5} + 0.5]/2 = FCI ;

Post: [{ 0.7 + 2 0.6 + 0.5 x 0.5 /3.5} + 0.4]/2 = FCI

Botanical:

$V_{typical}$

Pre: 0.5 = FCI

Post: 0.4 = FCI

Physical:

$[V_{slope} + V_{width} + V_{rough} + V_{soil} + V_{hydro}]/5$

Pre: [1 + 0.95 + 0.4 + 0.2 + 0.6]/5 = FCI

Post: [1 + 0.9 + 0.2 + 0.2 + 0.6]/5 = FCI

Chemical:

$[V_{typical} \times V_{hydro}]1/2$

Pre: [0.5 x 0.6]1/2 = FCI

Post: [0.4 x 0.6]1/2 = FCI

Functional Capacity Units (FCU); FCI x wetland acres per WAA…

WAA#	Pre-project FCUs	Post project FCUs
Biota	33.95	24.425
Botanical	12.25	8.24
Physical	15.435	11.948
Chemical	3.675	2.472
	(24.5 acres)	(20.6 acres)

Tidal Fringe (Interim HGM) Worksheet
Functional Capacity Index (FCI)
Mitigation

Biota:

$[\{V_{edge} + 2\ V_{hydro} + 0.5V_{nhc}/3.5\} + V_{typical}]/2$

Pre: [{ 1 + 2 0.6 + 0.5 x 0.8 /3.5} + 0.1]/2 = FCI ;

Post: [{ n/a + 2 n/a + 0.5 x n/a /3.5} + n/a]/2 = FCI

Botanical:

$V_{typical}$

Pre: 0.1 = FCI

Post: n/a = FCI

Physical:

$[V_{slope} + V_{width} + V_{rough} + V_{soil} + V_{hydro}]/5$

Pre: [1 + 1 + 0.1 + 1 + 0.6]/5 = FCI

Post: [n/a + n/a + n/a + n/a + n/a]/5 = FCI

Chemical:

$[\ V_{typical}\ x\ V_{hydro}]1/2$

Pre: [0.1 x 0.6]1/2 = FCI

Post: [n/a x n/a]1/2 = FCI

Mitigation

Functional Capacity Units (FCU); FCI x wetland acres per WAA…

WAA#	Pre-project FCUs	Post project FCUs (init.)	Post Project FCUs (3rd)
Biota	60.357	n/a	n/a
Botanical	5	n/a	n/a
Physical	37	n/a	n/a
Chemical	1.5	n/a	n/a

Post project FCU – Pre-project FCU = Net gain/loss

WAA#	Net gain/loss	Net gain/loss	Net gain/loss
Biota	n/a	n/a	n/a
Botanical	n/a	n/a	n/a
Physical	n/a	n/a	n/a
Chemical	n/a	n/a	n/a

Tidal Fringe (Interim HGM) Worksheet
Functional Capacity Unit (FCU)
Impact(s) sheet

Potential Functional Capacity impacts

{i.e. WAA 1 FCU biota loss (bl) + WAA 2 bl + WAA 3 bl + WAA 4 bl = net FCU loss}

	Loss FCU's	Preservation FCUs[1]
Biota:	9.524	60.357
Botanical:	4.01	5.0
Physical:	3.487	37
Chemical:	1.203	1.5

*** Net FCU loss is calculated by deducting the post project FCU from the pre-project FCU per function capacity. Different functional capacity index should NEVER be summarized.**