

Integrating AGIS into the planning process

Presented to | AAND and SDAMA 2014 Airports Fall Seminar

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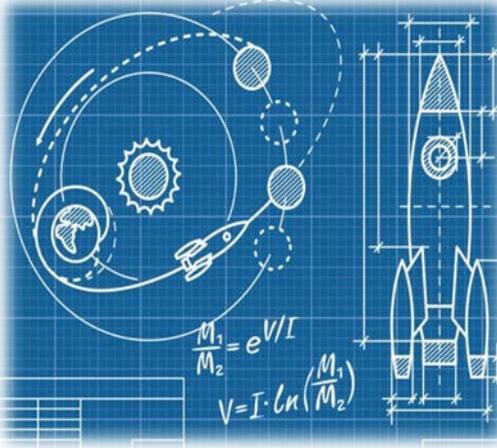
Date | September 22, 2014



Airports GIS Theories



What my friends think I do



What my wife thinks I do



What society thinks I do



What airports think I do



What I think I do



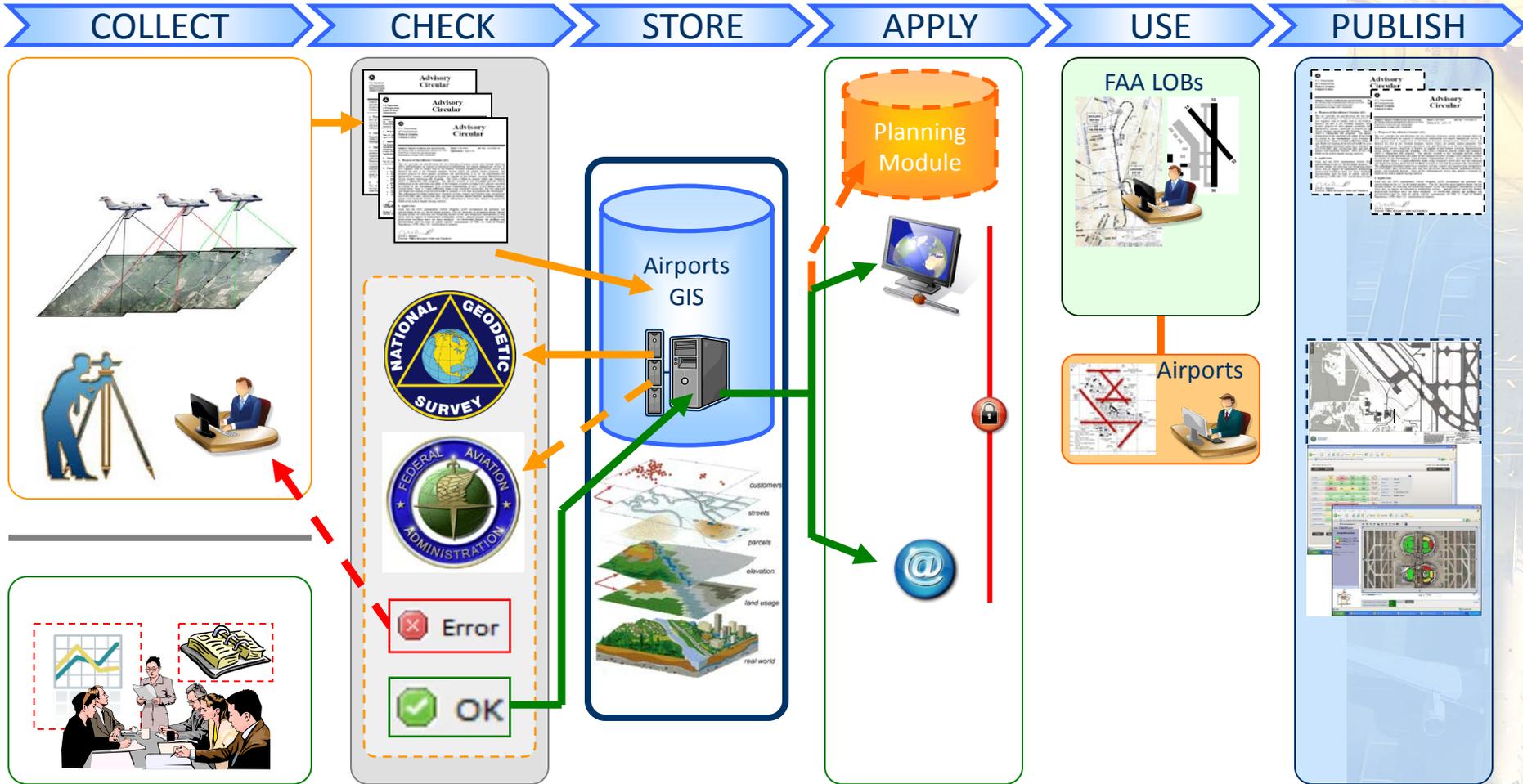
What I really do

Learning Objective for Today

- **Recognition of Airport Sponsor, Consultants and ADO staff that identifies gathering AGIS aeronautical survey data should occur as early in the master planning process as feasible, and knowing why this is important**
- **Understand what aspects of AGIS and when aeronautical surveying should be included in a Master Plan update**
- **Show eALP sample formats**



Airports GIS | Reality for Today's Sales Pitch



Development/Deployment Perspective: ATMs; PCs; FAX; Internet; e-mail; mobile phones; Google Earth

Airports GIS

- The "**sweet spot**" for aeronautical surveys at airports are typically large-scale engineering, design, and construction projects involving the runway (eg., a runway extension, runway reconstruction, runway relocation, or new runway) or a major taxiway reconfiguration-(project specific added to AGIS)
- Another opportunity to capture volumes of aeronautical survey data is in conducting airport airspace analysis or master plan updates-(planning specific added to AGIS web site)



Master Plan AC 150/5070-6B

- Provides guidance for the preparation of master plans for airports
- The elements of a master planning process will vary in complexity and level of detail, depending on the airport size, aviation function, issues of the individual airport
- **3 Key Elements that Require FAA Approval of an airport master planning process**
 - ▶ Scope of Work concurrence for AIP funding eligibility
 - ▶ Forecast review and concurrence
 - ▶ ALP review and approval



Master Plan Scope of Work

- The sponsor, the sponsor's consultant, and FAA Region/ADO representatives as a team must carefully prepare a scope of work that reflects the planning update of the individual airport
- To ensure master planning efforts conform to the AC and grant eligibility requirements, FAA is responsible for:
 - 1- reviewing and accepting the sponsor's draft scope
 - 2- insure the proposed level of effort is necessary to complete the tasks
 - 3- AGIS and scope review before the sponsor enters into a contract



Aviation Activity Forecasts

- **Forecasts of future levels of aviation activity are a required for a master planning effort**
- **These projections are used to determine the need for new or expanded airport facilities**
- **FAA approval is required to ensure the forecast is based on reasonable planning assumptions, uses current data as a base line, and is developed using appropriate forecast methods like TAF or SASP**



Airport Layout Plan (ALP)

- Depicts existing airport facilities and proposed development based on aviation activity forecasts, facility requirements, and alternatives analysis
- An approved ALP is necessary for the airport to receive financial assistance in the form of a grant
- Serves as a critical planning tool for future improvements for environmental review
- Sponsors of airport development must accomplish the improvement in accordance with an FAA-approved

ALP

| LEGEND | |
|----------------------------|------------------|
| EXISTING | AIRPORT PROPOSED |
| SECURITY FENCE | BARBED WIRE (BW) |
| PERIMETER CHAIN LINK FENCE | |
| BUILDINGS | |
| ROAD | |
| RAIL | |
| WATER | |
| UTILITY | |

| HELENA REGIONAL AIRPORT BUILDINGS | |
|-----------------------------------|---|
| DESCRIPTION # | |
| 1 | PORT & MAINTENANCE STA |
| 2 | CITY OF HELENA FIRE TRAIL |
| 3 | TWA T-HANGARS (W-95) |
| 4 | UNIV. OF MT - HCT - STORAGE |
| 5 | UNIV. OF MT - HCT - STORAGE |
| 6 | HCT - RESEARCHERS' SENIOR |
| 7 | UNIV. OF MT HCT |
| 8 | EXEC. AIR #4 |
| 9 | EXEC. AIR #7 |
| 10 | WEST AIR HANGAR |
| 11 | WEST AIR |
| 12 | SOUTH TERN/AIRPORT BEACON |
| 13 | MONTANA DIVISION OF AERONAUTICS |
| 14 | MT HIGHWAY DEPT. HANGAR |
| 15 | MT. DEPT. FWBP HANGAR #1 |
| 16 | MT. DEPT. FWBP HANGAR #2 |
| 17 | STATE OF MT - DEPT. OF ADMINISTRATION |
| 18 | PAUL GORDON HANGAR |
| 19 | WEST AIR MAINTENANCE HANGAR |
| 20 | SLEEPING GIANT FLYING CLUB HANGAR |
| 21 | MRA HANGAR |
| 22 | PCA HANGAR |
| 23 | EXEC. AIR |
| 24 | TANK GARAGE |
| 25 | EXEC. AIR |
| 26 | HELENA AIRCRAFT |
| 27 | ART RYDER (LEASED FROM A/10) |
| 28 | ART. TRAINING CENTER / RWYS |
| 29 | MT NATIONAL GUARD (A BLDG) & APRON |
| 30 | MHC C-12 HANGAR |
| 31 | U.S. FOREST SERVICE FIRE RETARDANT BASE |
| 32 | U.S. FOREST SERVICE FIRE RETARDANT BASE |
| 33 | SUMMIT AERONAUTICS GROUP |
| 34 | NORTH TERMINAL |
| 35 | AIRPORT PUBL.C SAFETY/ARRV. STA.#2 |
| 36 | FEDERAL AVIATION ADMIN. BLDG. |
| 37 | WAGO BUILDING |
| 38 | IMMIGRATION & NATURALIZATION SERVICE |
| 39 | FOREST SERVICE/THRA |



Key stages in the planning process

■ Facility Requirements and Alternatives (continued)

- ▶ Alternatives Development and Evaluation is a key item
 - Identify options to meet projected facility requirements and formulate alternatives
 - Discuss the preliminary assessment each alternative against a wide range of evaluation criteria, including its operational, environmental, and financial impacts

■ Improvements and their Feasibility

- ▶ Facilities Implementation Plan: summary description of the recommended improvements and associated costs
- ▶ Financial Feasibility Analysis: financial plan for the airport describing how the sponsor will finance recommended projects and demonstrate their financial feasibility



Master Plan updates and AGIS

- **The Master Plan process will identify the design critical aircraft and approach minimums desired for airspace analysis**
- **For most Master Plan updates, the ALP update will need updates to the airspace drawing and inner airspace drawing < these include safety-critical data**
 - This is likely due directly to the need to identify the latest obstructions that effect approach and departure surfaces
 - This also necessitates the latest Part 77 analysis for zoning
 - **Safety-critical data updates require AGIS compliance**



AGIS for Approach Planning in Master Plans

- **FAA Flight Plan Goal - publish (LPV) “Localizer Performance with Vertical” guidance procedures to every public airport runway if feasible**
- **GPS-LPV was designed to be similar to ILS which was done intentionally to smooth the pilot transitioning phase.**
- **Airport Sponsors should address the AGIS -GPS approach criteria in Master Plan, ALPs, and SASP**



AGIS Approach Process for LPV GPS

- **Submit Survey Data on AGIS web site for validation**
- **Submit on FAA AVN website the Airport's request for Flight Procedures Office to design LPV as appropriate**
- **Submit RAPT Airport Worksheet to ADO to review**
- **Request Schedule Flight Check and Approach Plate Publications**
- **Process can take 18-24 months on average in review of recent new establishments in the Dakotas found on the FAA web link below:**

https://www.faa.gov/air_traffic/flight_info/aeronav/procedures/ifp_initiation/ifp_requirements/media/Master_LPV_Combined.xlsx

- **Color coded: Green is survey done and validated by National Geological Survey, and Red is LPV on hold due to obstacle penetration**



ND-LPV “**GREEN-READY** To Go”

GPS Production Status (5 Airports)

- Airport managers should log-in, reply “survey completed and validated-please process IFR-LPV procedure to Runway XX/XX”
- <http://aeronav.faa.gov/index.asp?xml=aeronav/PIT/ifpform>
- Bowman (new), Edgeley, Kindred, Lakota, Park River



SD-LPV “**GREEN-READY** To Go” GPS Production Matrix-(12 Airports)

- Airport managers should log-in, reply “survey completed and validated-please process IFR-LPV procedure to Runway XX/XX”
- <http://aeronav.faa.gov/index.asp?xml=aeronav/PI T/ifpform>
- Aberdeen, Brookings, Cheyenne Eagle Butte, Faith, Hoven, Sioux Falls, Lemmon, Madison, Milbank, Onida, Pine Ridge, Wessington Springs



Dakota Airports- LPV Candidates That Penetrated The GQS – “**RED-STATUS On Hold For LPV Establishment**”

- Airports should remove the penetration identified in the flight path to continue with the LPV development.
- **SD has 16 Airports**; Belle Fourche, Bison, Spearfish, Britton, Buffalo, Canton, Chamberlain, Cheyenne Eagle Butte, Custer, Edgemont, Gregory, Martin, Milbank, Parkston, Pine Ridge, Webster, DeSmet
- **ND has 12 airports**; Ashley, Bowman (existing), Ellendale, Garrison, Grand Forks, Wahpeton, Fargo, Mott, Williston, New Rockford, Washburn, Wishek



Master Plan updates and AGIS

- An airport may opt to use the MP update to update its ALP from the data set collected during inventory analysis
 - ▶ In these instances, the AGIS component must be clear
 - ▶ eALP module is still in development. While we can collect the information in Table 2-1 for use in eALP development a hard copy for conditional approval is still required.

Reno-Tahoe Airport Authority
Reno-Tahoe International Airport



REQUEST FOR QUALIFICATIONS

**PROFESSIONAL AIRPORT CONSULTING SERVICES
ELECTRONIC AIRPORT LAYOUT PLAN (eALP) AND GEOGRAPHIC
INFORMATION SYSTEM (GIS) SERVICES
RENO-TAHOE AIRPORT AUTHORITY**

The Reno-Tahoe Airport Authority (RTAA) Reno, Nevada, is seeking qualified consulting firms to provide professional services for the development and implementation of an Electronic Airport Layout Plan (eALP), airport mapping database and GIS application development for Reno-Tahoe International Airport.

PROJECT DESCRIPTION

In order to comply with Federal Aviation Administration (FAA) transition policy directing airports to develop and maintain their Airport Layout Plan (ALP) data in a GIS format, the RTAA has commenced the process of implementing an enterprise GIS. This system will include the collection and submittal of data related to Reno-Tahoe International Airport (RNO) in compliance with FAA Advisory Circulars (ACs) 150/5300-16, 17 and 18, resulting in an accepted FAA eALP and subsequent revisions.

In addition to satisfying FAA requirements, the eALP will act as a partial GIS base map for the airport. Additional efforts will serve not only to maintain the base eALP information, but build upon this data to facilitate a spatial information acquisition and dissemination platform.

This scope of services will be broken down into six primary tasks. Task One includes validation of existing geodetic control, capture of aerial imagery and generation of digital ortho imagery. Task Two will focus on the acquisition of planimetric and non-planimetric information to satisfy FAA eALP and Airport Mapping Database requirements. Additional GIS data will also be acquired to satisfy the requirement for the development of a formal "paper" ALP. Task Three shall include the development of a full FAA approved airspace obstruction analysis to satisfy both FAA Airport GIS (AGIS) requirements and formal "paper" ALP needs. This task will also involve the submittal of pertinent data to the respective regulatory agencies, resulting in an approved FAA eALP, Airspace Obstruction Survey and Airport Mapping Database, as appropriate. Task Four will focus on the development and implementation of web and non-web based GIS applications to support various RTAA business and operational needs. This includes the integration of existing and proposed business systems to the spatial data platform. Task Five will facilitate the sustainability of the GIS through the provision of documented procedures, best practices and an applicable update to the GIS Plan based on the outcome of this project. The final task, Task Six, will concentrate on a variety of additional spatial data collection and facility evaluations. These items will be executed based on RTAA's priority needs and budget availability. Items may include but are not limited to, comprehensive or targeted Sub-Surface Utility Engineering (SUE) mapping, the migration of ancillary

Electronic ALP and GIS Service RFQ #13/14-10
Page 1 of 8



Audience Questions

- Why is it important to identify early in the planning process whether or not aeronautical survey data is required?
- How does AGIS factor into the Master Plan process?
- When an airport sponsor updates its ALP drawing set, where are AGIS standards required?
- If an airport is updating its ALP according to AGIS requirements, is a paper ALP drawing set required? Why or why not?



Airports GIS Homepage



Federal Aviation
Administration

« Airports GIS

Home Projects Airport View Help Administration Logout Print this page

Airports GIS Home

My Account

Welcome, Michael Thomas McNeerney.

[Update Account Information](#)

[Change Password](#)

Survey Projects

Manage your survey projects.

[My Survey Projects](#)

[Create New Survey Project](#)

[Test Survey File](#)

eALP Projects

Manage your electronic Airport Layout Plan (eALP) projects.

[My eALP Projects](#)

[Create New eALP Project](#)

Runway Safety Area Inventory

The Runway Safety Area policy (Order 5200.8, Runway Safety Area Program) requires regional offices to collect and maintain data for each Runway Safety Area (RSA).

[Download RSAI database](#)

Help & Training

Learn more about Airports GIS.

[About Airports GIS](#)

[Support Desk](#)

[Online Help](#)

[IDLE Training](#)

Online Resources

Access the virtual library.

[National Geodetic Survey \(NGS\)](#)

[AeroNav Products \(AJV-3\)](#)

[NFDC Portal](#)

[AC 150/5300](#)

System Information

Version 4.3.1 - as of 01/28/2014.

[View Release History and Notes](#)

[Feedback Form](#)

Imagery and Data - GovCloud

View and upload / download airport data

[My Imagery](#)

[My Airport Data](#)

Administration

These functions are only for system administrators.

[User Management](#)

[Users Pending Approval \(3\)](#)

[More administration tools...](#)

Surface Analysis and Visualization

[Surface Analysis and Visualization](#)

[User's Guide - Booklet format](#)

[User's Guide - 8.5 x 11 format](#)

[Quick Reference Guide](#)

e-ALP Tool

■ Quarterly Improvements

- ▶ Data Collection and data viewer is working well
- ▶ Printing capability has been improved
 - We continue to make refinements to the printed view
 - Working to align the ALP SOP with the eALP

- **AGIS staff have added AECOM to assist with printing a user defined ALP product (rotation, colors, extra sheets, etc) Looking for a roll out in 2015**



eALP tool workflow



Federal Aviation Administration

[« Airports GIS \(DEMO Site\)](#)

- [Home](#)
- [Projects](#)
- [Airport View](#)
- [Help](#)
- [Administration](#)
- [Logout](#)

[Print this page](#)

DBQ-20130530-ACE-{no ado}-143943

DUBUQUE RGNL, IA (DBQ)

- [eALP Project Summary](#)
- [eALP Assembly](#)
- [Airport Review](#)
- [FAA Preliminary Review](#)
- [FAA Final Review](#)
- [Airport Sponsor Signature](#)
- [FAA Official Signature](#)

Next Project Action: None

[View eALP](#) | [Download eALP as PDF](#)

eALP Project Summary

eALP Project Information

Airport: DUBUQUE RGNL
[View NASR Data for DBQ](#)

Created By: Todd Dalsing on 05/30/2013

eALP Project Type: Revision to Current ALP (Minor Change)

AIP Grant Number: 3-19-0028-052-2010

eALP Sponsor Information

Contact Name: Todd Dalsing

Position: Operations Supervisor

Address: Dubuque Regional Airport
11000 Airport Road
Dubuque, IA 52003

Phone: 563-589-4233

Email: tdalsing@cityofdubuque.org

eALP Surveyor/Consultant Information

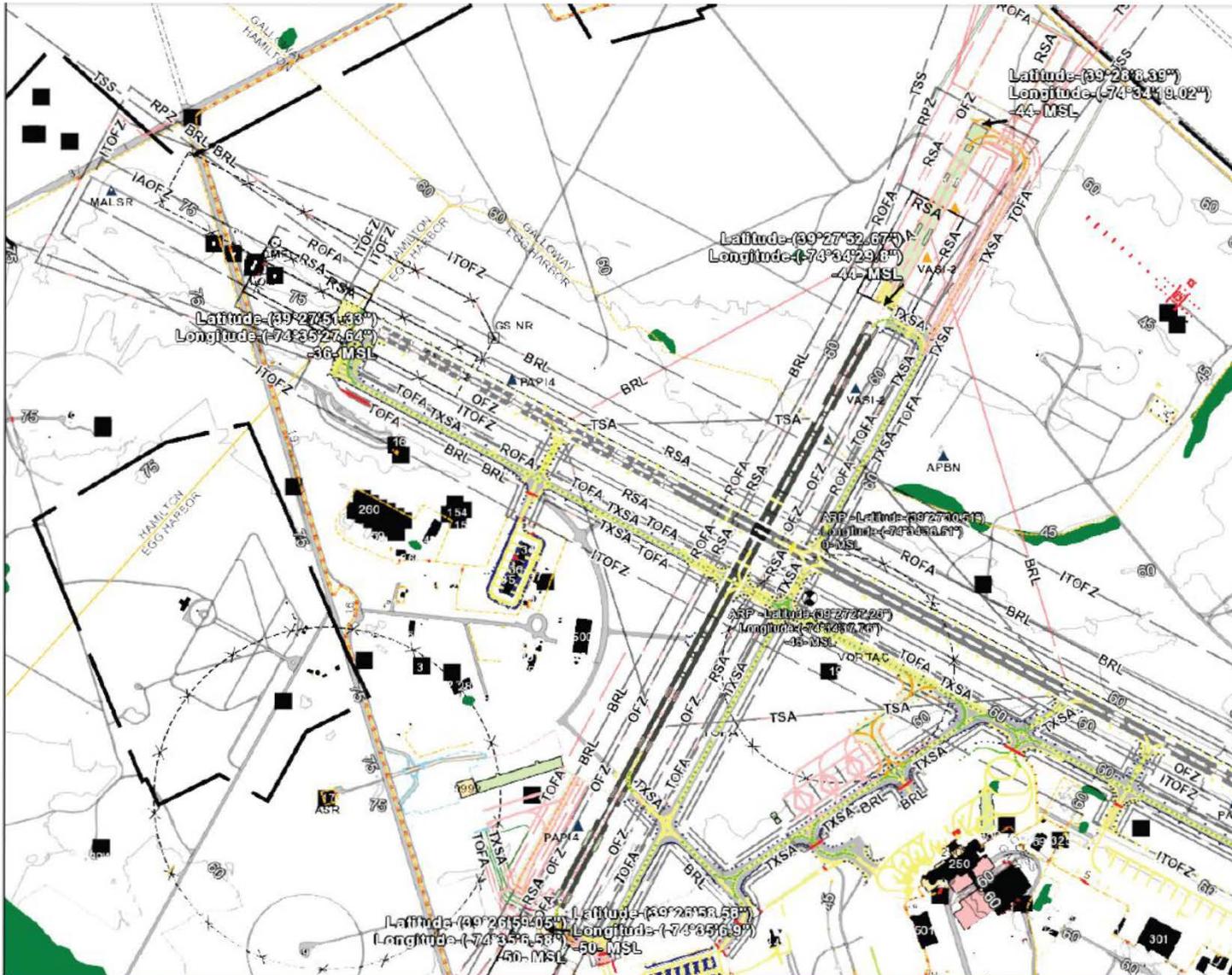
| Name | Organization | Phone | Email | View | Review | Approve | Coordination |
|--------------------------------------|----------------|--------------|--|------|--------|---------|--------------|
| Steven Zeets | Foth Companies | 319-365-9565 | steve.zeets@foth.com | Yes | Yes | No | No |
| Adam Michael Wilhelm | Foth | 515-251-2522 | adam.wilhelm@foth.com | Yes | Yes | No | No |

eALP Project History & Documents

[View All History](#) | [View All Documents](#)

| Date | User | Action | Notes/Comments |
|------------------------|------------------|----------------------------------|--|
| 06/11/2014 03:21:53 PM | Brian Creasy | Requested File/Document Download | OFFICIAL_ON-FILE_eALP_DBQ-20130530-ACE-{no_ado}-143943.pdf |
| 06/11/2014 03:05:49 PM | Brian Creasy | Requested File/Document Download | OFFICIAL_ON-FILE_eALP_DBQ-20130530-ACE-{no_ado}-143943.pdf |
| 02/06/2014 01:08:39 PM | Anthony Nguyen | Requested File/Document Download | OFFICIAL_ON-FILE_eALP_DBQ-20130530-ACE-{no_ado}-143943.pdf |
| 12/16/2013 03:15:42 PM | Taurice McMillan | Requested File/Document Download | OFFICIAL_ON-FILE_eALP_DBQ-20130530-ACE-{no_ado}-143943.pdf |
| 10/15/2013 10:27:25 AM | Tim Duan | Requested File/Document Download | OFFICIAL_ON-FILE_eALP_DBQ- |

How a typical eALP looks like today



How a typical eALP looks like today

The screenshot displays a Geographic Information System (GIS) interface for an Airport Layout Plan (ALP). The central map shows a runway and taxiway with various overlays, including a blue shaded area representing a Runway Safety Area (RSA). A red line is drawn across the RSA, with a length of 1,146 ft. The interface includes several toolbars and panels:

- Layer List:** Shows the current view as 'Runway End Protect - 13'. It includes checkboxes for 'Short Term', 'Medium Term', and 'Long Term'. There are buttons for 'Select All', 'Deselect All', 'Expand All', and 'Collapse All'. The 'Transparency' slider is set to a low value. The 'FAA Ortho Imagery' and 'ESRI Base Map' layers are visible.
- Draw and Measure:** Contains drawing tools (point, line, curve, rectangle, circle, ellipse, polygon, text) and measurement tools. It includes a 'Clear drawings' button. The 'Line Color' is red, 'Style' is Solid, 'Width' is 10, and 'Transparency' is 1. The 'Show Measurements' checkbox is checked. The 'Distance' unit is set to Feet, and the 'Font' is Arial, size 12.
- Identify:** Shows the attributes for the selected feature, 'RUNWAYSAFETYAREABOUNDARY'. The attributes are:

| Attribute Name | Values |
|---------------------|--------------------------|
| alternative | 0 |
| determinationdate | 2000-01-01 |
| name | C-RUNW-SAFT- |
| geom | Polygon |
| determination | UNKNOWN |
| status | ACTIVE |
| description | Runway Safety Area |
| feature_type | RUNWAYSAFETYAREABOUNDARY |
| userflag | Null |
| runwayenddesignator | 13 |

How a typical eALP looks like today



DRAFT eALP for PIT
ALP View

Auto Hide

Identify

RUNWAYHELIPADDESIGNSURFACE

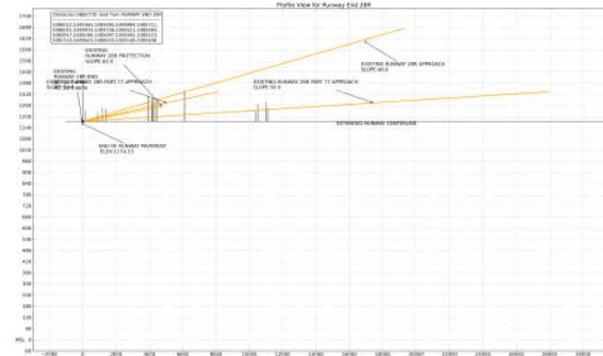
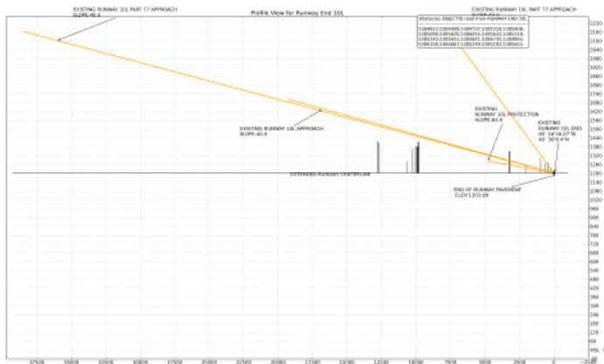
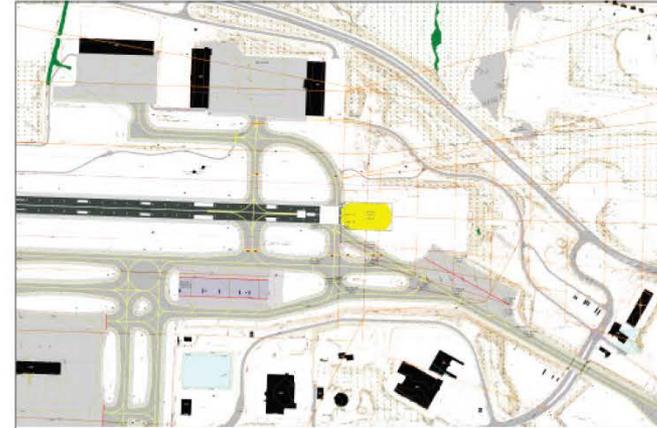
| Attribute Name | Values |
|-------------------|------------------------------|
| determinationdate | Null |
| name | RPZ Runway 10L |
| zoneouterwidth | 1750 |
| determination | Null |
| userflag | Null |
| zonelength | 2500 |
| status | ACTIVE |
| feature_type | RUNWAYHELIPADDESIGNSURFACE |
| zoneuse | People - Property Protection |
| slope | 0 |
| zoneinnerwidth | 1000 |
| geom | Polygon |
| designsurfacetype | RPZ |

300 m

500 ft

80° 16' 40" W 40° 30' 01" N

How a typical eALP looks like today



| LEGEND | | | |
|--------|----------------------------|--|---------------------|
| | AWP | | TAXIWAY EDGE LIGHTS |
| | RUNWAY EDGE LIGHTS | | RUNWAY EDGE LIGHTS |
| | CENTERLINE POINT | | OBSTACLE |
| | AIRPORT ELEVATION | | OBSTRUCTION SURFACE |
| | LOC | | OBSTRUCTION SURFACE |
| | SDR C | | RUNWAY CENTER LINE |
| | RUNWAY THRESHOLD | | RUNWAY |
| | RUNWAY SHOULDER | | TAXIWAY CENTER LINE |
| | TAXIWAY CENTER LINE LIGHTS | | TAXIWAY CENTER LINE |
| | RUNWAY EDGE LIGHTS | | RUNWAY EDGE LIGHTS |
| | OBSTACLE | | OBSTRUCTION SURFACE |
| | OBSTRUCTION SURFACE | | RUNWAY CENTER LINE |
| | RUNWAY CENTER LINE | | RUNWAY |
| | RUNWAY | | TAXIWAY CENTER LINE |
| | TAXIWAY CENTER LINE | | TAXIWAY CENTER LINE |

GENERAL NOTES

1. FAA DISCLAIMER: The preparation of this document may have been supported, in part, through the Airport Improvement Program Reauthorization Act of 2018. The FAA disclaims any liability for the accuracy or completeness of the information contained herein. The FAA disclaims any liability for the accuracy or completeness of the information contained herein. The FAA disclaims any liability for the accuracy or completeness of the information contained herein.
2. The drawings reflect current planning standards applicable to PITTSBURGH INTL to the greatest extent possible. The drawing should not be used as a standard for planning or design.
3. All coordinate data is NAD83/NAIP/GCS.

| | | | |
|--|------|--------------|----|
| PITTSBURGH INTL (PIT) | | | |
| VIEW: Runway End Profile - 01R/01L | | | |
| AIRPORT SPONSOR & DATE | | SHEET # OF # | |
| DATE | | DATE | |
| REV | DATE | DESCRIPTION | BY |
| 1 | | | |
| 2 | | | |
| DRAWN: [Name] DATE: 09/27/23 09:27:51 PM | | | |

Proposed next steps

- **Introduce AGIS requirement basics into yearly grant processes**
 - Prior to annual ACIP meetings with sponsors, use Master Plans to identify projects that require aeronautical survey data collection (safety-critical data; review Transition Policy)
 - Weave AGIS into the decision-making process for ADO project funding prioritizations and ACIP discussion
 - Include as-built deliverables in AGIS format for grant work scopes and close-outs

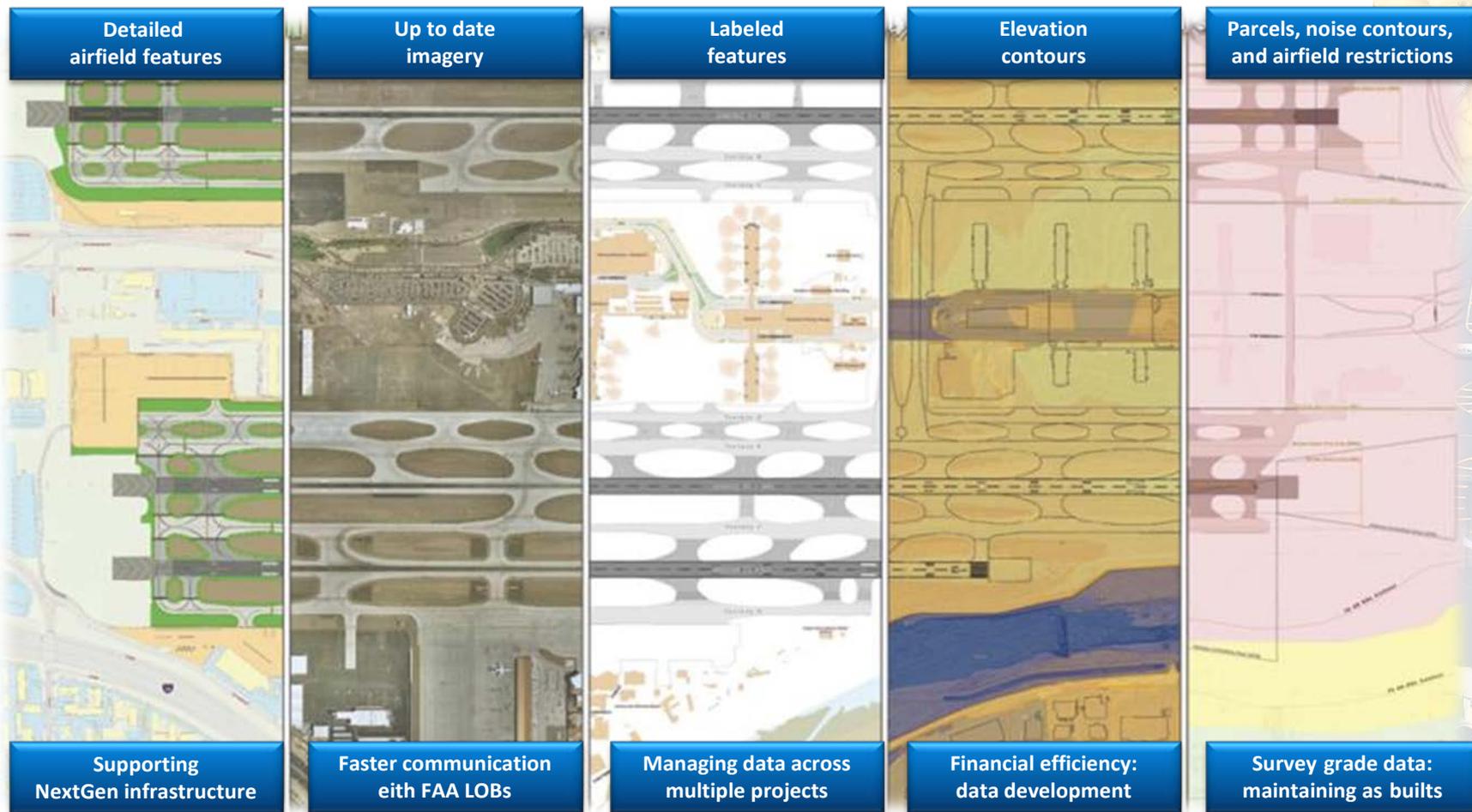


Best Practices

- **Fall CIP meetings** - review AGIS requirements with Master Plan projects with sponsors respective to their projects.
- **Plan ahead**-Professional services for AGIS may not in the current consultant selection criteria. Consider the consultant selection guidance on the AGIS webpage to help guide the sponsor.
- **Seek help from your peers**-Staff in the ADO has tools to help assist you in reviewing scopes of work, professional service proposals along with contacts for all AGIS resources



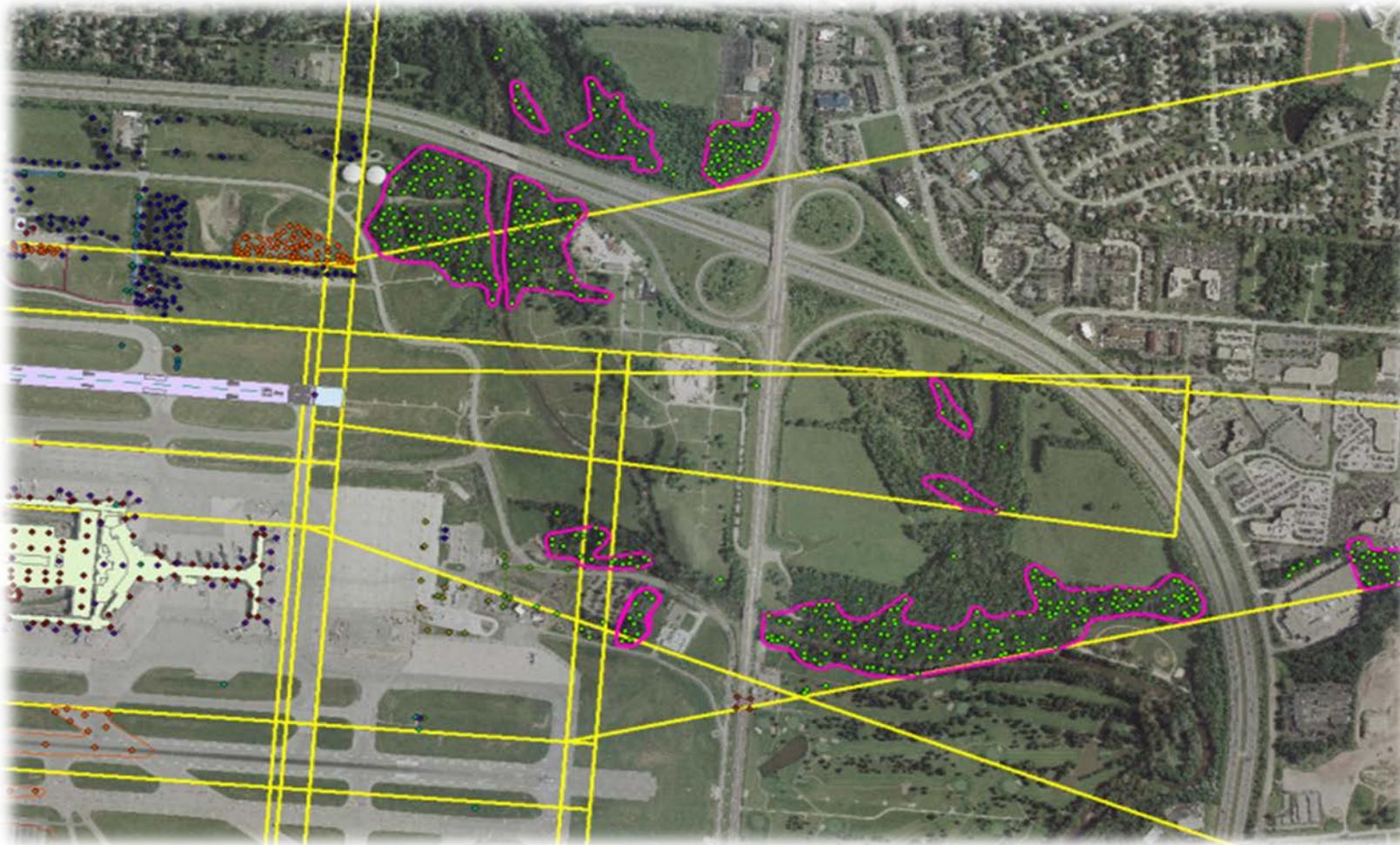
Benefits | Airport Sponsors



Source: PHX; ESRI



Benefits | Obstruction Analysis



Source: Woolpert



Thank you!

Dakota/Minnesota Airports GIS Team

Mark Holzer-Program Manager 701 323 7393

Andy Peek – Assistant Manager 612 253 4631

Website Resources:

Airports GIS: <https://airports-gis.faa.gov/>
AVN Data System http://avnnet.jccbi.gov/datasheet_prd/
AVN Data (Public): <http://avnwww.jccbi.gov/datasheet/>
AVN (Charts +) <http://www.avn.faa.gov/>
NGS Data & Imagery <http://www.ngs.noaa.gov/>
UDDF Data: <http://www.ngs.noaa.gov/AERO/UDDFdat.htm>
PACS/SACS Data: <http://www.ngs.noaa.gov/AERO/aero.html>

