To: Flight Procedures & Airspace Group (AFS-420)

JUNE 12, 2023

Boeing Field/King County Intl (KBFI) Seattle, WA RNAV (GPS) Y RWY 32L, ORIG is submitted for processing and submission to AMC-AJV-IFP-ProdCoordTeam@faa.gov and 9-AMC-AJW-TL@faa.gov for publication. Request publication in the August 10, 2023 Terminal Procedures Publication.

Sincerely,

Brian Berubee
Chief Designer
Hughes Aerospace Corporation
Mobile: 405.779.7021
brian.berubee@hughesaerospace.com

Enclosures:
WA_KBFI_RNAV_(GPS)_Y_RWY_32L_ORIG_F
WA_KBFI_RNAV_(GPS)_Y_RWY_32L_ORIG_S_W
WA_KBFI_RNAV_(GPS)_Y_RWY_32L_ORIG_8260-2
ARI CODING FILE

US Department of Transportation
Federal Aviation Administration

FLIGHT PROCEDURE STANDARDS WAIVER

FLIGHT STANDARDS USE ONLY
CONTROL NO.

Waiver 1 of 3

1. FLIGHT PROCEDURE IDENTIFICATION:

Seattle, WA
Boeing Fld/King County Intl (BFI)
RNAV (GPS) Y Rwy 32L

2. WAIVER REQUIRED AND APPLICABLE STANDARD:

FAAO 8260.58, Paragraph 3-1-4.c, to allow 5.06° a turn at the final LPV PFAF without an Appendix C capture fix.

3. REASON FOR WAIVER (JUSTIFICATION FOR NONSTANDARD TREATMENT):

Turn at the FAF from the intermediate segment is required at Seattle (S46) TRACON's request.

4. EQUIVALENT LEVEL OF SAFETY PROVIDED:

1. FAAO 8260.58A, para 3-1-4 allowed alignment of the intermediate course within 15° of the final approach course.
2. Compliant with FAAO 8260.58, para 3-1-4.b, the PFAF is a FB fix.
3. The intermediate segment descent gradient and final approach segment length contribute to a stabilized approach.
4. Five (5) years of National Climatic Data Center (NCDC) data indicates the historical high temperature for two (2) months of each year (July and August) does not exceed 92°F/33°C.

5. ALTERNATIVE ACTIONS DEEMED NOT FEASIBLE:

FAAO 8260.58, Appendix C is not clear about the amount of turn (if any) would be allowed for LPV procedures with an offset intermediate segment.

6. COORDINATION WITH USER ORGANIZATIONS (SPECIFY):

S46 TRACON, BFI ATCT, BFI Airport Director, AFS-420W

7. SUBMITTED BY:

DATE	OFFICE IDENTIFICATION	TITLE	SIGNATURE
03/25/23	HAC	CHIEF DESIGNER	Brian Berubee Digitally signed by Brian Berubee Date: 2023.03.26 15:55:21 -07'00'

8. AFS ACTIONS:

☑ **APPROVED** ☐ **DISAPPROVED** ☐ **NOT REQUIRED**

COMMENTS:

Approved Based on the Equivalent Level of Safety in Block 4.

DATE	ROUTING SYMBOL	SIGNATURE
		Wade Terrell Signed By: Wade Terrell Fri Jun 9 2023 08:12:54 GMT-05:00:00 (Central Standard Time)

US Department of Transportation
Federal Aviation Administration

FLIGHT PROCEDURE STANDARDS WAIVER

FLIGHT STANDARDS USE ONLY
CONTROL NO.

Waiver 2 of 3

1. FLIGHT PROCEDURE IDENTIFICATION:

Seattle, WA
Boeing Fld/King County Intl (BFI)
RNAV (GPS) Y Rwy 32L

2. WAIVER REQUIRED AND APPLICABLE STANDARD:

The missed approach incorporates an interim mandatory altitude restriction that is lower than the clearance limit altitude. Order 8260.3, paragraph 2-8-1, "The missed approach must be simple, specify a charted missed approach altitude (altitude at clearance limit), and a clearance limit fix/facility. When required by obstacles or deemed operationally advantageous, the missed approach may also specify an interim "climb-to" altitude to identify a turn point. Any other interim altitude restriction is not permitted."

3. REASON FOR WAIVER (JUSTIFICATION FOR NONSTANDARD TREATMENT):

Air traffic control requests a mandatory 1700-foot MSL altitude restriction at the FEVAS waypoint to ensure separation from KSEA traffic. The mandatory 1700-foot MSL altitude restriction at FEVAS will prevent aircraft from climbing through the altitudes of KSEA arrivals.

4. EQUIVALENT LEVEL OF SAFETY PROVIDED:

1. Order 8260.3, paragraph 13-6-1.d.(2) is applied at the late ATT starting 600 feet below the hold down altitude at FEVAS and a 40:1 is used in lieu of a 30.38:1 OCS to provide a more adverse evaluation.
2. The OCS between the late FEVAS ATT and the clearance limit is clear.
3. The procedure is RADAR REQUIRED to provide for radar monitoring of aircraft executing the missed approach.

5. ALTERNATIVE ACTIONS DEEMED NOT FEASIBLE:

1. Air traffic control metering of traffic into and/or from KBFI and KSEA airports would result in excessive arrival and departure delays and a reduction in capacity to both airports.
2. Relocation of fixes and/or amendment of procedure routes is not feasible due to runway alignments and airport locations/configurations.

6. COORDINATION WITH USER ORGANIZATIONS (SPECIFY):

S46 TRACON, BFI ATCT, BFI Airport Director, AFS-420W

7. SUBMITTED BY:

DATE	OFFICE IDENTIFICATION	TITLE	SIGNATURE
03/25/23	HAC	CHIEF DESIGNER	Brian Berubee Digitally signed by Brian Berubee Date: 2023.03.26 15:53:29 -07'00'

8. AFS ACTIONS:

☑ **APPROVED** ☐ **DISAPPROVED** ☐ **NOT REQUIRED**

COMMENTS:

Approved Based on the Equivalent Level of Safety in Block 4.

DATE	ROUTING SYMBOL	SIGNATURE
		Wade Terrell Signed By: Wade Terrell Fri Jun 9 2023 08:12:54 GMT-05:00:00 (Central Standard Time)

US Department of Transportation
Federal Aviation Administration

FLIGHT PROCEDURE STANDARDS WAIVER

FLIGHT STANDARDS USE ONLY
CONTROL NO.

Waiver 3 of 3

1. FLIGHT PROCEDURE IDENTIFICATION:

Seattle, WA
Boeing Fld/King County Intl (BFI)
RNAV (GPS) Y Rwy 32L

2. WAIVER REQUIRED AND APPLICABLE STANDARD:

The missed approach incorporates an interim segment altitude restriction with 600 feet of level surface ROC applied to a 1075-foot MSL Building (53-000455) 74 feet after the late FEVAS waypoint ATT. Order 8260.3, paragraph 2-8-5. Apply 1000 feet of missed approach interim segment level surface ROC.

3. REASON FOR WAIVER (JUSTIFICATION FOR NONSTANDARD TREATMENT):

Air traffic control requests a mandatory altitude restriction of 1700 feet MSL at FEVAS waypoint to ensure separation from KSEA traffic. The mandatory 1700-foot MSL altitude restriction at FEVAS will prevent aircraft from climbing through the altitudes of KSEA arrivals.

4. EQUIVALENT LEVEL OF SAFETY PROVIDED:

1. 600 feet of level surface ROC is applied to the interim segment for a 1075-foot MSL Building (53-000455) 74 feet after the late FEVAS ATT. The highest obstruction within the interim segment is a 639-foot AAO.
2. Order 8260.3, paragraph 13-6-1.d.(2) is applied at the late ATT starting 600 feet below the hold down altitude at FEVAS and a 40:1 is used in lieu of a 30.38:1 OCS to provide a more adverse evaluation.
3. The OCS between the late FEVAS ATT and the clearance limit is clear.

5. ALTERNATIVE ACTIONS DEEMED NOT FEASIBLE:

1. Air traffic control metering of traffic into and/or from KBFI and KSEA airports would result in excessive arrival and departure delays and a reduction in capacity to both airports.
2. Relocation of fixes and/or amendment of procedure routes is not feasible due to runway alignments and airport locations/configurations.

6. COORDINATION WITH USER ORGANIZATIONS (SPECIFY):

S46 TRACON, BFI ATCT, BFI Airport Director, AFS-420W

7. SUBMITTED BY:

DATE	OFFICE IDENTIFICATION	TITLE	SIGNATURE
05/15/23	HAC	CHIEF DESIGNER	Brian Berubee Digitally signed by Brian Berubee Date: 2023.05.15 10:52:48 -07'00'

8. AFS ACTIONS:

☑ **APPROVED** ☐ **DISAPPROVED** ☐ **NOT REQUIRED**

COMMENTS:

Approved Based on the Equivalent Level of Safety in Block 4.

DATE	ROUTING SYMBOL	SIGNATURE
		Wade Terrell Signed By: Wade Terrell Fri Jun 9 2023 08:12:54 GMT-05:00:00 (Central Standard Time)

SEATTLE, WASHINGTON

RNAV (GPS) Y RWY 32L

BOEING FLD/KING COUNTY INTL (BFI)

WAAS	APP CRS	Rwy Idg	9120
CH 89057	315°	TDZE	22
W32A		Apt Elev	22

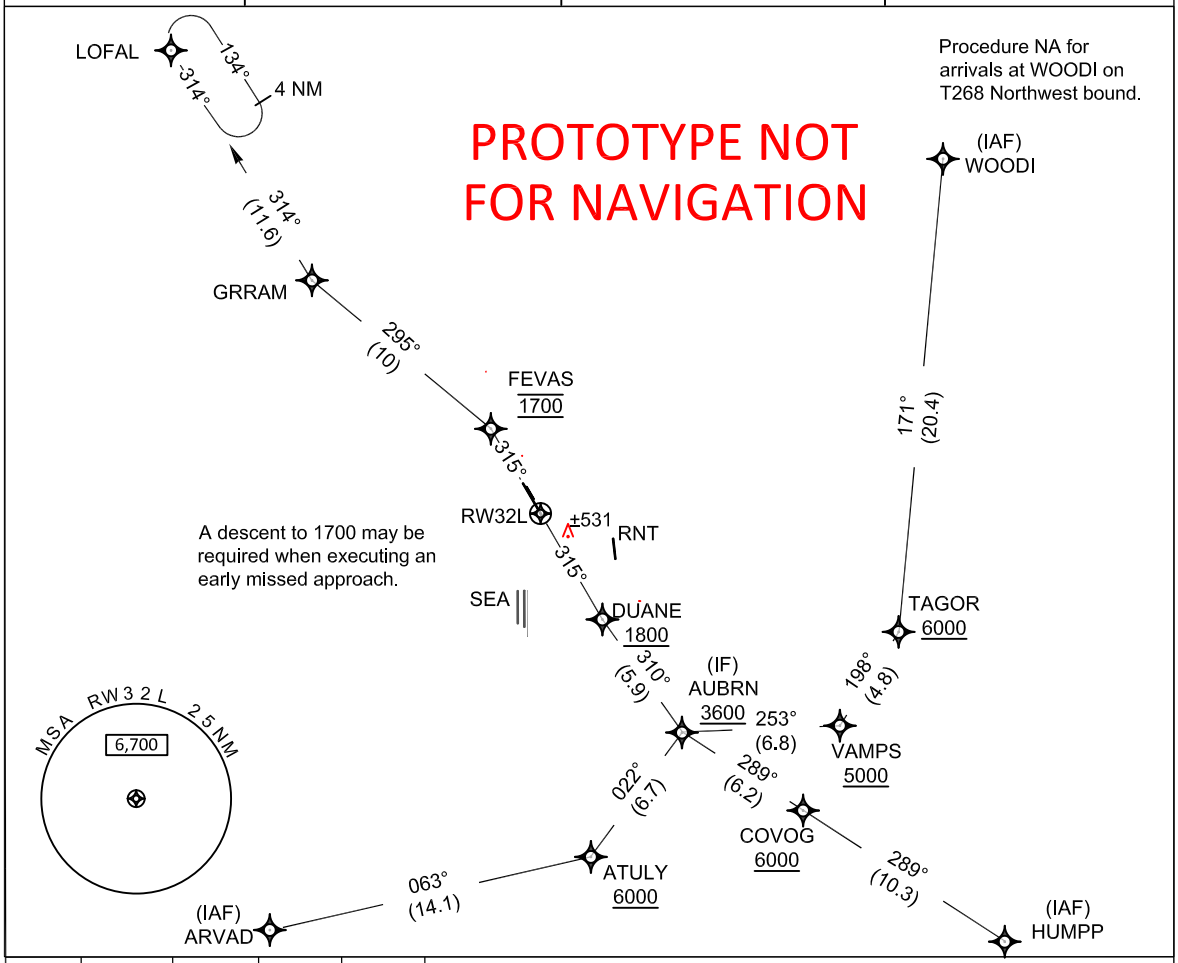
RNP APCH - GPS

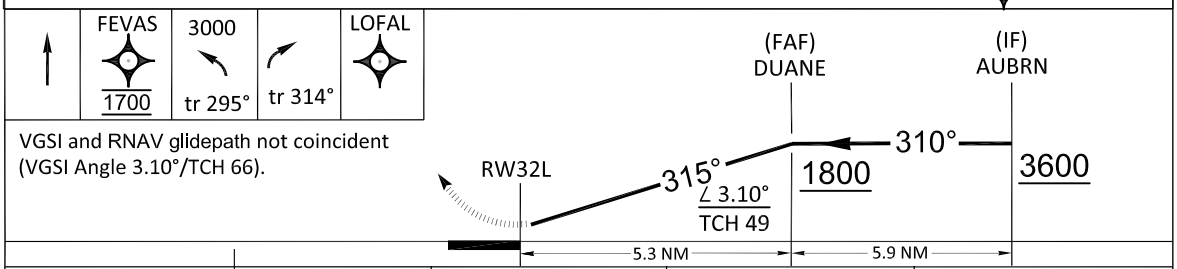
RADAR required for missed approach

For uncompensated BARO-VNAV systems, LNAV/VNAV NA below -6°C or above 54°C. Circling NA for Cats C and D NE of Rwy 14L-32R. Circling Rwy 32R NA at night. Rwy 32L helicopter visibility reduction below 3/4 SM not authorized.

MISSED APPROACH: Climb direct FEVAS, cross FEVAS at 1700, then climb to 3000 on the RNAV missed approach route to LOFAL and hold.

ATIS	SEATTLE APP CON	BOEING TOWER	GND CON
127.75	119.2 284.7	120.6 257.8	121.9





VGSI and RNAV glidepath not coincident (VGSI Angle 3.10°/TCH 66).

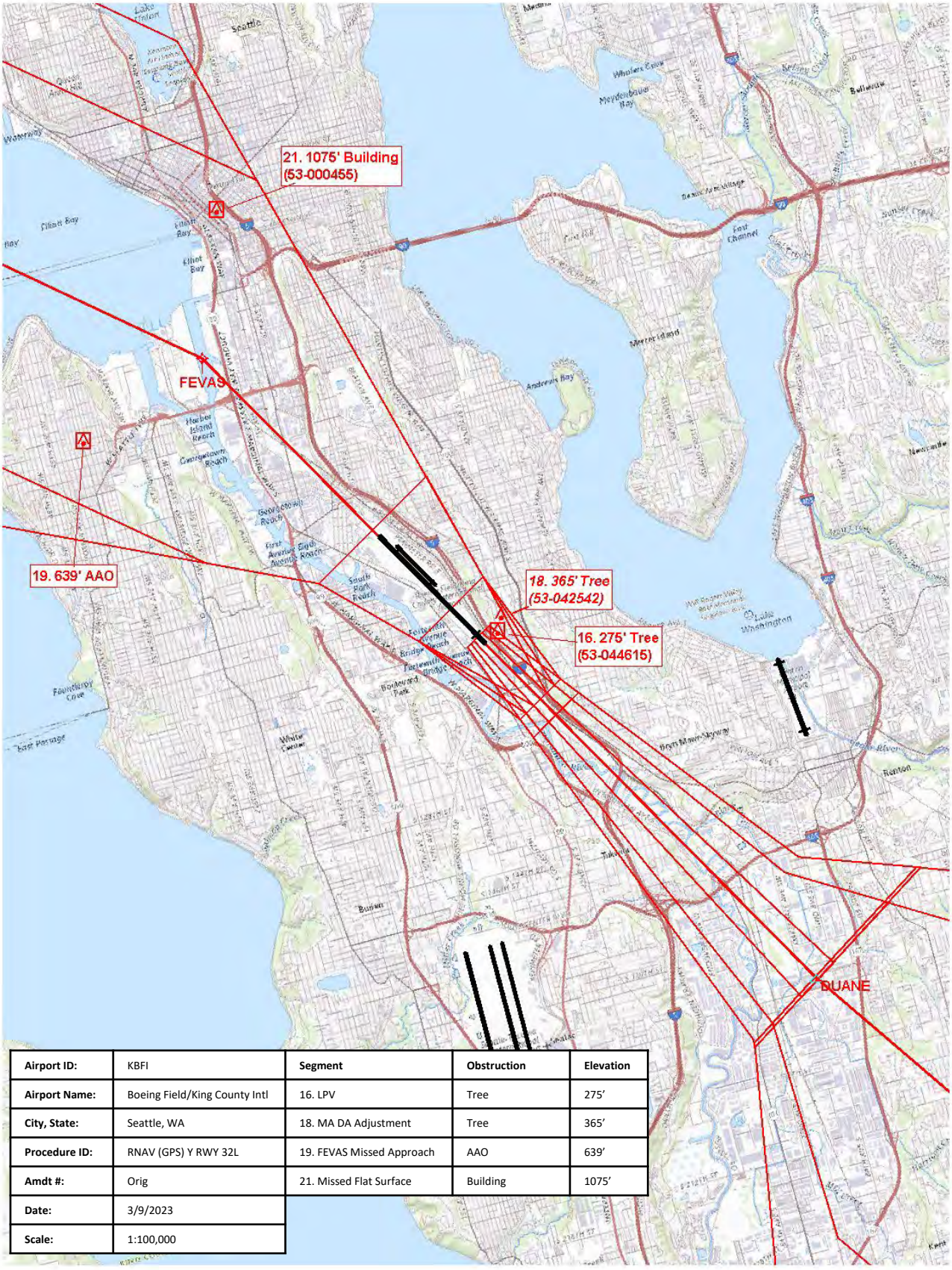
CATEGORY	A	B	C	D
LPV DA		478-1 3/8 456 (500-1 3/8)		
LNAV/VNAV DA		884-2 1/2 862 (900-2 1/2)		
LNAV MDA	800-1 778 (800-1)	800-1 1/4 778 (800-1 1/4)	800-2 1/2 778 (800-2 1/2)	
CIRCLING	800-1 778 (800-1)	900-1 1/4 878 (900-1 1/4)	960-2 3/4 938 (1000-2 3/4)	960-3 938 (1000-3)

SEATTLE, WASHINGTON
Orig

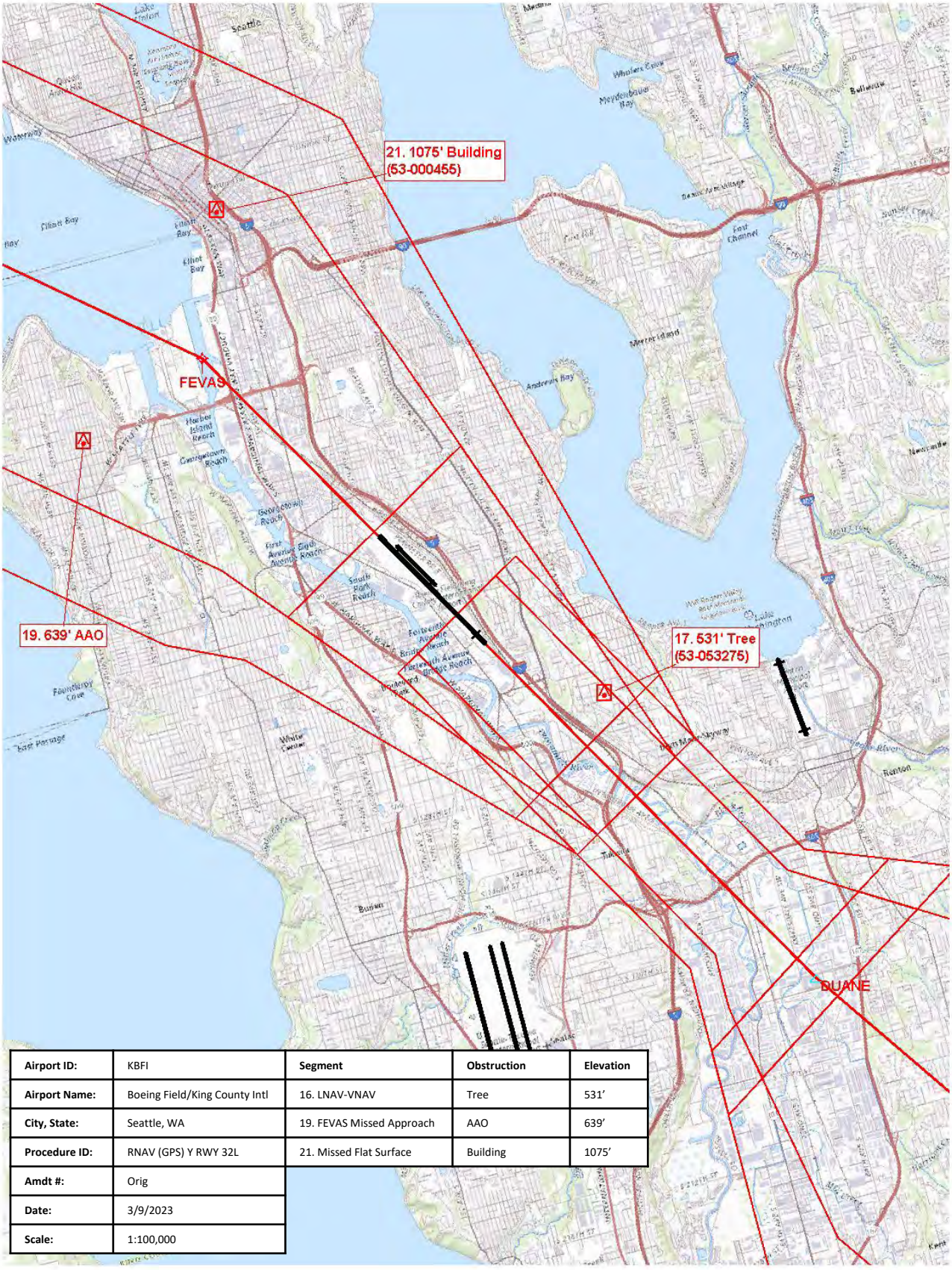
47° 32'W-122° 18'W

BOEING FLD/KING COUNTY INTL (BFI)

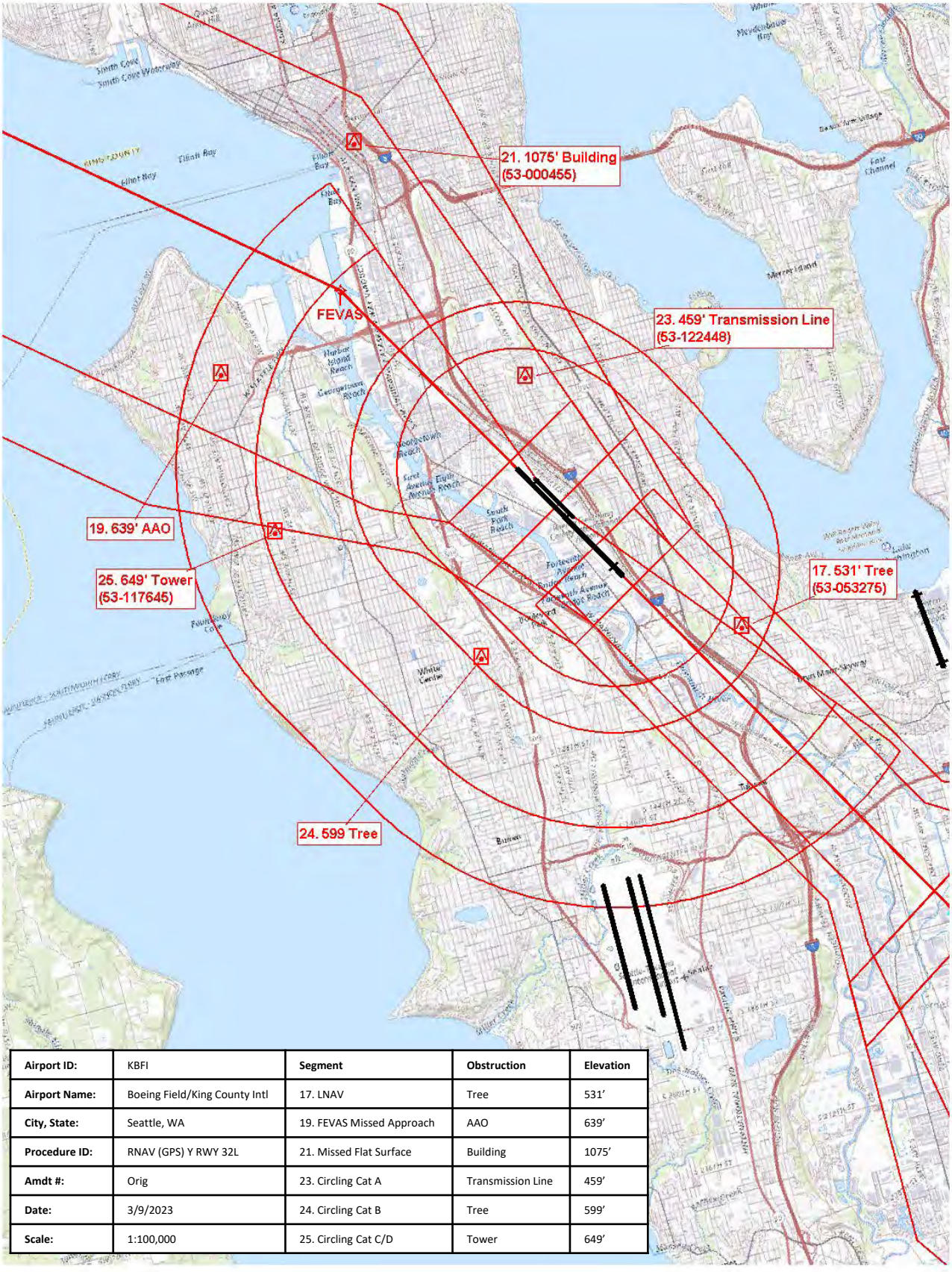
RNAV (GPS) Y RWY 32L



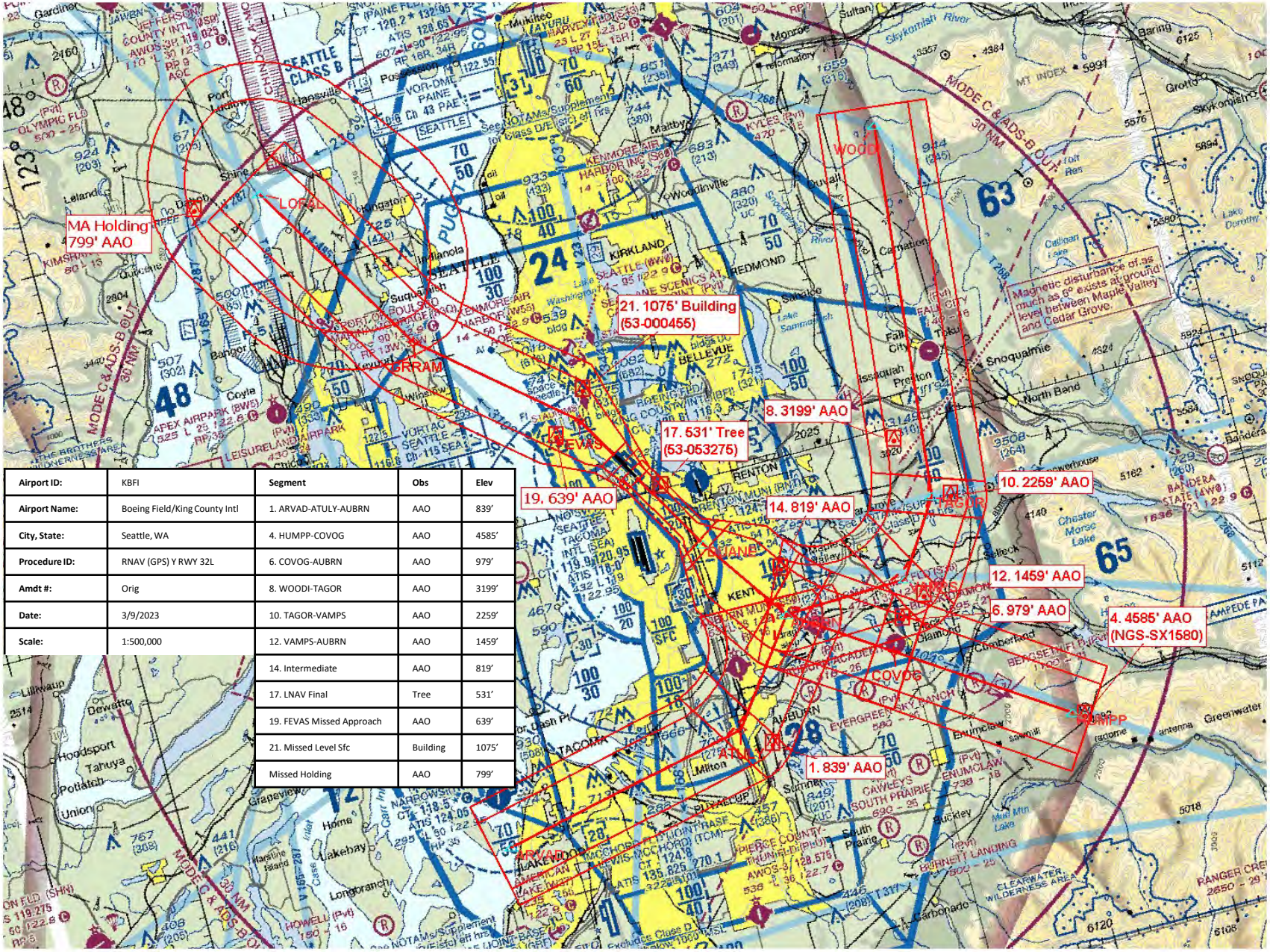
Airport ID:	KBFI	**Segment**	**Obstruction**	**Elevation**
Airport Name:	Boeing Field/King County Intl	16. LPV	Tree	275’
City, State:	Seattle, WA	18. MA DA Adjustment	Tree	365’
Procedure ID:	RNAV (GPS) Y RWY 32L	19. FEVAS Missed Approach	AAO	639’
Amdt #:	Orig	21. Missed Flat Surface	Building	1075’
Date:	3/9/2023			
Scale:	1:100,000			



Airport ID:	KBFI	**Segment**	**Obstruction**	**Elevation**
Airport Name:	Boeing Field/King County Intl	16. LNAV-VNAV	Tree	531’
City, State:	Seattle, WA	19. FEVAS Missed Approach	AAO	639’
Procedure ID:	RNAV (GPS) Y RWY 32L	21. Missed Flat Surface	Building	1075’
Amdt #:	Orig			
Date:	3/9/2023			
Scale:	1:100,000			

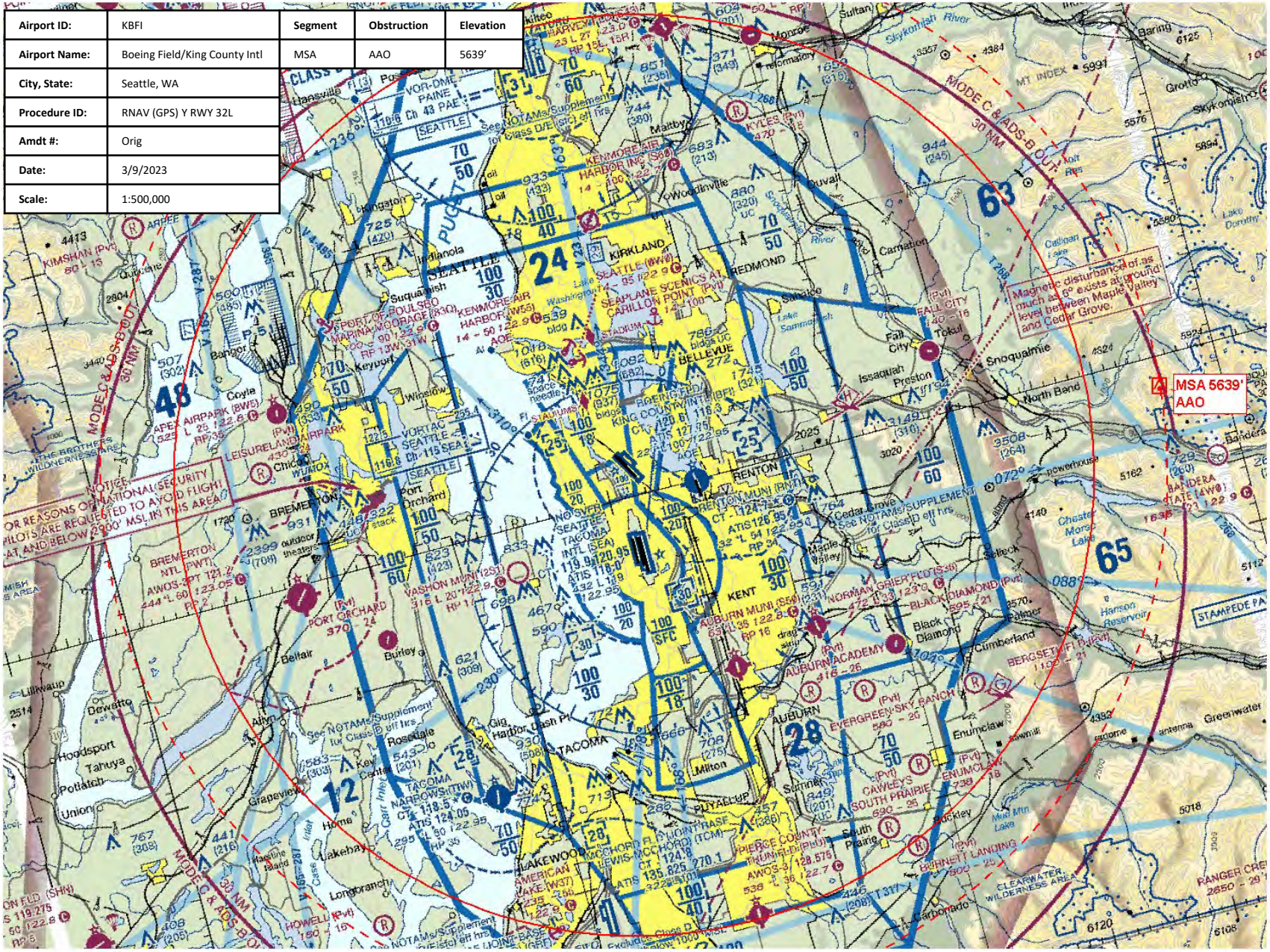


Airport ID:	KBFI	Segment	Obstruction	Elevation
Airport Name:	Boeing Field/King County Intl	17. LNAV	Tree	531’
City, State:	Seattle, WA	19. FEVAS Missed Approach	AAO	639’
Procedure ID:	RNAV (GPS) Y RWY 32L	21. Missed Flat Surface	Building	1075’
Amdt #:	Orig	23. Circling Cat A	Transmission Line	459’
Date:	3/9/2023	24. Circling Cat B	Tree	599’
Scale:	1:100,000	25. Circling Cat C/D	Tower	649’



Airport ID:	KBFI	Segment	Obs	Elev
Airport Name:	Boeing Field/King County Intl	1. ARVAD-ATULY-AUBRN	AAO	839′
City, State:	Seattle, WA	4. HUMPP-COVOG	AAO	4585′
Procedure ID:	RNAV (GPS) Y RWY 32L	6. COVOG-AUBRN	AAO	979′
Amdt #:	Orig	8. WOODI-TAGOR	AAO	3199′
Date:	3/9/2023	10. TAGOR-VAMPS	AAO	2259′
Scale:	1:500,000	12. VAMPS-AUBRN	AAO	1459′
		14. Intermediate	AAO	819′
		17. LNAV Final	Tree	531′
		19. FEVAS Missed Approach	AAO	639′
		21. Missed Level Sfc	Building	1075′
		Missed Holding	AAO	799′

Airport ID:	KBFI	Segment	Obstruction	Elevation
Airport Name:	Boeing Field/King County Intl	MSA	AAO	5639’
City, State:	Seattle, WA			
Procedure ID:	RNAV (GPS) Y RWY 32L			
Amdt #:	Orig			
Date:	3/9/2023			
Scale:	1:500,000			



FEDERAL AVIATION ADMINISTRATION
FLIGHT STANDARDS SERVICE
OBSTACLE ASSESSMENT CHECKLIST

1. DATE 08/01/2022 **2. ORGANIZATION** HUGHES AEROSPACE CORPORATION

3. AIRPORT KBFI **4. PROCEDURE** RNAV (GPS) Y RWY 32L **5. AMEND #** ORIG

6. AIRCRAFT TYPE TBM850 **7. FMS / SOFTWARE** GTN 750 Version 6.5.2

8. PIC NAME / PHONE CHRIS BAUR 281-655-3330 **9. EVALUATOR NAME / PHONE** CHRIS BAUR 281-655-3330 RAY CRAIG 281-655-3330

TERPS BIENNIAL REVIEW

31. BIENNIAL	NA	32. DATE BIENNIAL COMPLETE	NA

OBSTACLE ASSESSMENT TASKS

33 EQUIPMENT ACCURACY VERIFIED	YES

IAP SEGMENT CHECKS

TRANS **WOODI**

34. DOCUMENTED CONTROLLING OBSTACLE VERIFIED	YES	35. CONTROLLING OBSTACLE MOST ADVERSE	YES

TRANS **HUMPP**

34. DOCUMENTED CONTROLLING OBSTACLE VERIFIED	YES	35. CONTROLLING OBSTACLE MOST ADVERSE	YES

TRANS **ARVAD**

34. DOCUMENTED CONTROLLING OBSTACLE VERIFIED	YES	35. CONTROLLING OBSTACLE MOST ADVERSE	YES

FINAL

34. DOCUMENTED CONTROLLING OBSTACLE VERIFIED	YES	35. CONTROLLING OBSTACLE MOST ADVERSE	YES

MISSED APPROACH

34. DOCUMENTED CONTROLLING OBSTACLE VERIFIED	YES	35. CONTROLLING OBSTACLE MOST ADVERSE	YES

FEDERAL AVIATION ADMINISTRATION
FLIGHT STANDARDS SERVICE
OBSTACLE ASSESSMENT CHECKLIST

HOLDING

34. DOCUMENTED CONTROLLING OBSTACLE VERIFIED	YES	35. CONTROLLING OBSTACLE MOST ADVERSE	YES

IAP VISUAL SEGMENT

VISUAL SEGMENT OR COPTER PROCEED VISUALLY/VFR AREA

36. VERIFIED CLEAR	YES	37. APPROPRIATE MITIGATIONS IN PLACE IF NOT CLEAR	NA

STAR SEGMENT CHECKS

EN ROUTE TRANS _____

34. DOCUMENTED CONTROLLING OBSTACLE VERIFIED		35. CONTROLLING OBSTACLE MOST ADVERSE	

COMMON ROUTE

34. DOCUMENTED CONTROLLING OBSTACLE VERIFIED		35. CONTROLLING OBSTACLE MOST ADVERSE	

RWY TRANS _____

34. DOCUMENTED CONTROLLING OBSTACLE VERIFIED		35. CONTROLLING OBSTACLE MOST ADVERSE	

DEPARTURE SEGMENT CHECKS

ICA OR COPTER PROCEED VISUALLY

34. DOCUMENTED CONTROLLING OBSTACLE VERIFIED		36. VERIFIED CLEAR	
35. CONTROLLING OBSTACLE MOST ADVERSE		37. APPROPRIATE MITIGATIONS IN PLACE IF NOT CLEAR	

RWY TRANS _____

34. DOCUMENTED CONTROLLING OBSTACLE VERIFIED		36. VERIFIED CLEAR	
35. CONTROLLING OBSTACLE MOST ADVERSE		37. APPROPRIATE MITIGATIONS IN PLACE IF NOT CLEAR	

FEDERAL AVIATION ADMINISTRATION
FLIGHT STANDARDS SERVICE
OBSTACLE ASSESSMENT CHECKLIST

COMMON ROUTE

34. DOCUMENTED CONTROLLING OBSTACLE VERIFIED _____

35. CONTROLLING OBSTACLE MOST ADVERSE _____

TRANS _____

34. DOCUMENTED CONTROLLING OBSTACLE VERIFIED _____

35. CONTROLLING OBSTACLE MOST ADVERSE _____

OBSTRUCTION DISCREPENCIES

38. OBSTACLE IN DATABASE DOES NOT EXIST

OBSTACLE ID _____ HEIGHT MSL/AGL _____

COORDINATES _____ SUPPORTING DOC _____

39. OBSTACLE NOT IN DATABASE

OBSTACLE ID _____ HEIGHT MSL/AGL _____

COORDINATES _____ SUPPORTING DOC _____

40. OBSTACLE DATA INCORRECT

OBSTACLE ID _____ HEIGHT MSL/AGL _____

COORDINATES _____ SUPPORTING DOC _____

OBSTRUCTION NOTIFICATION

41. OBSTACLE DATA DISCREPENCIES SENT TO NFDC _____

42. DATE SENT _____

51. EVALUATOR NOTES

53. PROCEDURE SAT _____

54. EVALUATOR SIGNATURE Chris Baur

Digitally signed by Chris Baur
Date: 2023.03.29 20:10:21 -07'00'

FEDERAL AVIATION ADMINISTRATION
FLIGHT STANDARDS SERVICE
FLIGHT VALIDATION CHECKLIST

1. DATE 08/01/2022 **2. ORGANIZATION** HUGHES AEROSPACE CORPORATION

3. AIRPORT KBFI **4. PROCEDURE** RNAV (GPS) Y RWY 32L **5. AMEND #** ORIG

6. AIRCRAFT TYPE TBM850 **7. FMS / SOFTWARE** GTN 750 Version 6.52

8. PIC NAME / PHONE CHRIS BAUR 281-655-3330 **9. EVALUATOR NAME / PHONE** CHRIS BAUR 281-655-3330 RAY CRAIG 281-655-3330

FLIGHT VALIDATION TASKS

10. FMS NAV DATA AND SOURCE COMPARISON SAT	YES	43. SIMULATOR AND OBSTACLE NOTES REVIEWED	YES
11. IAP ASSESSED TO DA / MDA	YES	44. AIR / GROUND COMMUNICATIONS SATISFACTORY	YES
12. DP / MISSED APPROACH ASSESSED AT MINIMUM CLIMB GRADIENTS	YES	45. RADAR COVERAGE ADEQUATE	YES
15. FLYABILITY SATISFACTORY	YES	46. ADEQUATE NAVIGATION PERFORMANCE ACHIEVED	YES
33. EQUIPMENT ACCURACY VERIFIED	YES	47. RUNWAY MARKINGS / FEATURES VERIFIED	YES
35. DOCUMENTED CONTROLLING OBSTACLE MOST ADVERSE	YES	48. FAS DATA BLOCK SATISFACTORY	YES

CHARTING CHECKLIST

16. CHART DETAIL SATISFACTORY	YES	20. TEMPERATURE LIMIT NOTED	NO
17. RNP < 1.0 IN MISSED APPROACH NOTED	NO	21. AIRCRAFT SIZE NOTED	YES
18. NON-STANDARD SPEED / CLIMB NOTED	NO	22. CHART MATCHES FLIGHT TRACK	YES
19. RF LEGS NOTED	NO		

IAP SEGMENT CHECKS

TRANS **AUBRN**

24. COURSES P 25. DISTANCES P 27. TAWS P

28. CONSTRAINTS MET YES 29. WIND COMP 260@ 11 KTS 30. RF BANK ANGLE NA

FEDERAL AVIATION ADMINISTRATION
FLIGHT STANDARDS SERVICE
FLIGHT VALIDATION CHECKLIST

TRANS HUMPP

24. COURSES P | 25. DISTANCES P | 27. TAWS P

28. CONSTRAINTS MET YES | 29. WIND COMP 210@ 19 KTS | 30. RF BANK ANGLE NA

TRANS ARVAD

24. COURSES P | 25. DISTANCES P | 27. TAWS P

28. CONSTRAINTS MET YES | 29. WIND COMP 270@15 KTS | 30. RF BANK ANGLE NA

TRANS WOODI

24. COURSES P | 25. DISTANCES P | 27. TAWS P

28. CONSTRAINTS MET YES | 29. WIND COMP 220@ 14 KTS | 30. RF BANK ANGLE NA

FINAL

24. COURSES P | 25. DISTANCES P | 26. FPA P | 27. TAWS P

28. CONSTRAINTS MET YES | 29. WIND COMP 270@ 08 KTS | 30. RF BANK ANGLE NA

MISSED APPROACH

24. COURSES P | 25. DISTANCES P | 27. TAWS P

28. CONSTRAINTS MET YES | 29. WIND COMP 180@ 12 KTS | 30. RF BANK ANGLE NA

HOLDING

24. COURSES P | 25. DISTANCES P | 27. TAWS P

28. CONSTRAINTS MET YES | 29. WIND COMP 180@12 KTS | 30. RF BANK ANGLE NA

49. VISUAL SEGMENT SAT | 50. NIGHT EVALUATION SAT

FEDERAL AVIATION ADMINISTRATION
FLIGHT STANDARDS SERVICE
FLIGHT VALIDATION CHECKLIST

STAR SEGMENT CHECKS

EN ROUTE TRANS _____

24. COURSES _____ 25. DISTANCES _____ 27. TAWS _____

28. CONSTRAINTS MET _____ 29. WIND COMP _____ 30. RF BANK ANGLE _____

COMMON ROUTE

24. COURSES _____ 25. DISTANCES _____ 27. TAWS _____

28. CONSTRAINTS MET _____ 29. WIND COMP _____ 30. RF BANK ANGLE _____

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RWY TRANS _____

24. COURSES _____ 25. DISTANCES _____ 27. TAWS _____

28. CONSTRAINTS MET _____ 29. WIND COMP _____ 30. RF BANK ANGLE _____

DEPARTURE SEGMENT CHECKS

ICA OR COPTER PROCEED VISUALLY

24. COURSES _____ 25. DISTANCES _____ 27. TAWS _____

28. CONSTRAINTS MET _____ 29. WIND COMP _____ 30. RF BANK ANGLE _____

RWY TRANS _____

24. COURSES _____ 25. DISTANCES _____ 27. TAWS _____

28. CONSTRAINTS MET _____ 29. WIND COMP _____ 30. RF BANK ANGLE _____

COMMON ROUTE

24. COURSES _____ 25. DISTANCES _____ 27. TAWS _____

28. CONSTRAINTS MET _____ 29. WIND COMP _____ 30. RF BANK ANGLE _____

FEDERAL AVIATION ADMINISTRATION
FLIGHT STANDARDS SERVICE
FLIGHT VALIDATION CHECKLIST

TRANS _____

24. COURSES _____ 25. DISTANCES _____ 27. TAWS _____

28. CONSTRAINTS MET _____ 29. WIND COMP _____ 30. RF BANK ANGLE _____

51. EVALUATOR NOTES

SPECIAL TRANING RECOMMENDATION FROM DEVELOPER

53. PROCEDURE SAT

54. EVALUATOR SIGNATURE Chris Baur Digitally signed by Chris Baur Date: 2023.03.29 20:10:45 -07'00'

Federal Aviation Administration Categorical Exclusion Declaration

Date: 05/17/23

IFP: Aerospace, Hughes (Environmental@hughesaerospace.com)

Airport Contact: Abbott, Bob (bob.abbott@hughesaerospace.com)

Request ID: KBFI_23517
Single or Multiple Procedure: Multiple
Procedure Name(s): RNAV (GPS) Y RWY 14R RNAV (RNP) Z RWY 14R RNAV (GPS) Y RWY 32L RNAV (RNP) Z RWY 32L
Historic Properties: No Historic Properties Impacted
Procedure Request Description:
Procedure names were amended after the completion of a CATEX dated 20230104 (attached as an Appendix). This CATEX covers the proposed administrative name changes for the following procedure names:

Change RNAV (GPS) Z RWY 14R (NEW) to RNAV (GPS) Y RWY 14R (NEW)
Change RNAV (RNP) Y RWY 14R (NEW) to RNAV (RNP) Z RWY 14R (NEW)

Declaration of Exclusion:
The FAA has reviewed the above referenced proposed action and it has been determined, by the undersigned, to be categorically excluded from further environmental documentation according to FAA Order 1050.1, "Environmental Impacts: Policies and Procedures." The implementation of this action will not result in any extraordinary circumstances in accordance with FAA Order 1050.1.

Basis for this Determination:
This review was conducted in accordance with policies and procedures in Department of Transportation Order 5610.1, "Procedures for Considering Environmental Impacts" and FAA Order 1050.1.

The applicable Categorical Exclusion is:

5-6.5.k: Publication of existing air traffic control procedures that do not essentially change existing tracks, create new tracks, change altitude, or change concentration of aircraft on these tracks. (ATO, AVS)

The above flight procedure has been developed within the accepted parameters.

Concurrence/Reviewed By: ANDREW W PIERONI Digitally signed by ANDREW W PIERONI Date: 2023.05.17 16:44:15 -04'00' Date: _____

Title: Environmental Protection Specialist

Approved By: Romana Wolf Signed By: Romana Wolf Thu Jun 8 2023 14:39:59 GMT-05:00:00 (Central Standard Time) Date: _____

Title: Manager, Flight Procedures and Airspace Grouup

APPENDIX - CATEX Completed by WSA 20230104 Covering Procedure Implementation

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
CATEGORICAL EXCLUSION DECLARATION

RNAV (GPS) Z RWY 14R (NEW)
RNAV (RNP) Y RWY 14R (NEW)
RNAV (GPS) Y RWY 32L (NEW)
RNAV (RNP) Z RWY 32L (NEW)

Boeing Field/King County International Airport
Seattle, Washington

Description of Proposed Action:

The Federal Aviation Administration (FAA) is proposing to implement four new approach procedures at Boeing Field/King County International Airport (KBFI), Seattle, Washington. The following procedures were developed by Hughes Aerospace Corporation for public use at KBFI at the request of the airport owner, King County.

- Area Navigation (RNAV) (Global Positioning System [GPS]) Z Runway (RWY) 14 Right (R)
- RNAV (Required Navigation Performance [RNP]) Y RWY 14R
- RNAV (GPS) Y RWY 32 Left (L)
- RNAV (RNP) Z RWY 32L

The Proposed Action would enhance the usability of performance based navigation (PBN) procedures at KBFI. Seattle TRACON reports that the current intermediate-to-final segments of the RWY 14R RNAV approach procedures have offsets of 29 to 30 degrees (°), which are undesirable and conflict with Seattle-Tacoma International (KSEA) RWY 16 approach procedures. The proposed approach procedures would provide localizer performance with vertical guidance (LPV) and lateral navigation/vertical navigation (LNAV/VNAV) minima in addition to the current LNAV and circling minima. The proposed approach procedures would also address King County's request to provide track-to-fix (TF) routes to offer procedure availability to all RNP-authorized aircraft and operators. The existing PBN procedures are often unavailable because aircraft separation requirements are not met—the Proposed Action may allow aircraft to utilize PBN procedures while maintaining aircraft separation between arrivals to KBFI and KSEA.

The Proposed Action replaces RWY 14R conflicting intermediate-to-final segment offsets with a 15° offset and avoids overflight of noise-sensitive areas. Section 1.3 has a complete list of the changes.

Table 1 summarizes the proposed amendments. A change in aircraft operations and aircraft fleet mix is not part of the purpose and need of this Proposed Action. **Figure 1 and 2** depicts the proposed procedure relative to the existing procedure.

Table 1. Procedure Description

Procedures	Description of Proposed Procedures
RNAV (GPS) Y RWY 14R RNAV (RNP) Z RWY 14R	From: • ARVAD initial approach fix (IAF): o Track 351° to cross FAVDU waypoint (WP) at or above (AOA) 8,000 ft MSL then o Track 334° to cross BIGIO WP AOA 4,000 ft MSL then o Track 011° to cross HAGEV WP AOA 3,000 ft MSL then o Track 084° to cross LEMNN intermediate fix (IF) AOA 2,200 ft MSL thence… • DIGGN IAF: o Track 134° to cross LOFAL WP AOA 5,400 ft MSL then o Track 126° to cross LEMNN IF AOA 2,200 ft MSL thence… • WOODI IAF: o Track 276° to cross DEDBE WP AOA 7,000 ft MSL then o Track 256° to cross USDAW WP AOA 5,000 ft MSL then o Track 240° to cross ZUVAN WP AOA 4,000 ft MSL then o Track 179° to cross LEMNN IF AOA 2,200 ft MSL thence… …From LEMNN IF track 120° to cross COLMT final approach fix (FAF) AOA 1,600 ft MSL then track 135° on the final segment to the decision altitude (DA) or minimum descent altitude (MDA) and then to the airport to land or execute the published missed approach.
RNAV (GPS) Y RWY 32L RNAV (RNP) Z RWY 32L	From: • ARVAD IAF: o Track 062° to cross ATULY WP AOA 6,000 ft MSL then o Track 022° to cross AUBRN IF AOA 3,600 ft MSL thence… • WOODI IAF: o Track 171° to cross TAGOR WP AOA 6,000 ft MSL then o Track 198° to cross VAMPS WP AOA 5,000 ft MSL then o Track 253° to cross AUBRN IF AOA 3,600 ft MSL thence… • HUMPP IAF: o Track 289° to cross COVOG WP AOA 6,000 ft MSL then o Track 289° to cross AUBRN IF AOA 3,600 ft MSL thence… …From AUBRN IF track 310° to cross DUANE FAF AOA 1,800 ft MSL then track 315° on the final segment to the DA or MDA and then to the airport to land or execute the published missed approach.

Figure 1. Proposed RNAV (GPS) Y RWY 14R and RNAV (RNP) Z RWY 14R

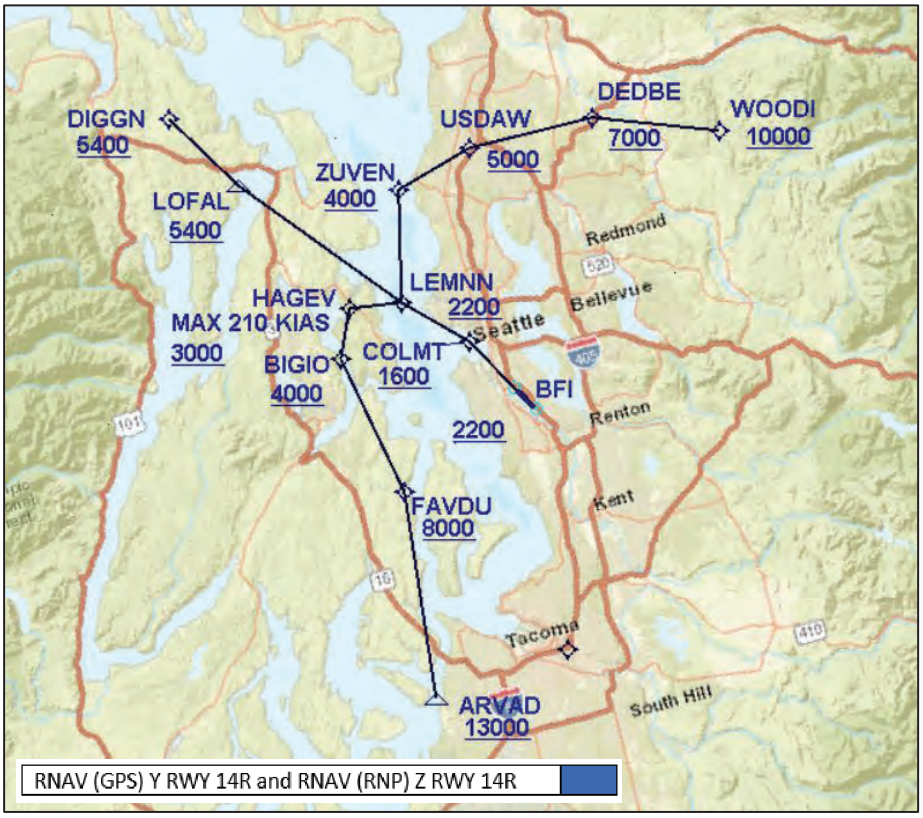
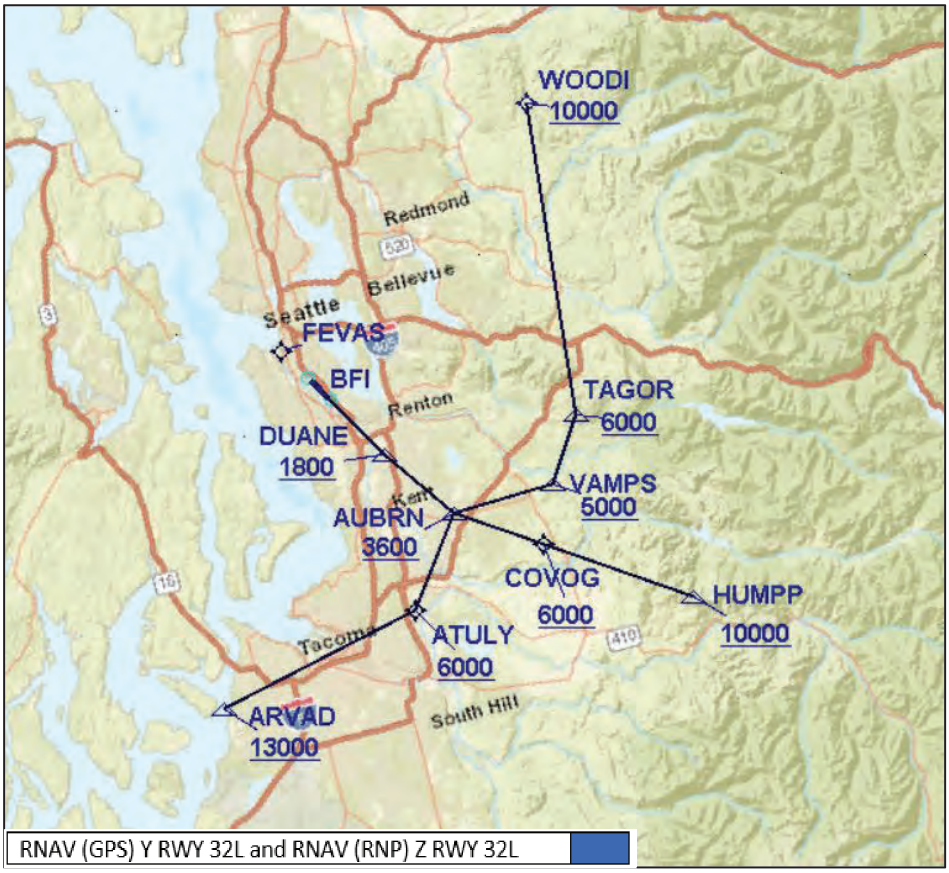


Figure 2. Proposed RNAV (GPS) Y RWY 32L and RNAV (RNP) Z RWY 32L



The current PBN procedures at KBFI do not meet Air Traffic Control (ATC) separation requirements for concurrent approaches at KBFI and KSEA. The Proposed Action will add full, unrestricted PBN operational capability to KBFI RWYs 14R and 32L—providing the necessary separation requirements to allow concurrent approaches at KBFI and KSEA.

The Environmental Protection Agency's (EPA) NEPAssist tool, Google Earth and the National Register of Historic Places, accessed through NEPAssist, was conducted to identify historic properties within the study area for the Proposed Action. The registered historic places identified in the vicinity of the Proposed Action are shown in **Figure 3** and listed in **Table 2**.

There are three Native American Tribes located within proximity of the project study. The identified Tribes are currently overflown and would continue to be overflown with the implementation of the Proposed Action. The tribes affected are shown in **Figure 4**.

Figure 3. Historical Properties in the Study Area

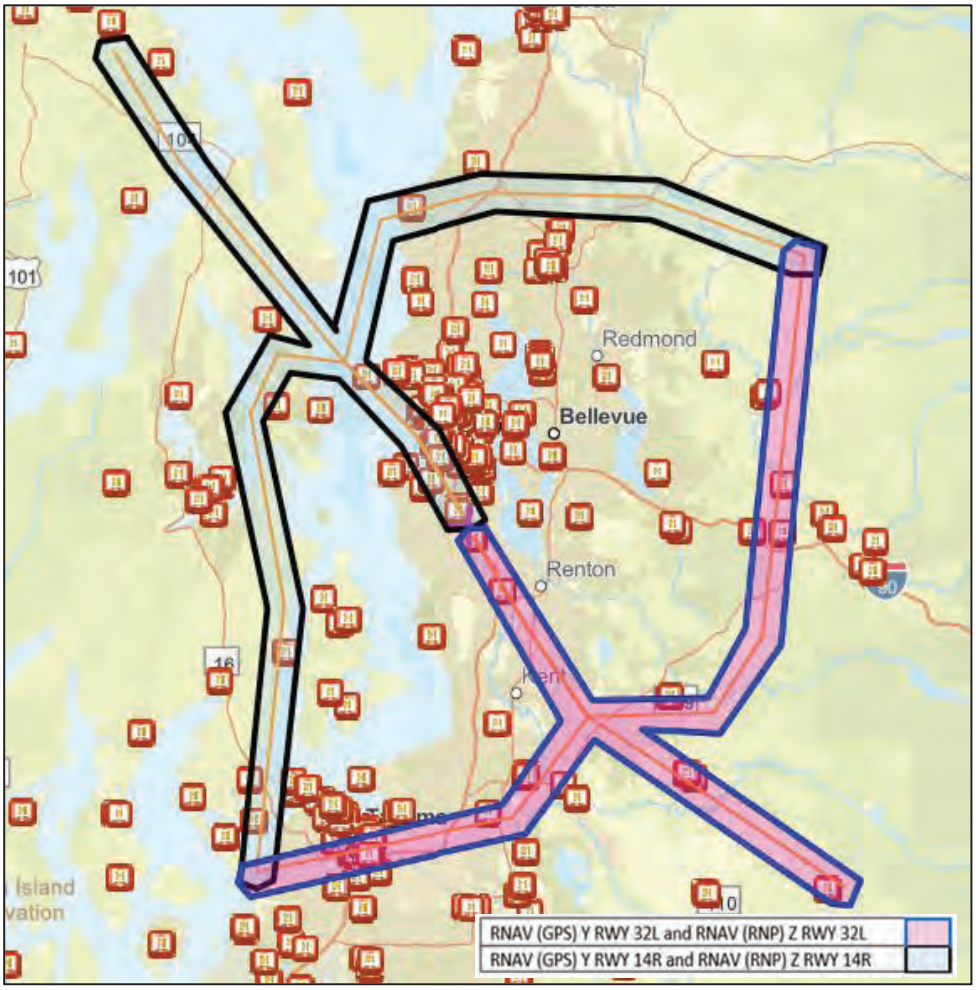


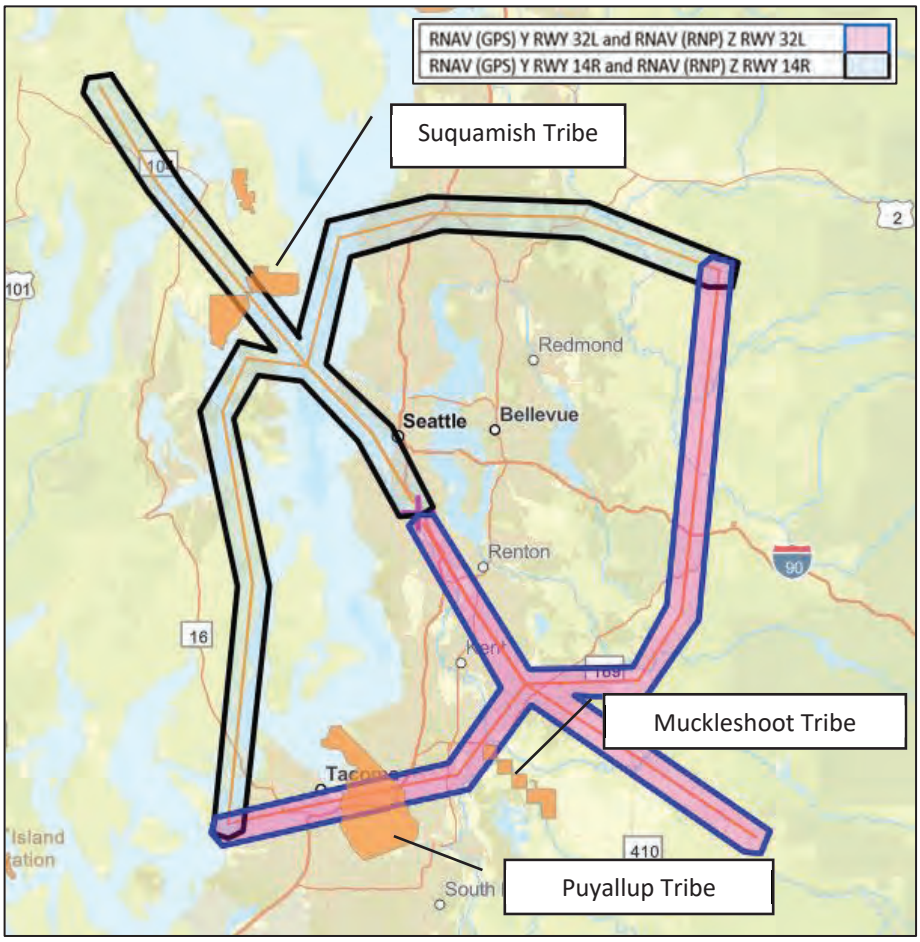
Table 2. Listing of Historical Properties

Listed Historic Place	NPS Registered Number	Area of Significance
Y.M.C.A. Building	83003353	Architecture
Engine House No. 4	84002425	Architecture
Sunset Telephone & Telegraph Building	85001809	Architecture
Pythian Temple	85001811	Architecture
Sprague Building	85002920	Architecture
Nihon Go Gakko	84003568	Architecture
Fire Station No. 5	86000971	Architecture
Fireboat Station	86000978	Architecture
Auburn Public Library	82004221	Architecture
Old City Hall	74001973	Architecture
Northern Pacific Office Building	76001901	Architecture
Pantages Theatre	76001902	Architecture, Culture
Building No. 105, Boeing Airplane Company	71000872	Architecture
Pacific Brewing and Malting Company	78002768	Architecture

Union Passenger Station	74001975	Architecture
Pacific National Bank Building	80004008	Architecture
Rhodes Medical Arts Building	78002769	Architecture
Tukwila School	79002544	Architecture
Fire Station No. 2	86000972	Architecture
US Post Office--Tacoma Downtown Station--Federal Building	91000657	Architecture
Blomeen, Oscar, House	91000781	Architecture
Williams, Sidney, House	84000179	Architecture
Bowes Building	79002553	Architecture
Rialto Theater	92001041	Architecture, Culture
House at 2314 South Ainsworth Avenue	95000220	Architecture
House at 605 South G Street	95000221	Architecture
Building at 1602 South G Street	95000222	Architecture
House at 1610 South G Street	95000223	Architecture
House at 708--710 South 8th Street	95000224	Architecture
House at 2326 South L Street	95000225	Architecture
Building at 712--716 Sixth Avenue	95000226	Architecture
McIlvaine Apartments	95000227	Architecture
Schultz Apartments	95000228	Architecture
House at 802--804 South G Street	95000229	Architecture
House at 1510 Tacoma Avenue South	95000230	Architecture
Sandberg--Schoenfeld Buildings	99001008	Architecture
Auburn Post Office	00000407	Architecture
Nisqually Power Substation	1000429	Architecture
Albers Brothers Mill	2000247	Architecture
Pagani, Luigi and Aurora, House	2000861	Architecture
Jovita Land Company Model Home--Corbett House	4000158	Architecture
Neighbor--Bennett House	4000921	Architecture
Falls City Masonic Hall	4000922	Architecture
National Bank of Tacoma	6000671	Architecture
Manley--Thompson Ford Agency	7001386	Architecture
Auditorium Dance Hall, The	7001458	Architecture
Washington Building	9000508	Architecture
Black Diamond Cemetery	39107	Architecture
City Waterway Bridge	82004278	Architecture
East 34th Street Bridge	82004279	Structure
Hull Building	83003340	Architecture
Carnegie, Andrew, Library	73001887	Architecture
Nelson, Charles F., House	73001879	Architecture
Wollochet--Point Fosdick School	87001168	Architecture
Midway School	87001166	Architecture
Palmer, A.L., Building	7001457	Architecture
Union Stables	13000210	Architecture
14th Avenue South Bridge	82004228	Structure
West Point Light Station	77001336	Architecture
M. V. VASHON	82004241	Structure

S.S. SAN MATEO	71000876	Structure
USCGC FIR	92001880	Structure

Figure 4. Native American Tribes in the Study Area



Historical radar track data for KBFI was obtained from Performance Data Analysis and Reporting System (PDARS). Data was randomly selected within a recent 90-day period between (January 1, 2021 – December 31, 2021). The random dates are assumed to represent average runway usage, flight paths, and day/night traffic ratios by capturing a range of temperature and wind conditions. The Proposed Action was designed to remain within the existing flight paths. **Figures 5 and 6** depict the Proposed Action with historical flight tracks. The Proposed Action is not intended to increase the number of aircraft operations or change the aircraft fleet mix at KBFI.

Figure 5. RNAV (GPS) Y RWY 14R and RNAV (RNP) Z RWY 14R with Historical Flight Tracks

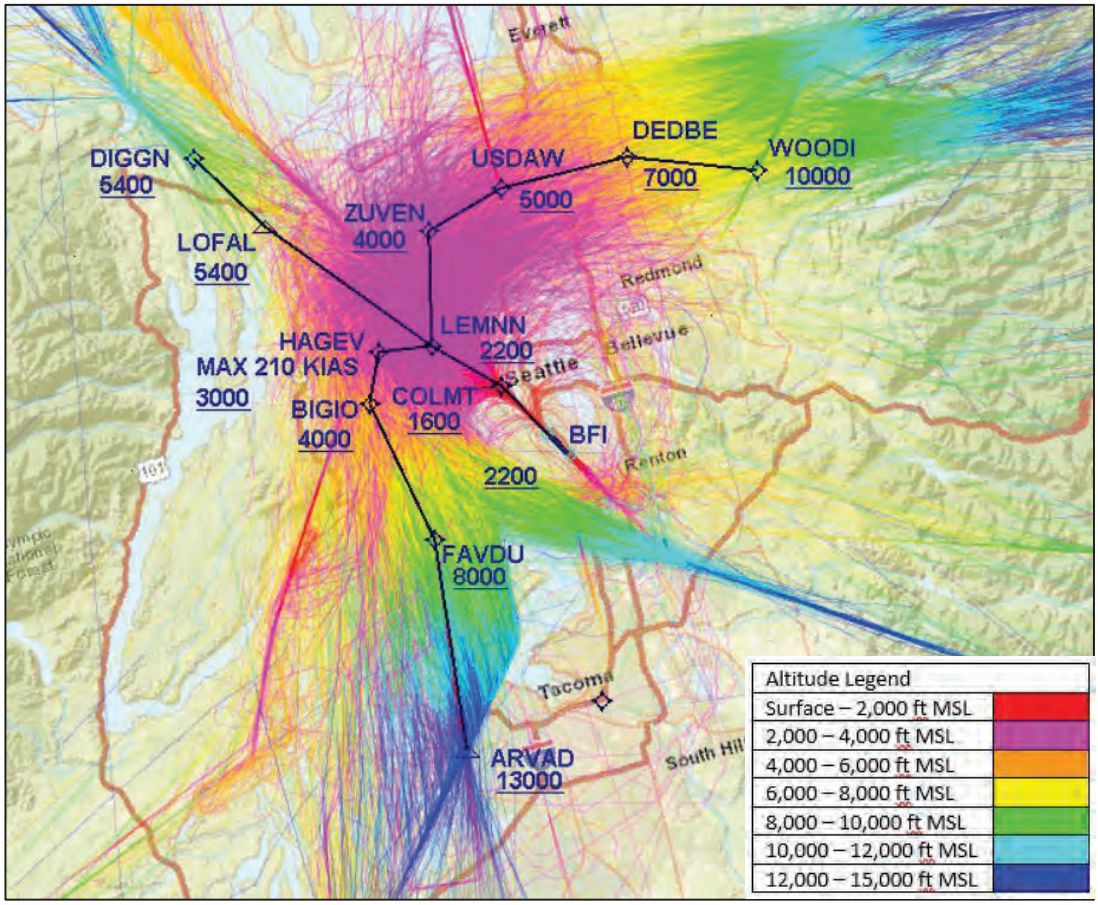
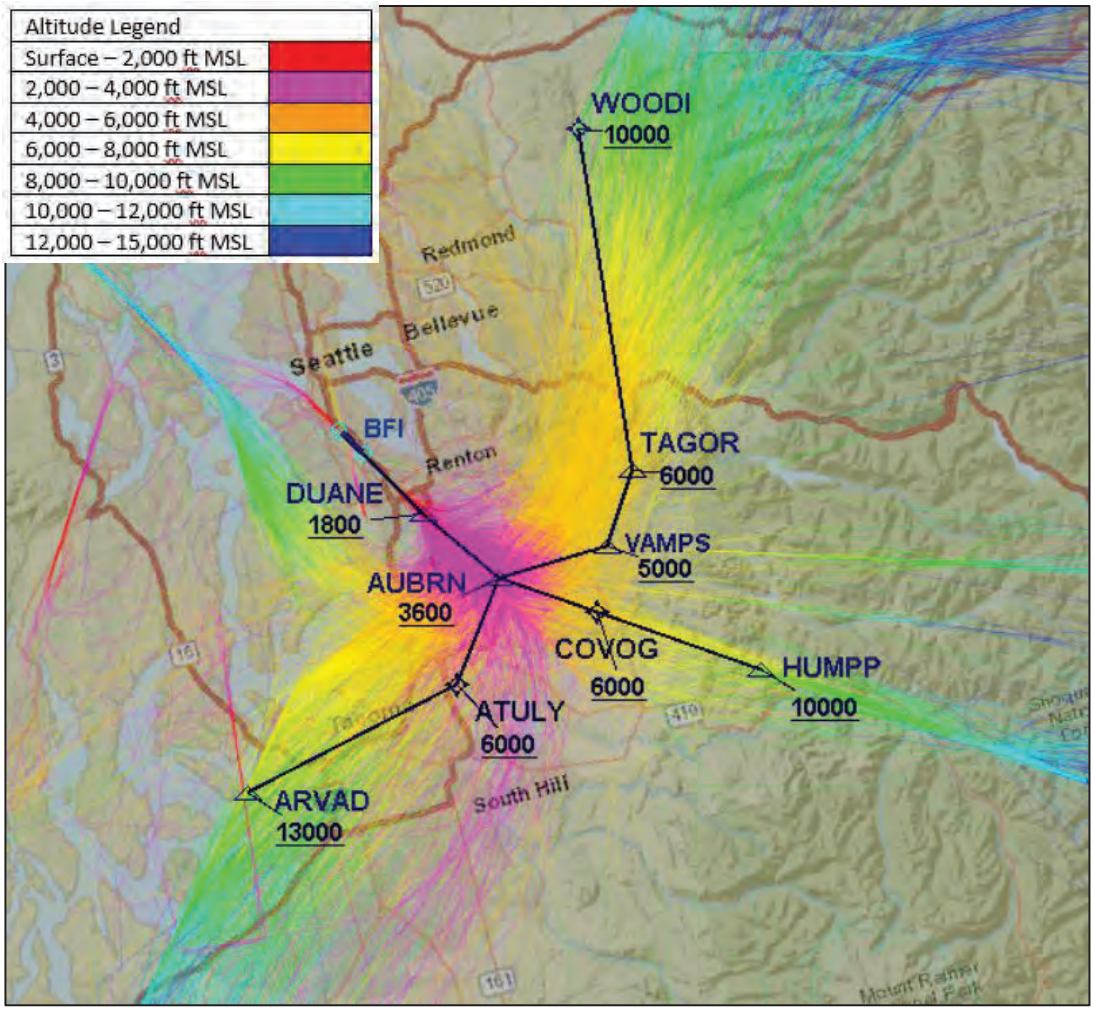


Figure 6. RNAV (GPS) Y RWY 32L and RNAV (RNP) Z RWY 32L with Historical Flight Tracks



A noise screening analysis was completed using the TARGETS Environmental Plug-in tool and the Aviation Environmental Design Tool (AEDT) to assess potential impacts resulting from the Proposed Action in accordance with MITRE's Center for Advanced Aviation System Development's, Guidance for Noise Screening of Air Traffic Actions (December 2012). Historical radar track data was used to create a baseline scenario. After the baseline scenario was built, aircraft operations were reassigned to the proposed procedures, which provided the alternative scenario. Once the baseline and alternative scenarios were built, the TARGETS Environmental Plug-in tool was used to generate noise outputs for both scenarios using AEDT. The results showed **no reportable noise impacts and no significant noise increases**.

A comprehensive Google search identified the 2004 KBFI Airport Master Plan (AMP) and the 2021 Airport Layout Plan.[1] AMPs represent an airport's blueprint for short, intermediate, and long-term development, typically covering a planning period of 20 years. The 2004 AMP 20-year planning period identified long-term development through the year 2015.

The 2021 Airport Layout Plan (ALP) identified the following projects for future development that involve the RWY and taxiway (TWY) environment. [2] The 2021 ALP provided no timeline for completion of the RWY/TWY projects, just that they are "future" projects.[3]

- Future realignment of TWY A3 & A4
- Future RWY centerline lights and touchdown zone (TDZ) lights for RWY 14R/32L
- Future RWY 14R/32L shoulder expansion from 25 ft to 40 ft
- Future runway protection zone (RPZ) property acquisition (7.4 acres) for RWY 14R/32L
- Pavement removal for TWY A5 and TWY A8
- Future construction of TWY B2 and TWY A2

IFP Information Gateway was reviewed for planned air traffic projects (see https://www.faa.gov/air_traffic/flight_info/aeronav/procedures/). Projects are listed below in **Table 3**.

Table 3. Planned Procedures for KBFI

Procedure Name	Scheduled Publication Date	Status
ILS OR LOC RWY 14R, AMDT 32	9/8/2022	Flight Check/ Public Comment (Closes 7/8/2022)
ILS OR LOC RWY 32L AMDT 2	9/8/2022	Flight Check/ Public Comment (Closes 7/8/2022)
CBAIN TWO DEPARTURE (RNAV)	2/23/2023	Under Development
NRVNA TWO DEPARTURE (RNAV)	2/23/2023	Under Development
TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES, AMDT 9	2/23/2023	Under Development

[1] King County International Airport, *Airport Master Plan 2004*, https://kingcounty.gov/services/airport/planning, accessed June 1, 2022

[2] The Airport Layout Plan (ALP) serves as a critical planning tool that depicts both existing facilities and planned development for an airport. By definition, the ALP is a plan for an airport that shows:

- Boundaries and proposed additions to all areas owned or controlled by the sponsor for airport purposes
- The location and nature of existing and proposed airport facilities and structures
- The location on the airport of existing and proposed non-aviation areas and improvements thereon.

[3] King County International Airport, *Airport Layout Plan 2021*, https://kingcounty.gov/~/media/services/airport/documents/planning/airport-layout-plan.ashx?la=en, accessed on November 1, 2022

The FAA Airport Terminal Area Forecast indicates a potential for an approximately six percent per year increase in traffic over the next two years and then a one percent increase over the next eight years.

Consideration of cumulative impacts applies to the impacts resulting from the implementation of the Proposed Actions combined with other actions. A cumulative impact is defined as an impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions.

Analyzing cumulative impacts is considered within geographic (spatial) and time (temporal) boundaries. Reasonably foreseeable future actions refers to projects that would likely be completed within the next five years and do not include those actions that are highly speculative or indefinite. The types of projects considered under the cumulative impact analysis are primarily limited to airfield projects, specifically projects that directly affect or involve runways and modifications to parallel taxiways (e.g., lengthening and/or widening). These types of projects may affect aircraft flight operations. An increase in aircraft operations and the aircraft fleet mix are not expected to change as a result of the implementation of the Proposed Action. Based on the available information, cumulative effects are not anticipated in connection with the Proposed Action.

In accordance with FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, Paragraph 5-2, Extraordinary Circumstances, the FAA has reviewed the Proposed Action for factors and circumstances in which a normally categorically-excluded action may have a significant environmental impact requiring further analysis. The FAA has determined that no extraordinary circumstances exist that warrant additional environmental review.

Declaration of Exclusion:

The FAA has reviewed the above referenced Proposed Action and it has been determined, by the undersigned, to be categorically excluded from further environmental documentation according to FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*. The implementation of this action will not result in any extraordinary circumstances in accordance with FAA Order 1050.1F.

Basis for this Determination:

The Instrument Flight Procedures Environmental Pre-Screening Filter tool was used for analysis purposes. This review was conducted by Western Service Center personnel in accordance with policies and procedures in Department of Transportation Order 5610.1C, Procedures for Considering Environmental Impacts, and FAA Order 1050.1F.

The applicable categorical exclusion is:

1050.1F 5-6.5.i: Establishment of new or revised air traffic control procedures conducted at 3,000 feet or more above ground level (AGL); procedures conducted below 3,000 feet AGL that do not cause traffic to be routinely routed over noise sensitive areas; modifications to

currently approved procedures conducted below 3,000 feet AGL that do not significantly increase noise over noise sensitive areas; and increases in minimum altitudes and landing minima. For modifications to air traffic procedures at or above 3,000 feet AGL, the Noise Screening Tool (NST) or other FAA-approved environmental screening methodology should be applied. (ATO, AVS)

Recommended by:

Facility Manager Review/Concurrence

Signature: Anthony E Setterfield Digitally signed by Anthony E Setterfield Date: 2023.01.04 09:19:44 -08'00' Date:

Name: Anthony E. Setterfield
Acting Air Traffic Manager
Seattle Terminal Radar Approach Control (TRACON)

Concurrence by:

Western Service Area Environmental Protection Specialist

Signature: LONNIE DEL COVALT Digitally signed by LONNIE DEL COVALT Date: 2023.01.04 11:28:45 -08'00' Date:

Name: Lonnie D. Covalt
Environmental Protection Specialist, Operations Support Group
Western Service Center, AJV-W25

Approval by:

Western Service Area Director or Designee Approval

Signature: BYRON G Y CHEW Digitally signed by BYRON G Y CHEW Date: 2023.01.04 15:24:07 -08'00' Date:

Name: B. G. Chew
Group Manager, Operations Support Group
Western Service Center, AJV-W2