BSL

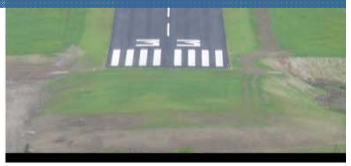
BELFAST Municipal Airport

ASG Innovative Airport Development Specialists

Project Advisory Committee Meeting #4 January 7, 2016





Agenda

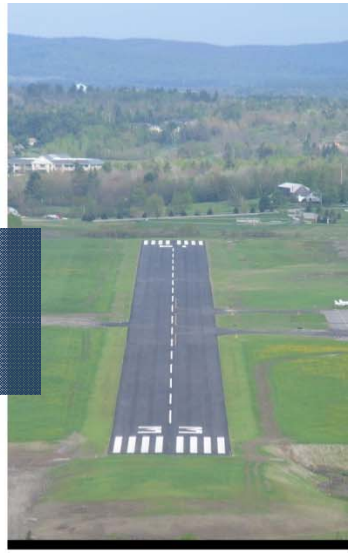
1. Introductions / Overview
2. Where are we in the Master Plan Process?
3. Review of Airport Master Plan Goals
4. Project Options (Development Alternatives) & Issues
5. Next Steps / Questions & Comments

Meeting Goals:

- *Establish PAC recommendations for all proposed project options*
- *Rank PAC-generated airport master plan goals*

BELFAST Municipal Airport



Introductions / Review

a. **James Miklas (ASG)** – *Project Manager*

b. **PAC Members** - *Serve as project advisors to ensure the BST Master Plan Update addresses the key issues facing the Airport today and into the future.*

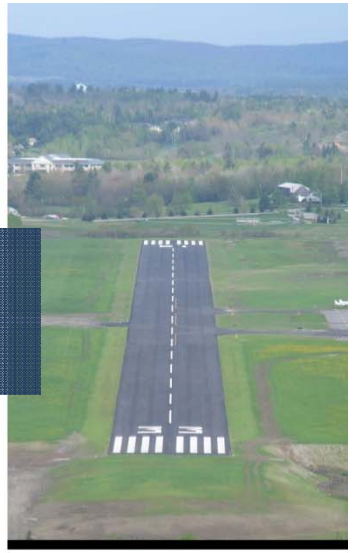
c. **Master Planning Process Review**
   - *A comprehensive study that describes the short-, medium-, and long-term development plans to meet future aviation demand.*
   - *Provides the framework to guide **(and protect for potential)** future airport development that will cost-effectively satisfy current & future aviation demand, while considering environmental and community factors.*

d. **Purpose of PAC Meetings** - ***SHARE IDEAS***

Belfast Municipal Airport

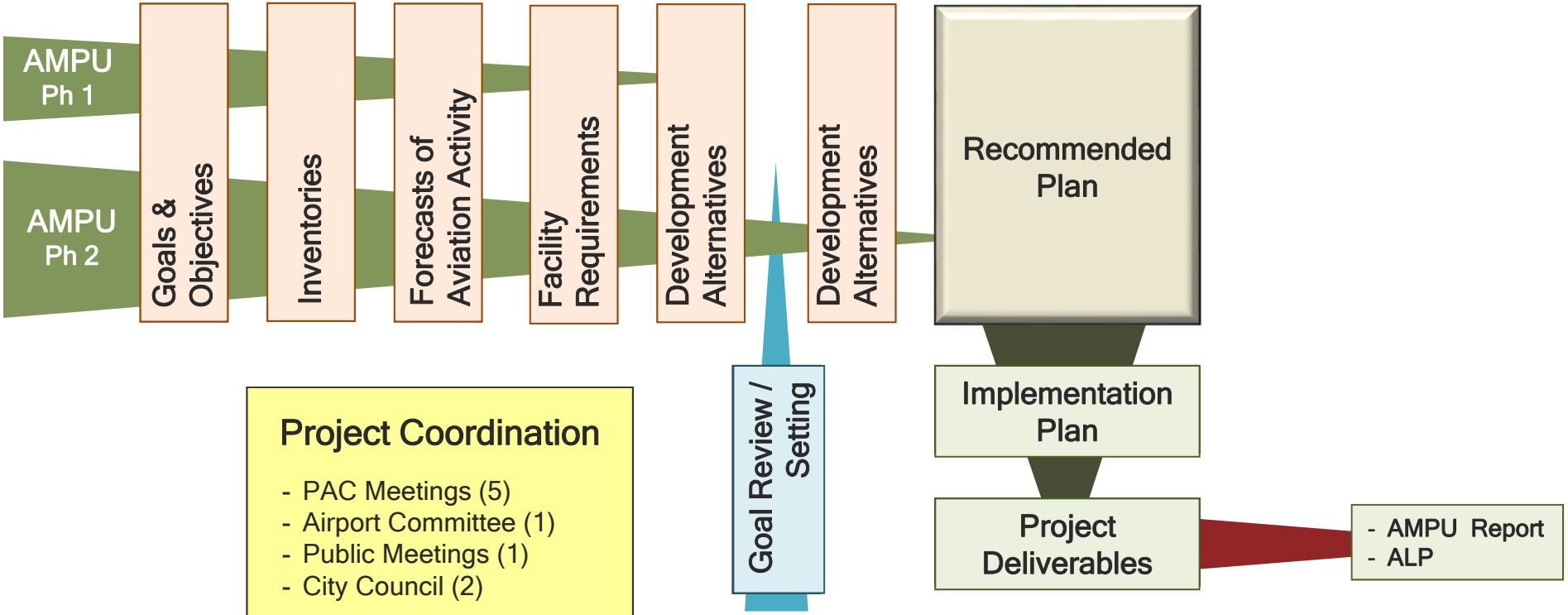
Airport Master Plan
Phase II



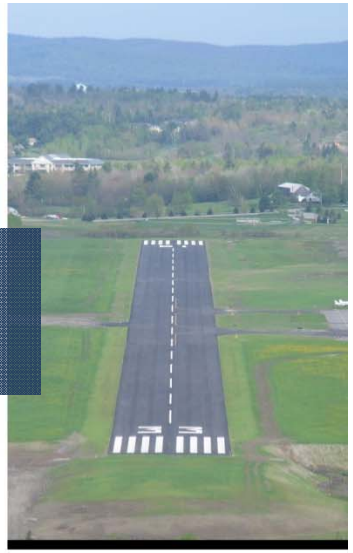



Where are we in the Master Plan Process?

Master Plan Process



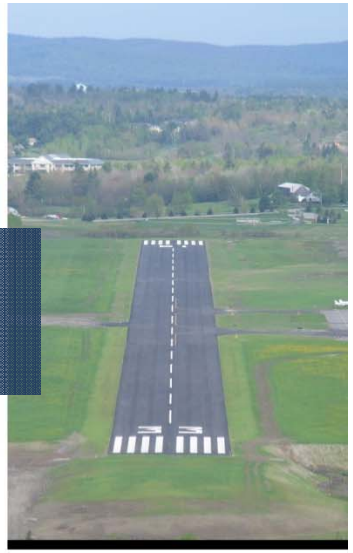


Review of Goals

- **Federal: FAA AC 150/5070-6B, *Airport Master Plans***
- **State: 2006 Maine Aviation Systems Plan Update**
- **Local: BST AMPU PAC-defined goals "The AMPU . . ."**
  - Must address development on and around BST (incl. residential and commercial).
  - Plan for BST to continue to grow as an economic asset for the entire community.
  - Must reflect BST's existing needs and anticipate future challenges.
  - Must be consistent with the City's overall comprehensive plan. (Note that this may affect the existing airport zoning overlay district and land uses, as well as their dimensional standards.)
  - Must review existing land uses on and around BST, and must anticipate potential future uses and users.
  - Should aspire to find realistic numbers to underlie the goals we set such as number of landings per year.



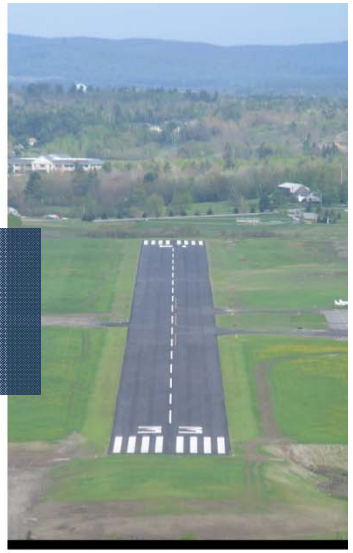
Review of Goals

- **Local: BST AMPU PAC-defined goals** (continued)

"The AMPU . . ."

- Should serve all aviation needs and uses including recreational aviation uses at BST.
- Must attempt to quantify the specific impact of a potential runway extension.
- Must continue to provide maximum service to all medical related flights.
- Should pursue a runway length that best supports the users of the runway.
- Must support the needs of local visitors to BST and the City.
- Must maintain safety as the highest priority.
- Should investigate if it is realistic that BST could support small commercial flights today or in the future.
- Should identify appropriate facilities and airport policies to attract a new FBO for BST.
- Should plan for fuel storage and fuel services at BST at a level commensurate with future demand.
- Must preserve BST's long-term development potential in order to allow the City to be flexible to respond to future needs while respecting the environment.
- *Must include an opportunity for general public review and input prior to presentation to the City Council*.



Development Alternatives

- **Evaluation Process**
  - Review Each Potential Project
  - Identify Alternatives
  - Present Preliminary Decision Matrix
  - Questions / Comments
  - Document Results
- **Preliminary Decision Matrix**

  Unofficial – this is simply a tool to help in decision-making
  - *Safety / Operational* - ability of a project to accommodate future demand safely and efficiently
  - *Economic* - cost-effectiveness, cost-benefit and economic ramifications of a project
  - *Environmental* - broad evaluation of environmental factors associated with a project
  - *Community / Implementation* - factors that can impact the ability to implement certain projects, including community and political acceptance.

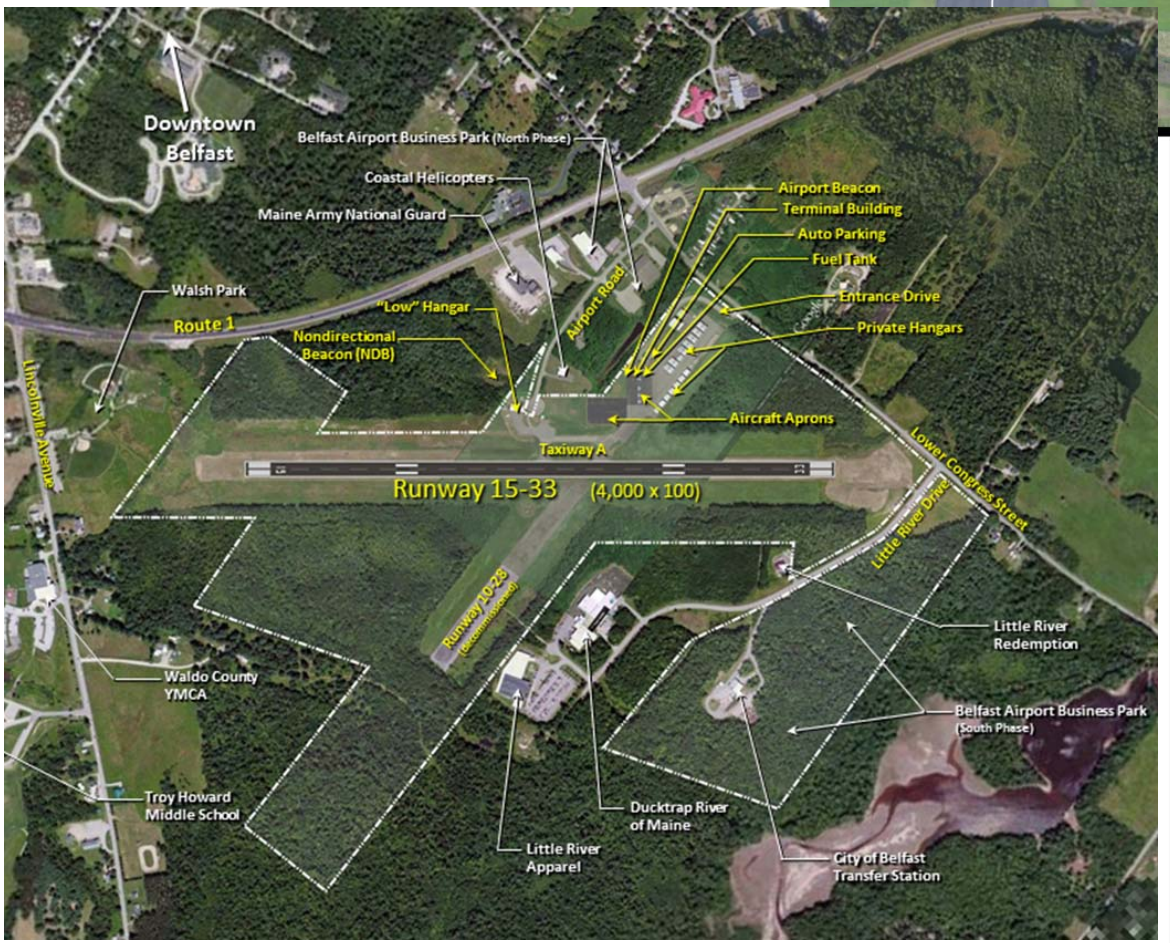
Belfast Municipal Airport

Airport Master Plan
Phase II

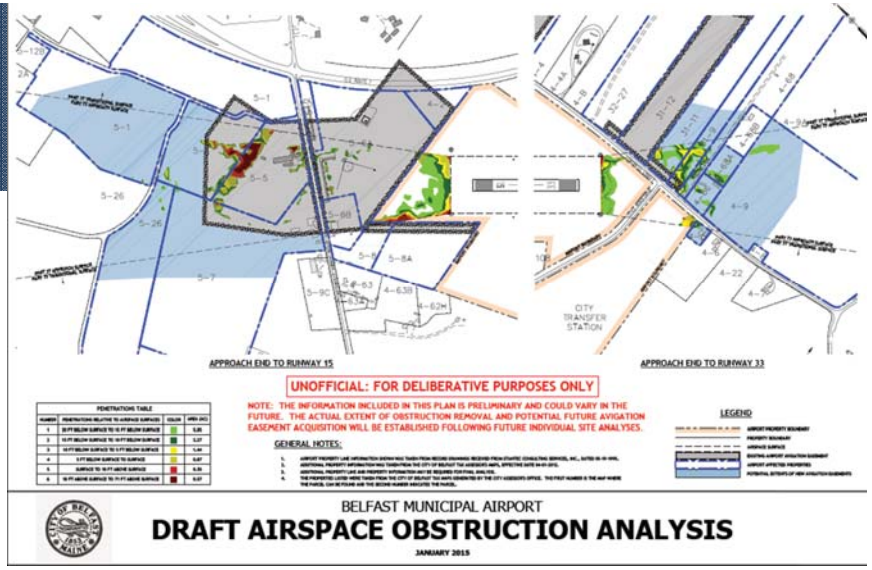



Development Alternatives

- **Airside Facilities**
  - Runway 15-33 (existing)
    1. Airspace
    2. Easements
    3. NAVAIDS
  - Taxiway A
    1. CL Separation
    2. Full-length
  - ***Runway 15-33 (extended)***
- **Landside Facilities**
  - Operational Areas
  - Development Areas
  - Fuel Farm
  - Other Improvements
- **Other Issues**



Airside: Runway 15-33 (existing)
*1.1 Airspace Clearance **



Evaluation Process

- **Identified Alternatives**
  - A. No Action
  - B. Clear vegetative obstructions based on existing runway
  - C. Modify airport operations to consider other less restrictive surfaces
  - D. Physically change the runway end locations
  - E. Other?

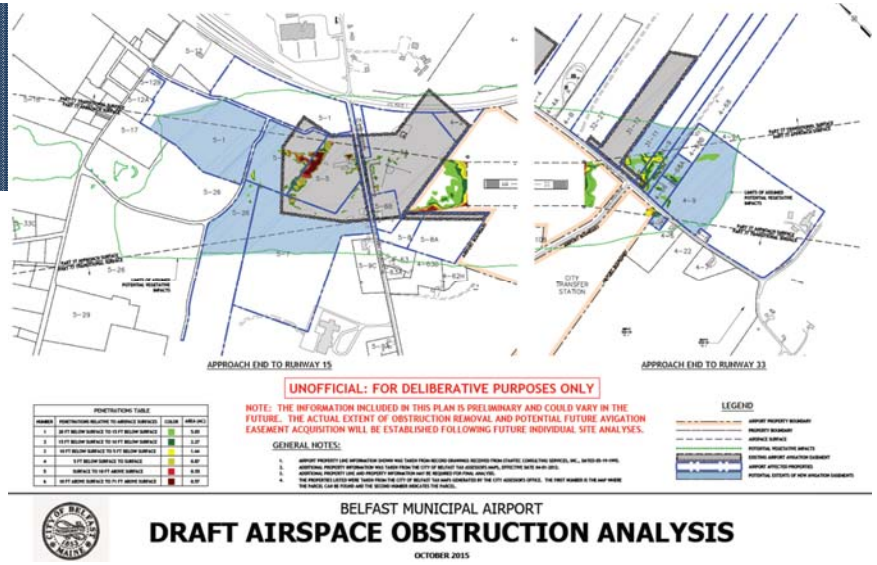
- **Preliminary Decision Matrix**

Alt	Safety / Operational Factors	Economic Factors	Environmental Factors	Community / Implementation Factors	Totals
A[1]	*NA*	*NA*	*NA*	*NA*	***NA***
B	5	3	2	2	**12**
C	2	2	3	3	**10**
D	1	1	3	3	**9**

Notes: 1 = Negative impact/least benefit; 3= No impact/neutral benefit; 5 = Positive impact/most benefit
[1] Alternative A is deemed to be unacceptable.

**** Project in process*** *(FAA EA FONSI issued)*

Airside: Runway 15-33 (existing)
*1.2 Easement Acquisition **



Evaluation Process

- **Identified Alternatives**
  - A. No Action
  - B. Obtain avigation easements to maintain clear FAA approach surfaces for the existing runway
  - C. Other?
- **Preliminary Decision Matrix**

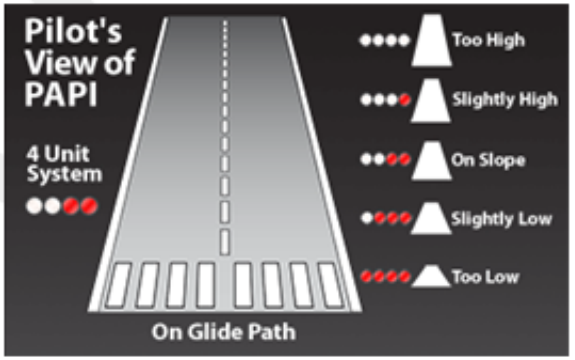
Alt	Safety / Operational Factors	Economic Factors	Environmental Factors	Community / Implementation Factors	Totals
A	1	2	3	3	**9**
B	5	3	3	2	**13**

Notes: 1 = Negative impact/least benefit; 3= No impact/neutral benefit; 5 = Positive impact/most benefit

**** Project in process***

Airside: Runway 15-33 (existing)

1.3 NAVAIDs (VGSI/PAPIs)



Evaluation Process

- **Relevant Notes**

  The installation of a PAPI on a runway end is an aircraft operational safety enhancement. This action has been endorsed by FAA for safety reasons.

- **Identified Alternatives**

  A. No Action
  B. Install PAPIs on both ends
  C. Other?

- **Preliminary Decision Matrix**

Alt	Safety / Operational Factors	Economic Factors	Environmental Factors	Community / Implementation Factors	Totals
A	2	3	3	3	**11**
B	5	3	3	4	**15**

Notes: 1 = Negative impact/least benefit; 3= No impact/neutral benefit; 5 = Positive impact/most benefit

Airside: Runway 15-33 (existing)
1.4 NAVAIDs (Wind Socks)

Evaluation Process

- **Relevant Notes**

  Winds can vary dramatically from one side of a runway to the other, and having additional wind socks would provide pilots operating at the airport with critical data regarding the wind conditions near the landing zones. The installation of additional wind socks is an aircraft operational safety enhancement.

- **Identified Alternatives**

  A. No Action
  B. Install Wind Socks on both ends
  C. Other?

- **Preliminary Decision Matrix**

Alt	Safety / Operational Factors	Economic Factors	Environmental Factors	Community / Implementation Factors	Totals
A	3	3	3	3	**12**
B	5	3	3	3	**14**

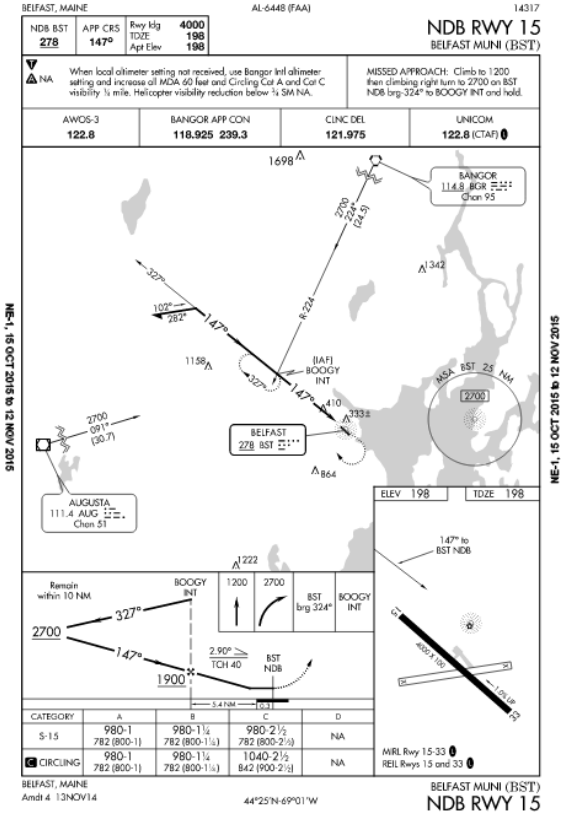
Notes: 1 = Negative impact/least benefit; 3= No impact/neutral benefit; 5 = Positive impact/most benefit

Airside: Runway 15-33 (existing)
1.5 NAVAIDs (Non-Directional Beacon / NDB)

Evaluation Process

- **Relevant Notes**

  An NDB is a radio transmitter that was utilized by the aviation industry as a navigational aid starting in the 1940s. An ADF provides pilots with a reference to the NDB locations. NDB technology is now obsolete, difficult and expensive to maintain, and newer technologies (i.e., GPS) have replaced its function with more effective navigational equipment.



- **Identified Alternatives**

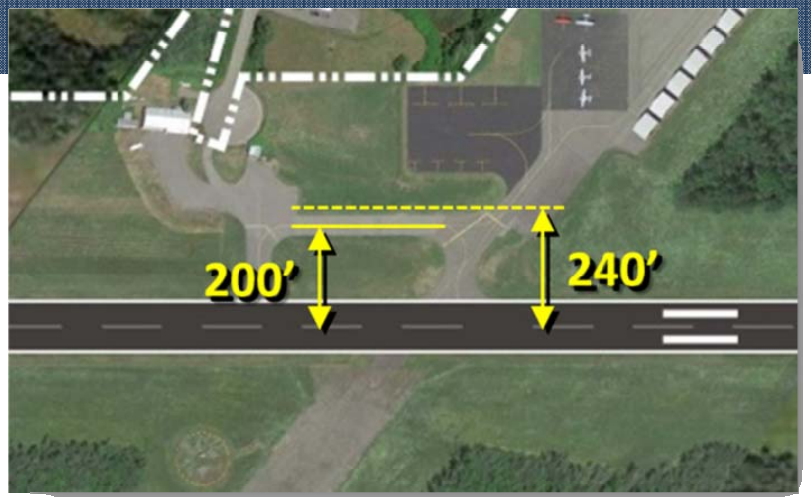
  A. Maintain NDB
  B. Do Not Maintain NDB
  C. Other?

- **Preliminary Decision Matrix**

Alt	Safety / Operational Factors	Economic Factors	Environmental Factors	Community / Implementation Factors	Totals
A	3	2	3	3	**11**
B	3	3	3	3	**12**

Notes: 1 = Negative impact/least benefit; 3= No impact/neutral benefit; 5 = Positive impact/most benefit

Airside: Taxiway A
2.1 RW to TW Centerline Separation



Evaluation Process

- **Identified Alternatives**
  - A. No Action / Request Modification of Standards (MOS)
  - B. Relocate Taxiway A Centerline 40 feet
  - C. Relocate Runway 15-33 Centerline 40 feet
  - D. Other?

- **Preliminary Decision Matrix**

Alt	Safety / Operational Factors	Economic Factors	Environmental Factors	Community / Implementation Factors	Totals
A[1]	2	3	3	3	**11**
B	5	3	3	4	**15**
C[2]	1	1	1	1	**4**

Notes: 1 = Negative impact/least benefit; 3= No impact/neutral benefit; 5 = Positive impact/most benefit

[1] Alternative would likely not be acceptable to FAA.

[2] Alternative would likely be cost-prohibitive.

Airside: Taxiway A
2.2 Extend TW A to Full-Length Parallel

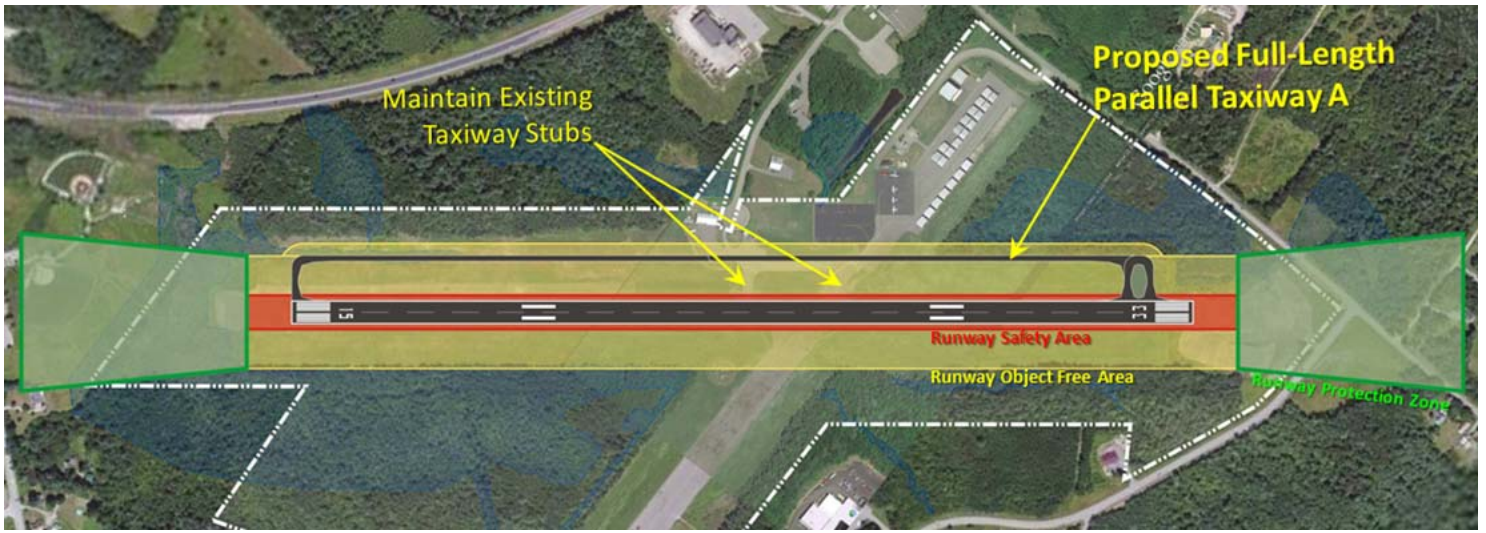
Evaluation Process

- **Identified Alternatives**
  A. No Action
  B. Construct Full-Length Parallel Taxiway A (two phases)
  C. Other?

- **Preliminary Decision Matrix**

Alt	Safety / Operational Factors	Economic Factors	Environmental Factors	Community / Implementation Factors	Totals
A	2	2	3	3	**10**
B	5	4	2	4	**15**

Notes: 1 = Negative impact/least benefit; 3= No impact/neutral benefit; 5 = Positive impact/most benefit



Landside: Facilities & Issues
3.1 Segregation of Operations

Evaluation Process

- **Identified Alternatives**
  A. Segregate On-Airport Operations
  B. Do Not Segregate On-Airport Operations
  C. Other?

- **Preliminary Decision Matrix**

Alt	Safety / Operational Factors	Economic Factors	Environmental Factors	Community / Implementation Factors	Totals
A	3	2	3	2	**10**
B	3	3	3	3	**12**

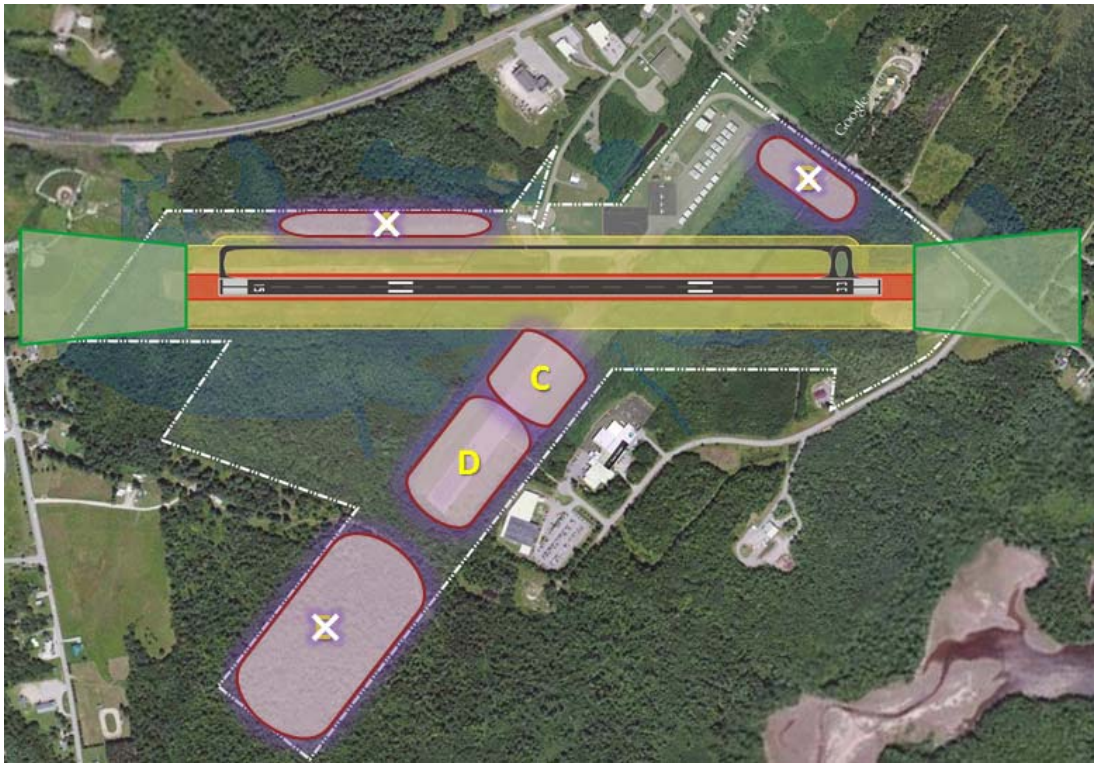
Notes: 1 = Negative impact/least benefit; 3= No impact/neutral benefit; 5 = Positive impact/most benefit

Landside: Facilities & Issues

3.2 Identify New Development Areas

Evaluation Process

- **Identified Alternatives**
  - A. No Action
  - B. Reserve Areas for Future Airport Related Development
  - C. Designate Areas for Future Non-Airport Related Development
  - D. Other?



- **Preliminary Decision Matrix**

Alt	Safety / Operational Factors	Economic Factors	Environmental Factors	Community / Implementation Factors	Totals
A	3	2	3	2	**10**
B	4	4	3	4	**15**
C	3	4	3	4	**14**

Notes: 1 = Negative impact/least benefit; 3= No impact/neutral benefit; 5 = Positive impact/most benefit

Landside: Facilities & Issues
3.3 Install Fuel Farm

Evaluation Process

- **Relevant Notes**
  - Basic need of tenants and visitors to BST
  - Primary revenue source of airports.
  - Proposed installation of a self-contained, above-ground, double-walled 5,000-gallon 100LL fuel tank with a self-service dispenser and card reader. (Future potential for Jet-A)
- **Identified Alternatives**
  A. No Action
  B. Conduct a phased installation of fuel tanks
  C. Other?
- **Preliminary Decision Matrix**

Alt	Safety / Operational Factors	Economic Factors	Environmental Factors	Community / Implementation Factors	Totals
A	2	2	3	2	**9**
B	4	4	3	4	**15**

Notes: 1 = Negative impact/least benefit; 3= No impact/neutral benefit; 5 = Positive impact/most benefit

Landside: Facilities & Issues

- **Other Various Improvements**
  - **3.4** Adjust the design and/or usage of the new BST apron (i.e., remarking tiedowns, consider hangar development on apron, etc.).
  - **3.5** Update existing terminal/administration building (i.e., ADA compliance).
  - **3.6** Establish enhanced airport security measures (i.e., updating the airport security plan, expanding security fencing, installing security cameras, etc.).
  - **3.7** Improve auto parking (i.e., establishing a remote/secure lot for longer-term parking).
  - **3.8** Construct a deicing pad or establishing protocols with local tenants to provide heated hangar access for transient aircraft for the purposes of deicing.

- **Identified Alternatives**
  A. No Action
  B. Action
  C. Other?

Airport Administration
4.1 Airport Land Use Compatibility Plan

Evaluation Process

- **Relevant Notes**
  - A plan would help ensure the long-term viability of BST by preventing development in specific areas that is inherently incompatible with airport operations (i.e., towers, residential development, schools, hospitals, etc.). A plan would help ensure that those who occupy areas of future growth are not located in an area that would have them realize direct and unreasonable impacts due to regular airport operations.

- **Identified Alternatives**
  A. No Action
  B. Establish an Airport Land Use Compatibility Plan
  C. Other?

- **Preliminary Decision Matrix**

Alt	Safety / Operational Factors	Economic Factors	Environmental Factors	Community / Implementation Factors	Totals
A	1	2	2	1	**6**
B	4	4	4	5	**17**

Notes: 1 = Negative impact/least benefit; 3= No impact/neutral benefit; 5 = Positive impact/most benefit

Airport Administration

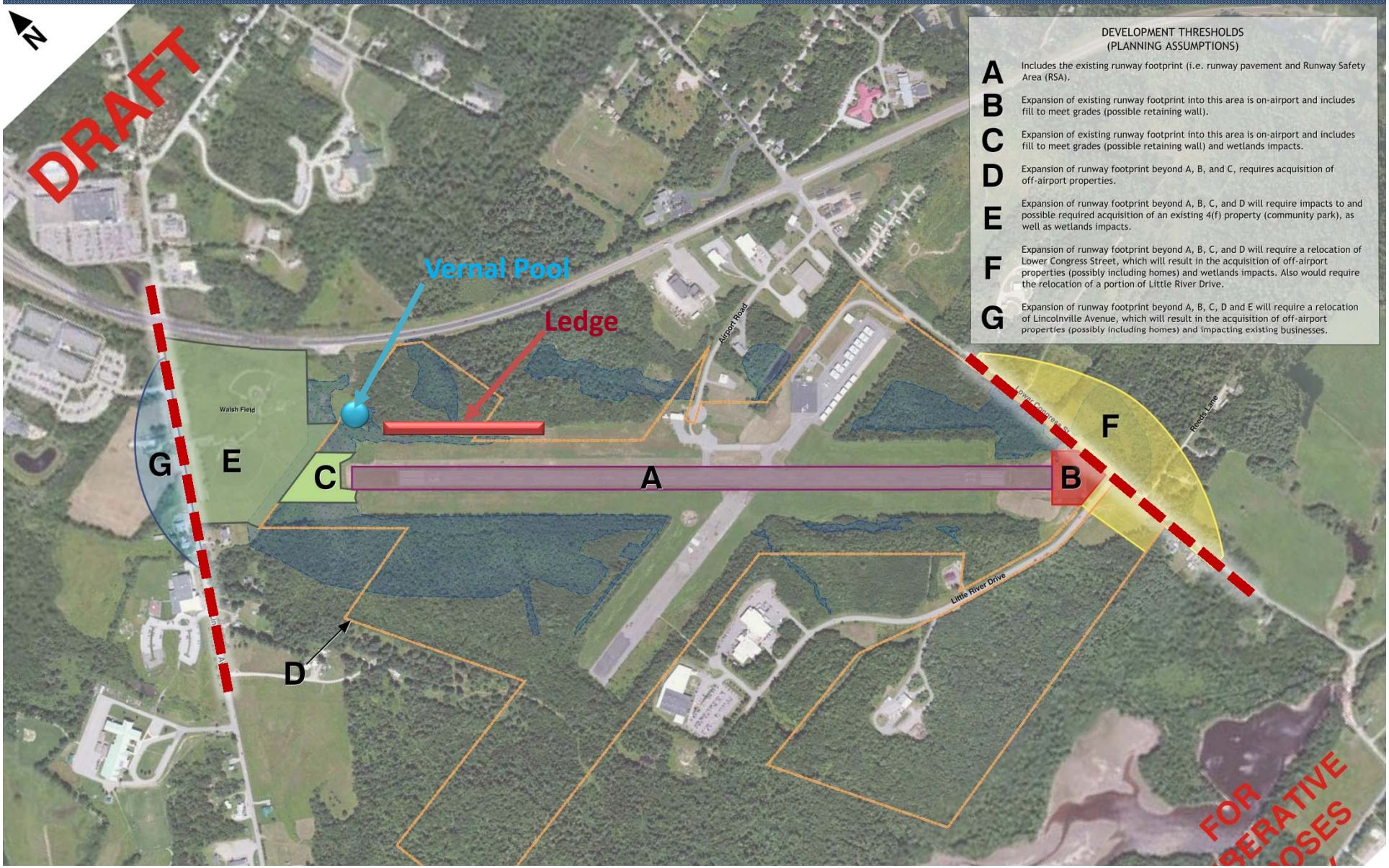
- **Other Various Improvements**
  - **4.2** Airport Rules & Regulations, and Minimum Standards
  - **4.3** Airport Security Plan
  - **4.4** Airport Emergency Response Plan
  - **4.5** Airport Wildlife Hazard Assessment, and Action Plan (FY2025)
  - **4.6** Vegetation Management Plan
  - **4.7** Rates/Charges Assessment
  - **4.8** Airport Ground Lease Review
  - **4.9** Stormwater Pollution Prevention Plan (SWPPP)
  - **4.10** Spill Prevention, Control and Countermeasure Plan (SPCC)
- **Identified Alternatives**
  - A. No Action
  - B. Action
  - C. Other?

Airside: Runway 15-33 (extension)

- **Relevant Comments**
  - FAA recommended runway length 4,990’ – AMPU goal to protect for potential.
  - Runway extension not justified for application of federal funding due to insufficient operations – development potential likely only through Public / Private Partnership
  - Interest expressed by local business concerns to develop BST to accommodate up to midsized business aircraft (e.g., Challenger 300, Citation V, Lear 60, etc.) – Requested 5,000-foot runway
  - AMPU Phase 1 - Runway Corridor Analysis designed to establish range of potential extension alternatives (if warranted by demand) and to provide a recommendation for a preferred length if a runway extension were to be ultimately pursued.
  - AMPU Phase 1 undertook a top-down (unconstrained) / bottom-up (constrained) analysis in an effort to balance operational demands with local physical limitations
  - Through coordination with key stakeholders (FAA / MaineDOT / City of Belfast / BST users), a “preferred” runway length was established at 4,710’ (aka 4,700’)
  - Ultimately, Alternative 3A was identified as the preferred alternative. Primary features: extend pavement Southeast (170’) & Northwest (240’); pave safety areas for departures; all construction remains On-Airport.

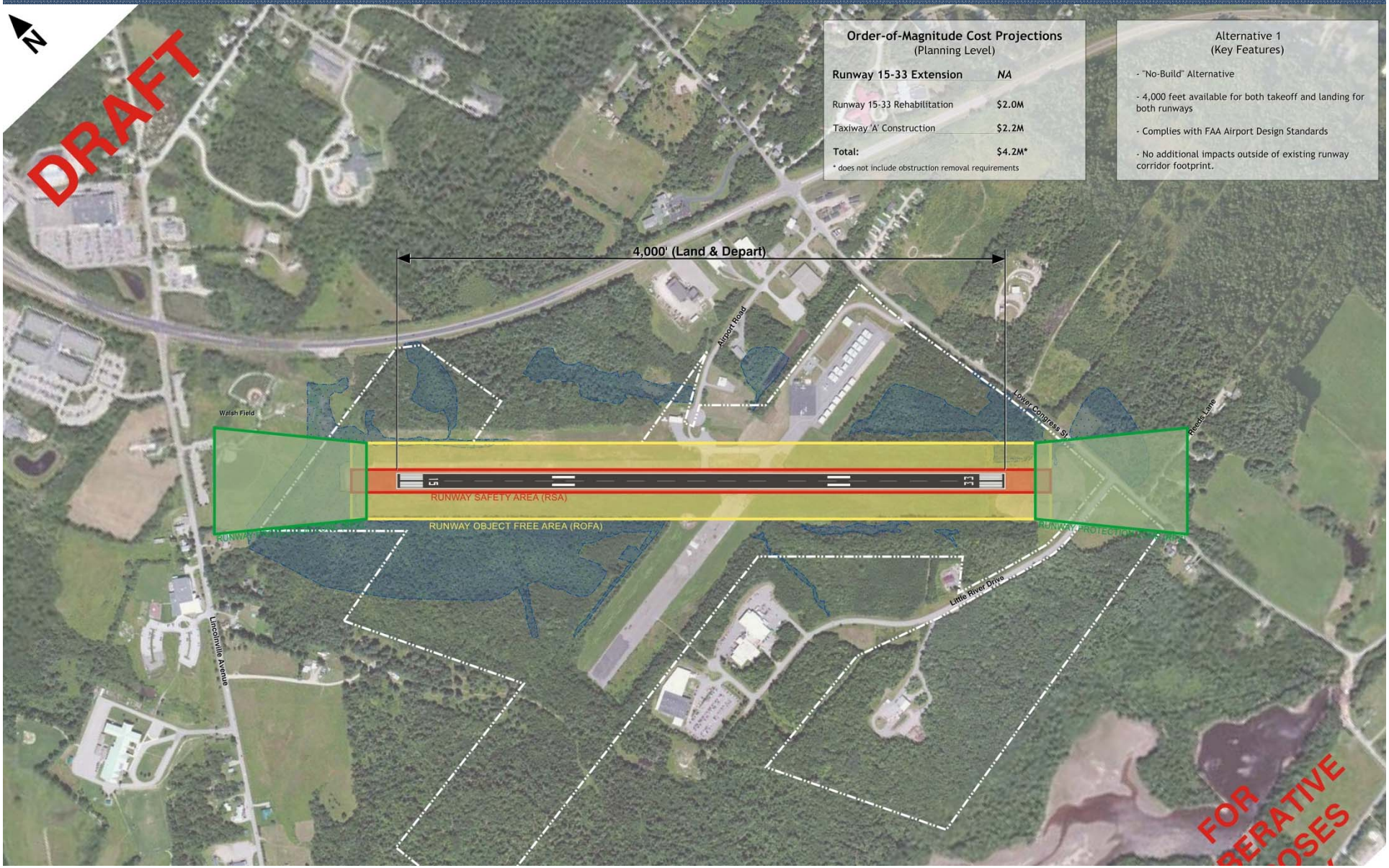
Runway 15-33 Development Alternatives

Key Site Development Impact Thresholds / Constraints



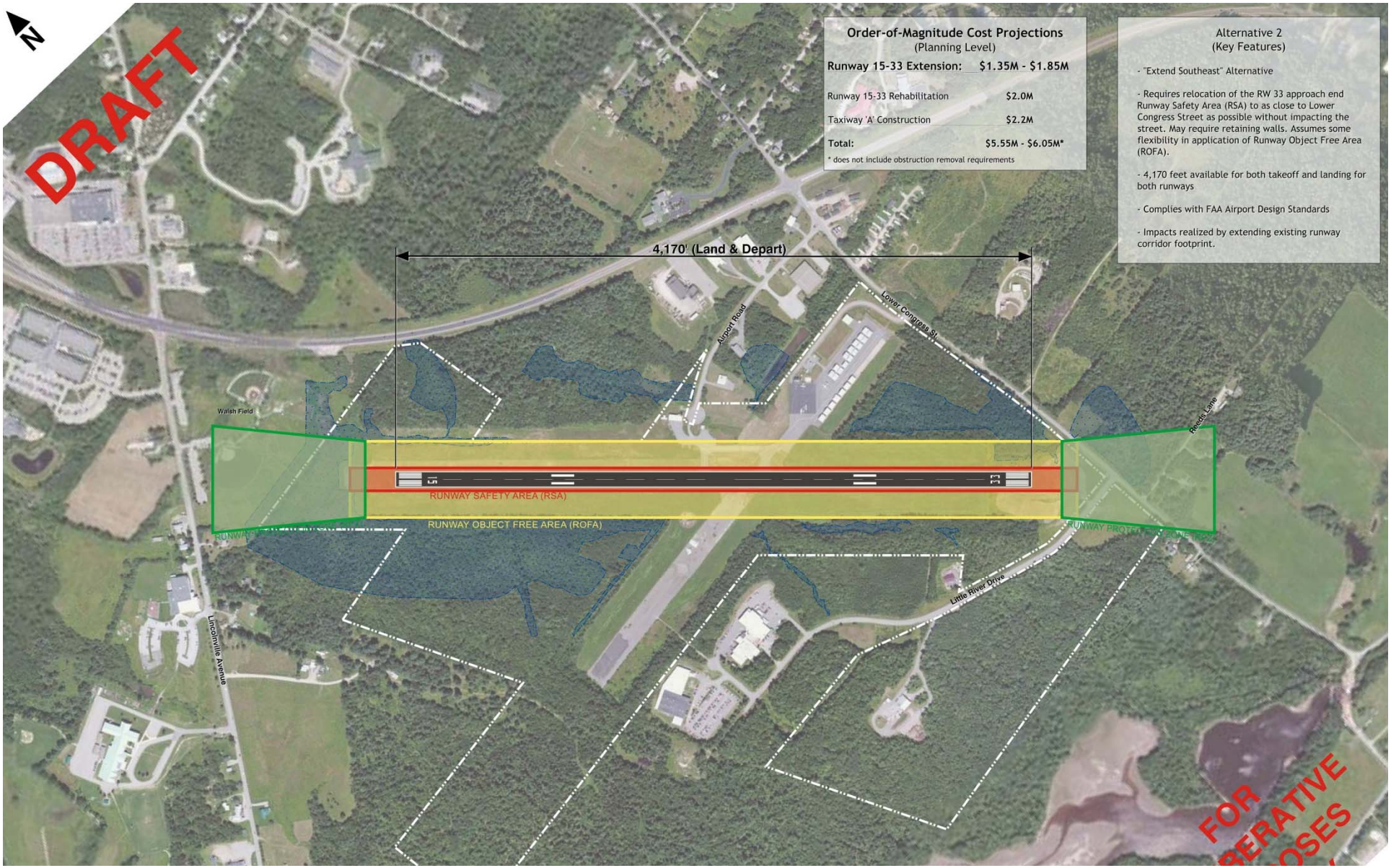
Airside: Runway 15-33 (extension)

Alternative 1 – Existing Conditions



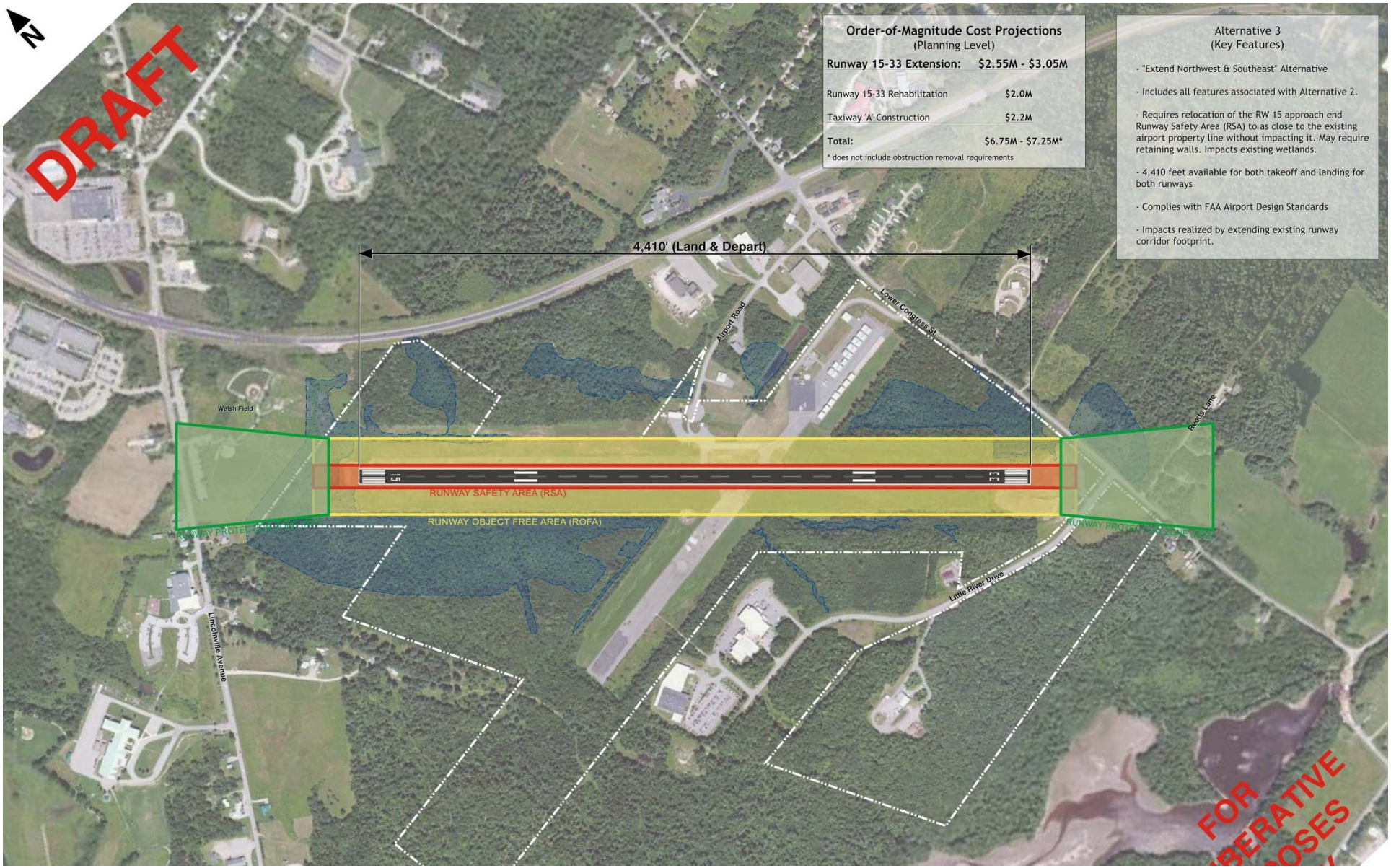
Airside: Runway 15-33 (extension)

Alternative 2 – Extend Southeast (Total 170') – Remain On-Airport



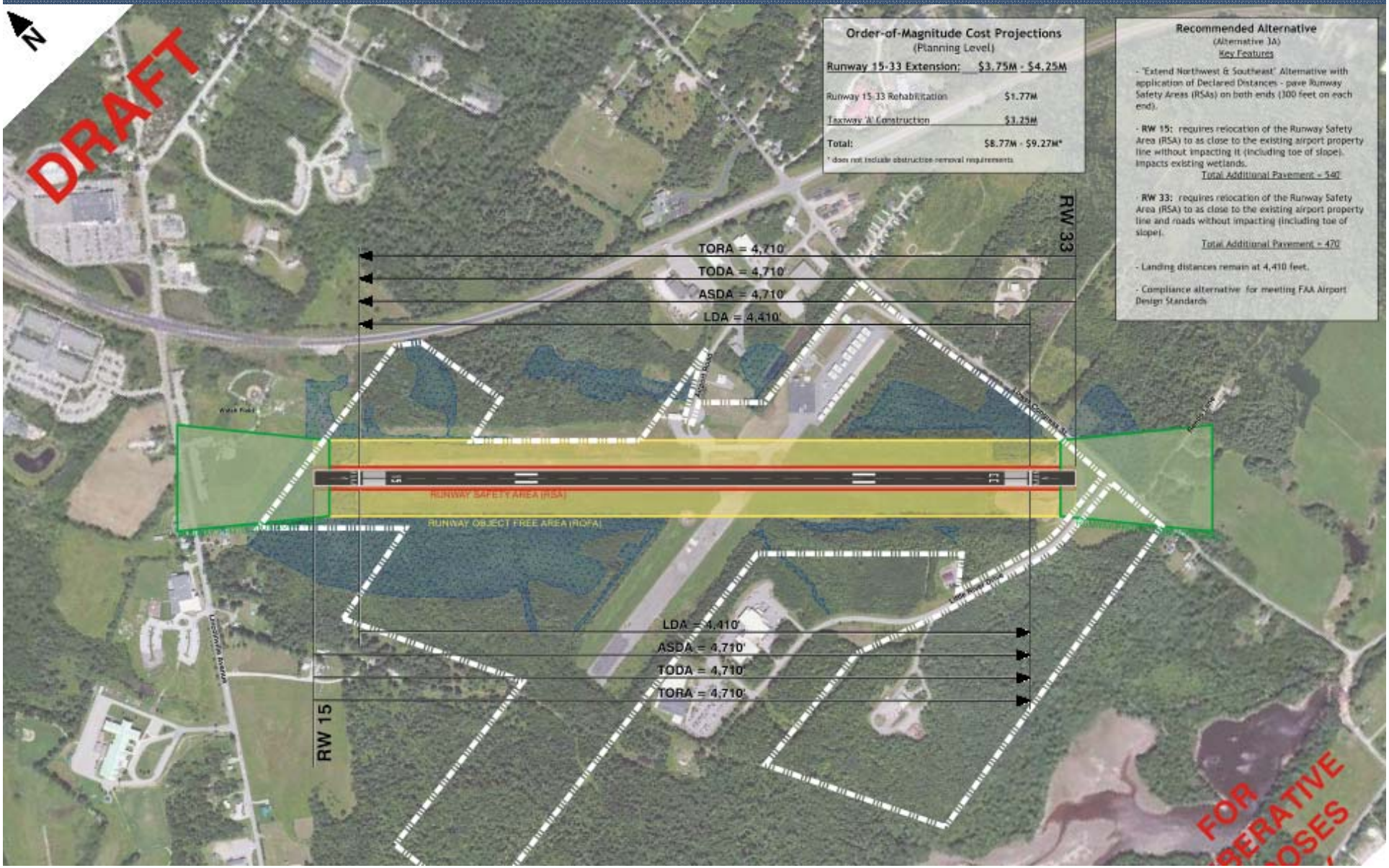
Airside: Runway 15-33 (extension)

Alternative 3 – Extend Southeast (170') & Northwest (240') – Remain On-Airport



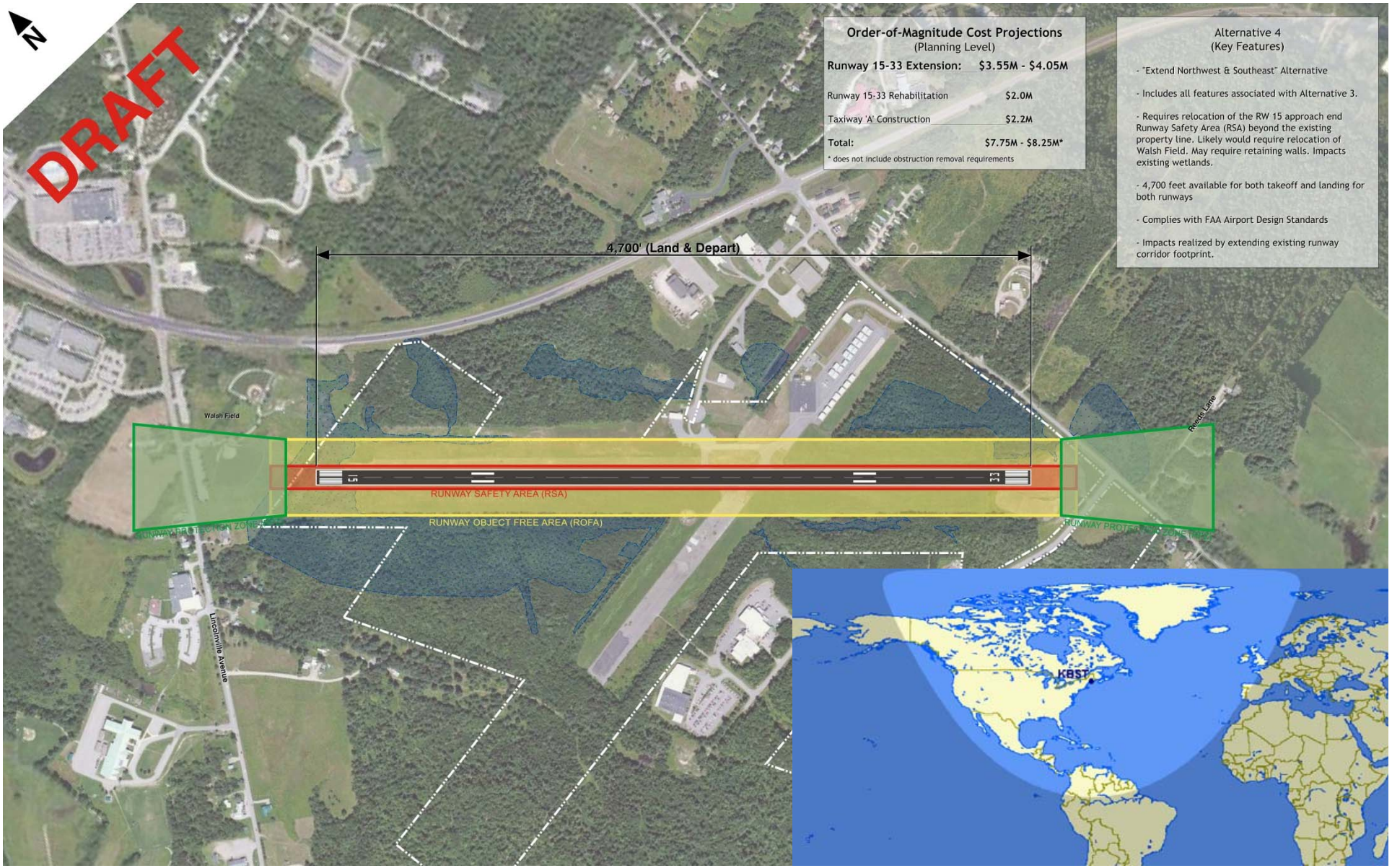
Airside: Runway 15-33 (extension)

Alternative 3A - Extend Southeast (170') & Northwest (240') - Remain On-Airport



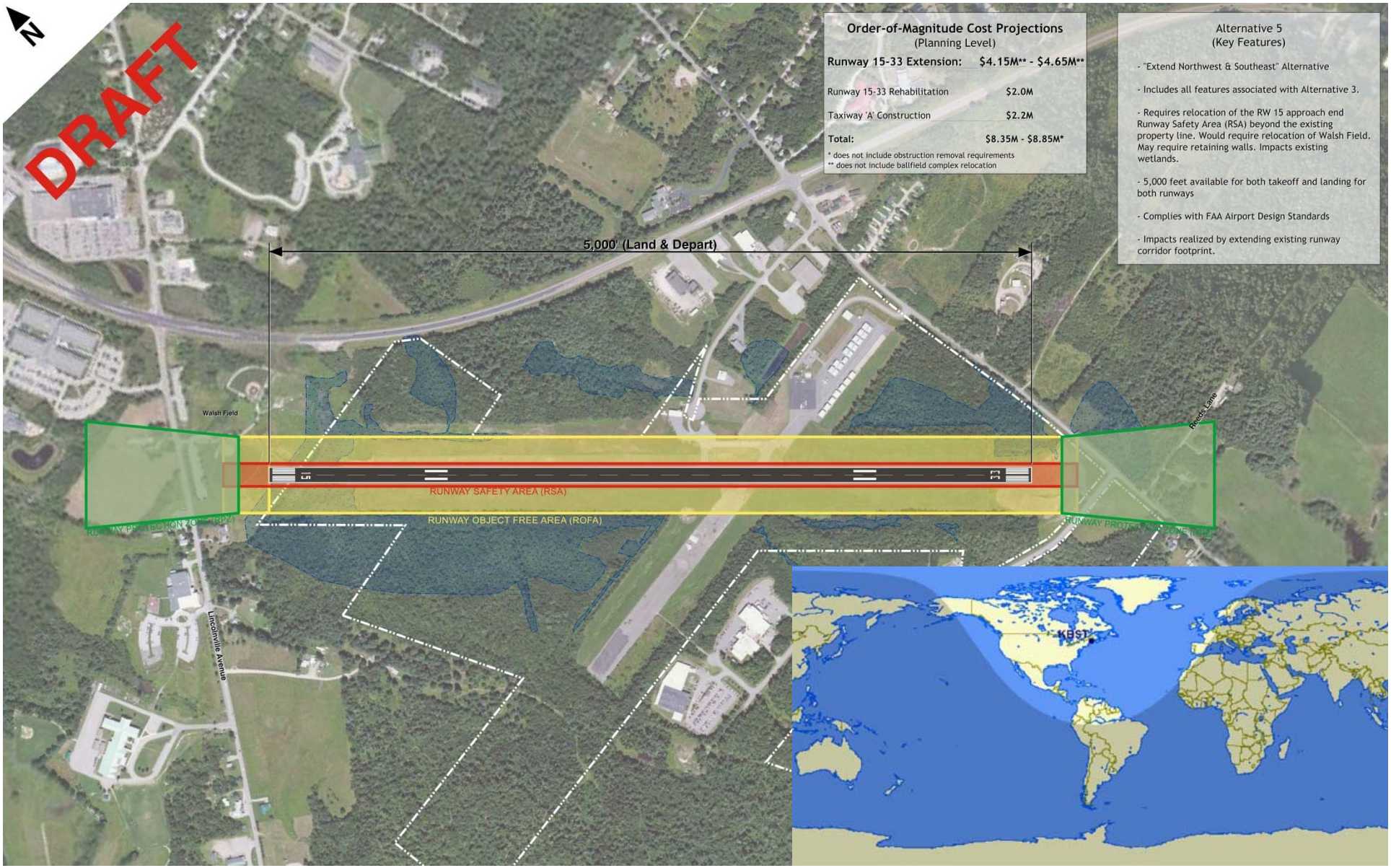
Airside: Runway 15-33 (extension)

Alternative 4 – On-Airport Development & Extend Northwest (290') – Off-Airport Impacts



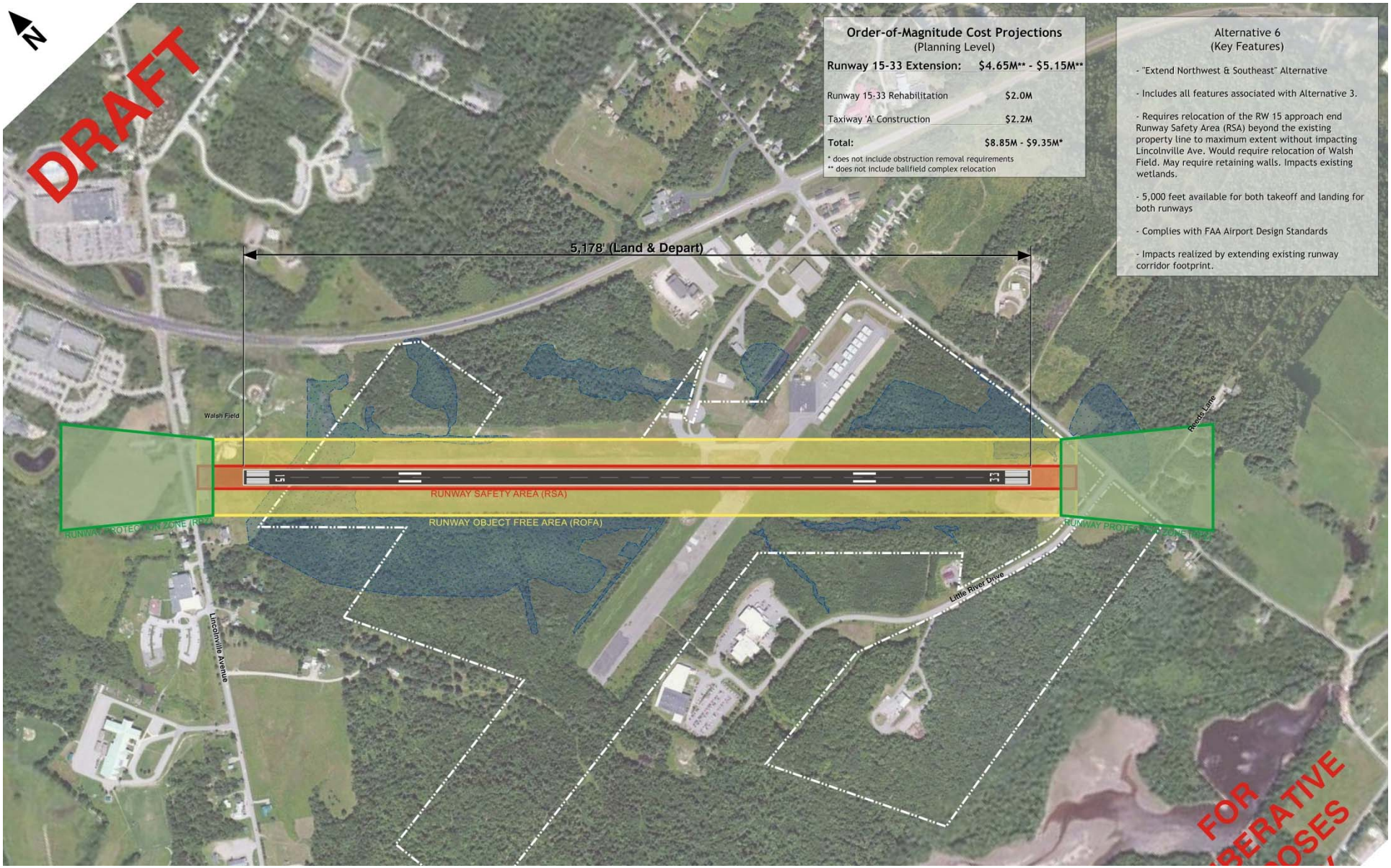
Airside: Runway 15-33 (extension)

Alternative 5 – On-Airport Development & Extend Northwest (590') – Off-Airport Impacts



Airside: Runway 15-33 (extension)

Alternative 6 – On-Airport Development & Extend Northwest (768') – Off-Airport Impacts



Airside: Runway 15-33 (extension)

Evaluation Process

- **Identified Alternatives**

  Seven Alternatives Identified

- **Preliminary Decision Matrix**

Alternatives	Impact / Benefit Factors				
	Safety / Operations	Economic	Environmental	Implementation	Avg. Total
a) No Action					
Alternative 1	3	3	3	3	3.0
b) Extend Runway					
Alternative 4	5	2	1	2	2.5
Alternative 5	5	1	1	1	2.0
Alternative 6	5	1	1	1	2.0
c) RW Relocation					
	NA	*NA*	*NA*	*NA*	*NA*
d) RW Realignment					
	NA	*NA*	*NA*	*NA*	*NA*
e) RW Shift					
	NA	*NA*	*NA*	*NA*	*NA*
f) Reduce Length					
Alternative 2	3	2	3	5	3.3
Alternative 3A	4	5	3	5	4.3
Alternative 3	4	4	3	4	3.8
g) Combination					
	NA	*NA*	*NA*	*NA*	*NA*

Notes: 1 = Negative impact/least benefit; 3= No impact/neutral benefit; 5 = Positive impact/most benefit

Airside: Runway 15-33 (extension)

Evaluation Process

- **Preliminary Benefit-Cost Matrix**

	Alternative 1	Alternative 2	Alternative 1A	Alternative 3	Alternative 2A	Alternative 4[1]	Alternative 3A	Alternative 5[1]	Alternative 6[1]
Takeoff distance (ft)	4,000	4,170	4,300	4,410	4,470	4,700	4,710	5,000	5,178
Landing distance (ft)	4,000	4,170	4,000	4,410	4,170	4,700	4,410	5,000	5,178
Estimated Range (CL300) (nm)[2]	1,900	2,150	2,275	2,420	2,450	2,710	2,720	2,950	3,100
Meets Athenahealth Goals	No	No	No	No	No	Yes	Yes	Yes	Yes
Est. Extension Cost (low)	$0	$1,180,000	$1,230,000	$3,030,000	$1,800,000	$3,980,000	$3,750,000	$4,520,000	$4,980,000
Est. Extension Cost (high)	$0	$1,680,000	$1,730,000	$3,530,000	$2,300,000	$4,480,000	$4,250,000	$5,020,000	$5,480,000
Avg. Cost per Linear RW Foot	*NA*	$8,412	$4,933	$8,000	$4,362	$6,043	$5,634	$4,770	$4,440
Avg. Cost per NM (range)	*NA*	$5,720	$3,947	$6,308	$3,727	$5,222	$4,878	$4,543	$4,358

[1] *Does not include any costs associated with relocation of existing ballfield complex or further extension of TWA.*

[2] *Based on manufacturers data (no winds aloft, does not consider operator restrictions.*

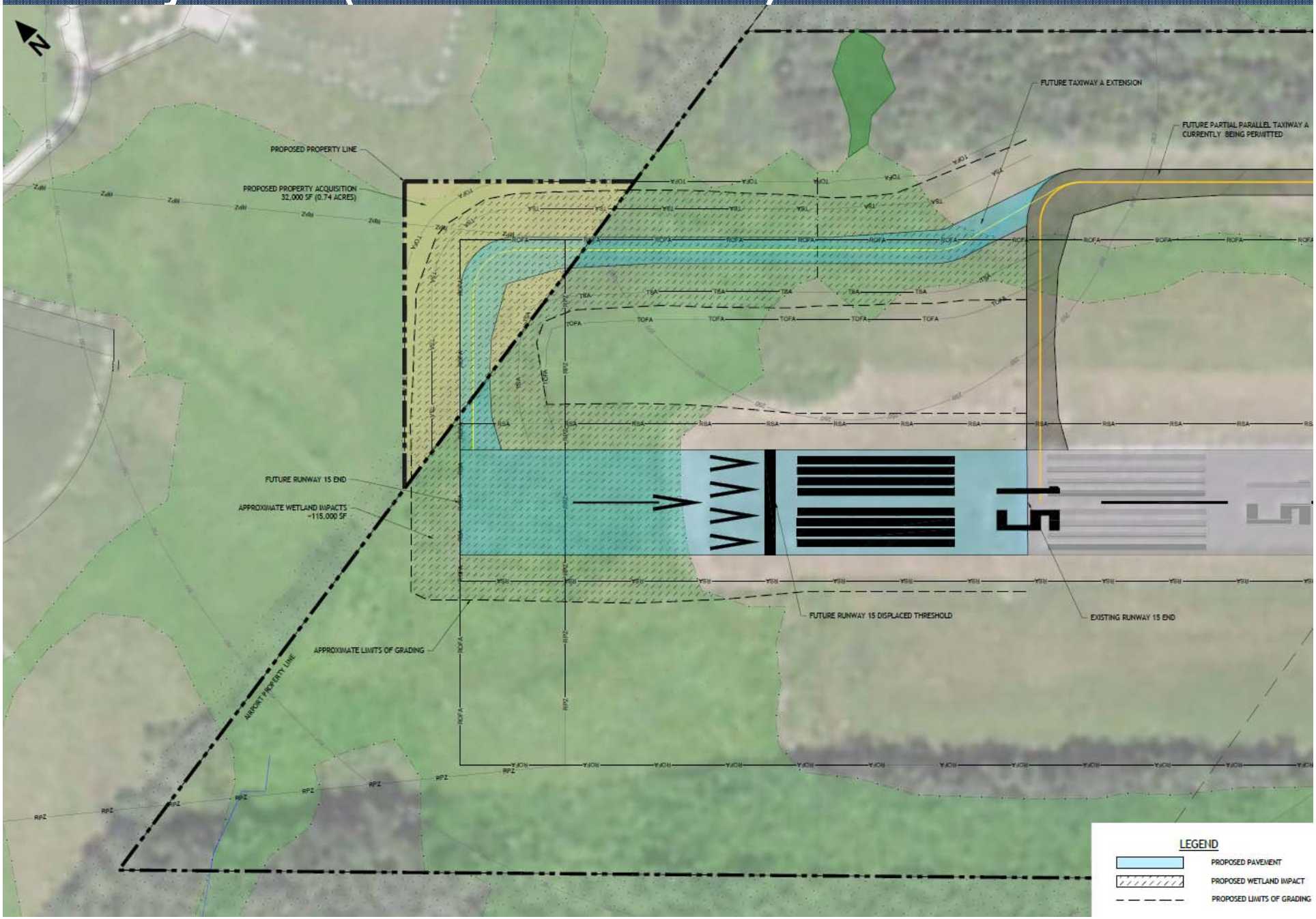
Does not include costs associated with airspace clearance and obstruction removal.

Airside: Runway 15-33 (extension)

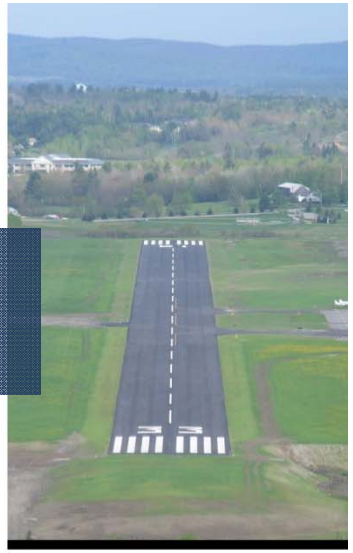
Evaluation Process

- **Key Considerations**
  - Proposed extension would fulfill operational demands/requirements for multiple area businesses. It would provide "value-added" benefits to others, and multiplier economic impacts throughout the area economy.
  - Inclusion of a runway extension on the Airport Layout Plan does not mean that it will be built – it simply means that if it were to be constructed, that it meets the federal and state airport design requirements. It specifically states on the ALP that inclusion of a project on the sheet does not guarantee funding.
  - Immediate impacts include:
    - RPZs being shifted 170' SE & 240' NW;
    - lowest airspace surfaces being lowered 5' to the SE & 7' to the NW;
    - highest airspace surfaces being lowered 8.5' to the SE & 12' to the NW;
    - Aircraft will land 170' closer to the property line to the SE & 240' closer to the property line to the NW.
    - Aircraft can start their departure roll 470' closer to the property line to the SE & 540' closer to the property line to the NW.
  - Environmental considerations must be addressed in a formal FAA Environmental Assessment (EA) – a federal action requiring public participation; as well as state permitting actions.

Runway 15-33 (TW extension alternative)





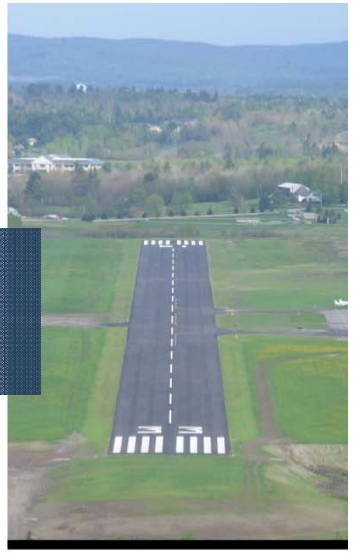



Next Steps

Upcoming Tasks

1. **Public Meeting to review Draft Recommendations**
2. **PAC Meeting # 5 to establish Final Recommendations** (added to the original schedule)
3. **Formal Presentation to the City Council**
   - **PAC to provide City Council with recommendations / dissentions**
4. **Public Hearing and City Council vote on Final Recommendations** (vote could also take place at a time separate from the public hearing)
5. **Complete AMPU Technical Report**
6. **Complete / Submit ALP**



Questions & Comments

Thank You!