



DRAFT

**Lake Elmo Airport
2035 Long-Term Comprehensive Plan (LTCP)
Executive Summary**

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ES EXECUTIVE SUMMARY

ES.1 INTRODUCTION

Lake Elmo Airport is one of seven airports owned and operated by the Metropolitan Airports Commission (MAC). It is located in Washington County, approximately 12 miles east of the downtown Saint Paul business district. The airport lies one mile east of downtown Lake Elmo, within Baytown Township, and is bordered by portions of West Lakeland Township and the City of Lake Elmo.

During 2014, Lake Elmo Airport had just over 200 based aircraft and accommodated approximately 26,000 total aircraft operations. It encompasses approximately 640 acres of land and has two paved runways. The primary runway (Runway 14-32) is 2,849 feet long by 75 feet wide, and the crosswind runway (Runway 04-22) is 2,496 feet long by 75 feet wide. The existing airport layout is depicted in **Figure ES-1**.

There have been a number of previous planning studies completed for the airport. The MAC prepared the first Long-Term Comprehensive Plan (LTCP) for Lake Elmo Airport in 1966, and updated it in 1976 and 1992. These plans included a recommendation for a relocated and extended primary runway (Runway 14-32) and an extension to the crosswind runway (Runway 04-22).

The most recent LTCP for Lake Elmo Airport prepared by the MAC and approved by the Metropolitan Council is dated December 2008. The 2008 LTCP recommended a plan to first extend crosswind Runway 04-22 to a length of 3,200 feet, along with development of a new hangar area on the east side of the airport. The relocation and extension of Runway 14-32 to 3,900 feet was identified as a viable ultimate configuration beyond the 20-year planning horizon to remain on the Airport Layout Plan.

The purpose of this 2035 Long-Term Comprehensive Plan (LTCP) is to identify future facility needs at Lake Elmo Airport for the 20-year period between the years 2015 and 2035. It will also provide a “road map” to guide the MAC’s development strategy for Lake Elmo Airport over the next 5-10 years by renewing aviation activity forecasts, envisioning facility needs and exploring alternatives to meet those needs.

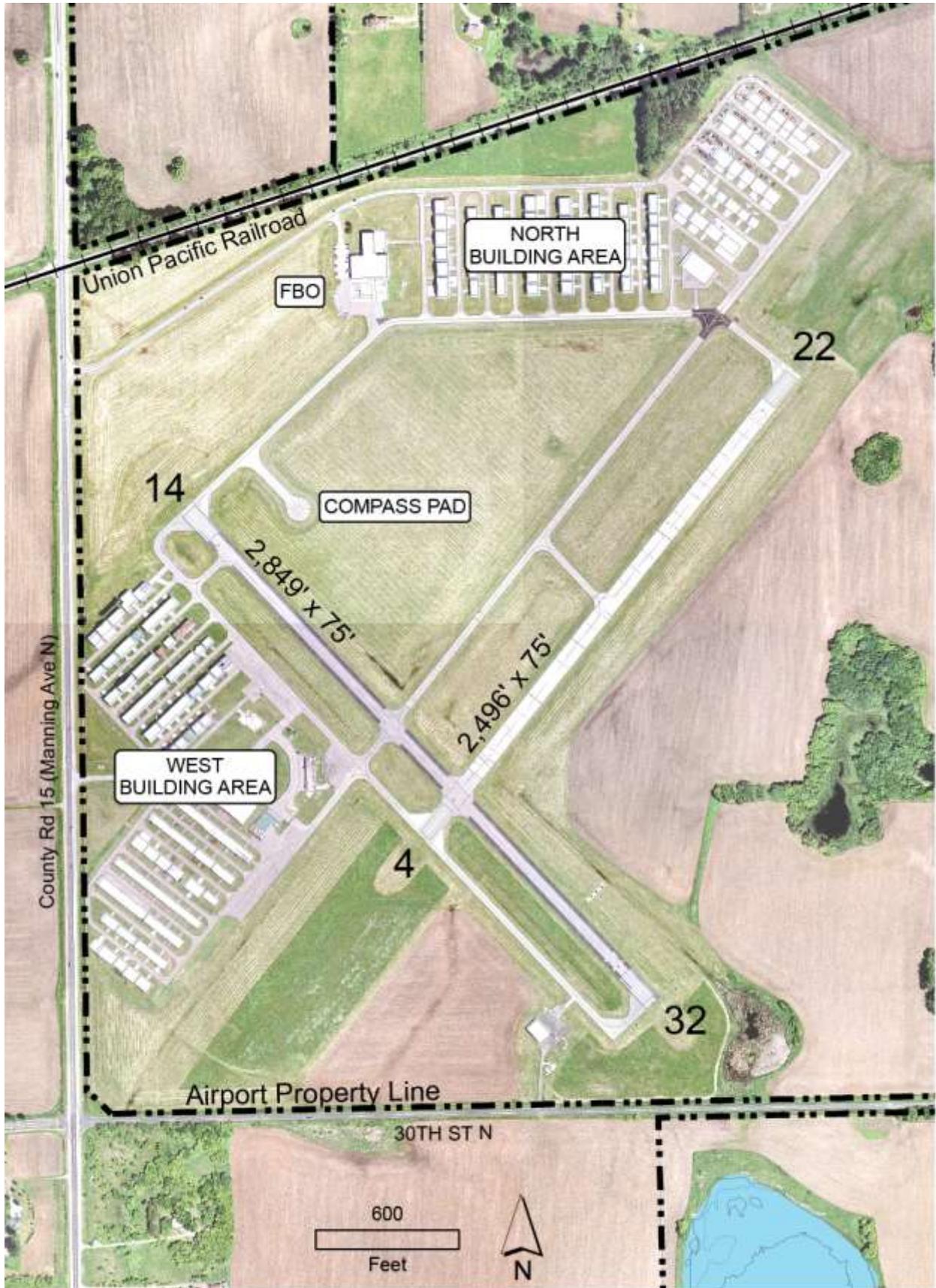
ES.2 AIRPORT ROLE

Functioning within a diverse system of metropolitan area airports, the primary role of Lake Elmo Airport is to accommodate personal, recreational, and some business aviation users within Washington County and the eastern portion of the metropolitan area. Example business services provided at the airport include flight training and aircraft maintenance.

Lake Elmo Airport’s primary role is not expected to change throughout the foreseeable planning period. The classification of the airport will continue to be that of a Reliever in the MAC system and an Intermediate Airport per Minnesota Department of Transportation – Aeronautics (MnDOT) criteria.

The design aircraft that is anticipated to use the airport on a regular basis will continue to be the family of small, propeller-driven airplanes with fewer than 10 passenger seats.

Figure ES-1: Existing Airport Layout



ES.3 FORECASTS

Aviation activity forecasts were prepared for both based aircraft and total aircraft operations.

The forecast calculations take into account assumptions relating to the economy, fuel costs, aircraft ownership trends, general aviation fleet trends including integration of very-light-jet aircraft, and general aviation taxes and fees. The baseline forecast assumes reasonable growth in all of these categories.

Along with a Base Case forecast, a range of scenarios to identify the potential upper and lower bounds of future activity levels at Lake Elmo Airport was developed. These scenarios used the same forecast approach that was used in the Base Case, but alter the assumptions related to socioeconomic conditions and aviation demand to reflect either a more aggressive or more conservative outlook. The forecast also considered the potential impacts of providing an extended runway length under the preferred development scenarios.

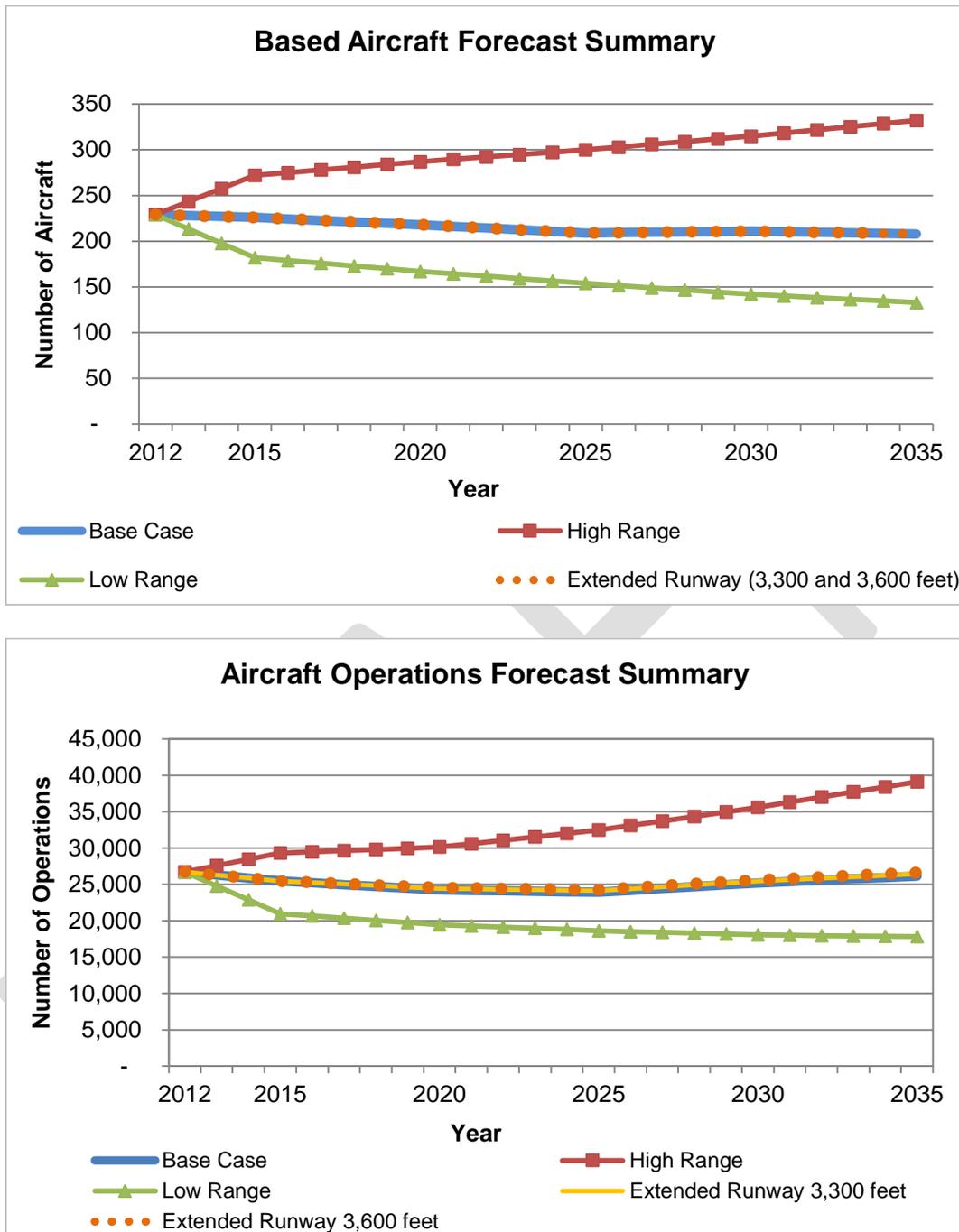
Table ES-1 compares the total number of aircraft and operations under different scenarios for Lake Elmo Airport, while Figure ES-2 shows the forecast trends graphically.

Table ES-1: Lake Elmo Airport 2035 LTCP Forecast Summary

Scenario	2012	2015	2020	2025	2030	2035
Based Aircraft						
Base Case	229	226	218	209	211	208
High Range	229	272	287	300	315	332
Low Range	229	182	167	154	142	133
Extended Runway (3,300 ft. & 3,600 ft.)	229	226	218	209	211	208
Aircraft Operations						
Base Case	26,709	25,454	24,232	23,908	25,200	26,138
High Range	26,709	29,322	30,128	32,460	35,610	39,119
Low Range	26,709	20,944	19,456	18,629	18,041	17,835
Extended Runway (3,300 ft.)	26,709	25,454	24,418	24,125	25,459	26,442
Extended Runway (3,600' ft.)	26,709	25,454	24,539	24,261	25,615	26,620

Source: HNTB Activity Forecasts

Figure ES-2: Lake Elmo Airport 2035 LTCP Forecast Comparison by Scenario



Source: HNTB Activity Forecasts

Recent activity levels at Lake Elmo Airport suggest that the number of based aircraft is declining slightly faster than predicted in the Base Case forecast scenario, but that aircraft operations are relatively stable. This indicates that the operations per based aircraft for those remaining at the airport are increasing.

The forecast scenarios indicate that future economic growth, fuel prices, technology, and national aviation policy may have a major impact on the development of general aviation. An extension to the primary runway would also affect the forecasts, though not to the

same extent as economic growth. Therefore, it is prudent to monitor actual local economic conditions closely along with aviation activity, and modify the phasing of facility improvements at the airport if that activity departs materially from forecast levels.

ES.4 FACILITY REQUIREMENTS

The existing runways at Lake Elmo Airport are short. In comparison to the other MAC-owned Reliever Airports, both the primary and crosswind runways at Lake Elmo Airport are the shortest in the system.

Based on the aviation activity forecasts, the future critical design aircraft for Lake Elmo Airport will continue to be represented by the family of propeller-driven aircraft with fewer than 10 passenger seats. This family of aircraft includes a diverse range of equipment types, ranging from small single-engine piston aircraft used primarily for recreational and personal flying, up to larger single- and twin-engine turboprop aircraft that are used more predominantly for business aviation. Typical aircraft in the latter category include the single-engine turboprop Pilatus PC-12 and the twin-engine turboprop Beechcraft King Air 200/250.

Runway Length

Based on runway length guidance provided by the Federal Aviation Administration (FAA), the primary runway length at Lake Elmo Airport should be between 3,300 feet and 3,900 feet to accommodate 95 percent and 100 percent of the aircraft types in the design aircraft family, respectively.

While the guidance from the FAA serves as a good baseline, more detailed information related to runway length requirements can be derived from manufacturer performance charts published for specific aircraft types. Based on a deeper assessment of runway length requirements for several representative aircraft types in the design aircraft family for Lake Elmo Airport, the optimal primary runway length is approximately 3,600 feet. This length fits into the range predicted by the FAA and will accommodate the majority of small turboprop and multi-engine piston aircraft departing at an operationally-feasible weight.

Meanwhile, a future length of 2,750 feet is recommended for the crosswind runway to better accommodate lower crosswind capable aircraft during periods of gusty conditions.

Also, based on user input, development of a new non-precision GPS-type instrument approach for Runway 14 and a GPS overlay of the existing non-precision approach for Runway 04 would enhance the operational capabilities of the airport. Planning for the establishment of these non-precision approaches is recommended for consideration.

Runway Protection Zones

The Runway Protection Zone (RPZ) is an area at ground level prior to the threshold or beyond the departure runway end to enhance the safety and protection of people and property on the ground. According to the FAA, this is best achieved through airport owner control over RPZs. Control is preferably exercised through the acquisition of sufficient property interest in the RPZ and includes clearing of RPZ areas and maintaining them clear of incompatible objects and activities.

In 2012, the FAA issued Interim Guidance to clarify its policy on what constitutes a compatible land use within an RPZ and how to evaluate proposed land uses that would reside in an RPZ.

Based on this guidance, the following existing land uses are not considered to be compatible within an existing RPZ at Lake Elmo Airport:

- Existing Runway 14 End: County Road 15/Manning Avenue, the north Airport Entrance Driveway, the Union Pacific Railroad, and non-owned property on the west side of Manning Avenue
- Existing Runway 32 End: 30th Street North
- Existing Runway 04 End: 30th Street North

Coordination with the FAA in the form of an RPZ Alternatives Analysis is required when an incompatible land use would enter the limits of the RPZ due to a triggering airfield project, an off-airport development proposal, or other operational change at the airport. Achieving compliance with the FAA's current RPZ compatibility criteria is a primary objective of this LTCP.

Landside Facilities

Existing landside facilities, including the existing number of aircraft storage hangars, appear to be adequate to support anticipated levels for both based aircraft and total operations. No new hangar development areas are proposed, although areas to accommodate the construction of additional hangars should be preserved in the LTCP.

The existing MAC Maintenance Facility is in excellent condition; however, an additional bay will likely be needed during the planning horizon to accommodate larger-dimension equipment. Also, an enclosed materials storage facility should be considered to store sand and other solid materials. There is ample space adjacent to the existing maintenance building for these improvements.

ES.5 ALTERNATIVES ANALYZED FOR DEVELOPMENT

Four development alternatives were evaluated in the Alternatives Analysis. These alternatives are described below and depicted in **Figure ES-3**.

Figure ES-3: LTCP Development Alternatives Considered



Note: See the alternatives analysis section for more detail.

The first alternative is the Base Case, which maintains the existing airfield configuration and runway lengths. The primary focus of the Base Case would be to reconstruct existing runway and taxiway pavements as required to maintain operational capabilities throughout the planning period.

Base Case	
<p>Advantages</p> <ul style="list-style-type: none"> • No changes to existing flight patterns • Retains use of existing north side end taxiway • Wind coverage maintained • No wetland mitigation • No impact to existing 30th Street N roadway alignment • Lowest development cost 	<p>Disadvantages</p> <ul style="list-style-type: none"> • Primary runway cannot be extended to the optimal 3,600-foot length • Additional land acquisition required to comply with FAA RPZ criteria <ul style="list-style-type: none"> ○ Existing incompatible RPZ land uses are not addressed ○ Improvements to the Manning Avenue corridor will trigger an RPZ Alternatives Analysis
<p><i>Estimated Development Cost: \$5,400,000.00</i></p>	

Alternative A considers extending the crosswind Runway 04-22 to a length of 3,200 feet. Existing Runway 14-32 would be maintained at its existing length and configuration. Alternative A represents the Preferred Alternative from the previous LTCP.

Alternative A	
<p>Advantages</p> <ul style="list-style-type: none"> • Preferred alternative from the previous LTCP • Retains use of existing north side end taxiway • No impact to existing 30th Street N roadway alignment • Low development cost when compared to other alternatives 	<p>Disadvantages</p> <ul style="list-style-type: none"> • Primary runway cannot be extended to the optimal 3,600-foot length and is not aligned for optimal wind coverage • Additional land acquisition required to comply with FAA RPZ criteria <ul style="list-style-type: none"> ○ Existing incompatible RPZ land uses are not addressed ○ Improvements to the Manning Avenue corridor will trigger an RPZ Alternatives Analysis ○ RPZ incompatibilities introduced on both ends of Runway 04-22 • Shifts existing traffic patterns and noise impacts to the northeast and southwest to align with lengthened crosswind runway alignment, moving the Runway 22 end closer to an established residential neighborhood • Requires wetland mitigation
<p><i>Estimated Development Cost: \$7,700,000.00</i></p>	

Alternative B considers relocating the primary Runway 14-32 and constructing it to a length of 3,600 feet. The relocation would include shifting the existing runway centerline approximately 700 feet parallel to, and northeast of, the existing alignment.

Alternative B	
<p>Advantages</p> <ul style="list-style-type: none"> • Runway 14-32 RPZs comply with FAA compatibility criteria • Development program can advance without the time needed for an RPZ Alternatives Analysis • No land acquisition required • Primary runway can be extended to optimal 3,600-foot length • Maintains continuity of existing airport operational footprint; primary runway remains on 14-32 alignment <ul style="list-style-type: none"> ○ Runway 14-32 alignment also ensures optimal wind coverage • New Runway 14-32 can be constructed while existing Runway 14-32 is in operation 	<p>Disadvantages</p> <ul style="list-style-type: none"> • Relocation of 30th Street N will alter established traffic flows in the vicinity of the airport • Existing north side end taxiway must be relocated • Shifts existing traffic patterns and noise impacts to the southeast to align with the relocated/lengthened primary runway, moving the Runway 32 end closer to an established residential neighborhood • Requires wetland mitigation • Highest development cost
<p><i>Estimated Development Cost: \$11,500,000.00</i></p>	

Alternative C also considers relocating primary Runway 14-32 by shifting the centerline 700 feet to the northeast. However, in this alternative, the Runway 14 end would be placed at the existing north side end taxiway and the runway would be extended to a length of 3,900 feet. Alternative C represents the “legacy” alternative that has been shown on previous Airport Layout Plans for Lake Elmo Airport for many years.

Alternative C	
<p>Advantages</p> <ul style="list-style-type: none"> • Primary runway can be extended to 3,900 feet, the longest of any alternative, but beyond the optimal length of 3,600 feet identified in the facility requirements analysis • Legacy development alternative dating back many years • Retains use of existing north side end taxiway • No land acquisition required • Maintains continuity of existing airport operational footprint; primary runway remains on 14-32 alignment <ul style="list-style-type: none"> ○ Runway 14-32 alignment also ensures optimal wind coverage • New Runway 14-32 can be constructed while existing Runway 14-32 is in operation 	<p>Disadvantages</p> <ul style="list-style-type: none"> • Incompatible land uses in the Runway 14 RPZ require an RPZ Alternatives Analysis • Relocation of 30th Street N will alter established traffic flows in the vicinity of the airport • Shifts existing traffic patterns and noise impacts to the southeast to align with the relocated/lengthened primary runway, moving the Runway 32 end closer to an established residential neighborhood • Requires wetland mitigation • High development cost
<p><i>Estimated Development Cost: \$10,600,000.00</i></p>	

After reviewing all of the concepts, costs, advantages and disadvantages, the Preferred Alternative recommended for Lake Elmo Airport is Alternative B, as depicted in **Figure ES-4**.

In summary, Alternative B proposes the following improvements for the 20-year planning period:

- Relocate primary Runway 14-32 by shifting the centerline 700 feet to the northeast and extend it to a length of 3,600 feet, including all necessary grading and clearing
- Relocate 30th Street N around the new Runway 32 end RPZ
- Construct a new cross-field taxiway to serve the new Runway 14 end, including taxiway lighting and/or reflectors
- Convert existing Runway 14-32 into a partial parallel taxiway and construct additional taxiway infrastructure as needed to support the relocated runway, including taxiway lighting and/or reflectors
- Reconstruct existing crosswind Runway 04-22 and extend it to 2,750 feet as recommended in the facility requirements section, including runway lighting, Precision Approach Path Indicator (PAPI) systems, and a new taxiway connector
- Pursue the establishment of a new non-precision instrument approach to the Runway 14 end, and upgrade the existing Runway 04 approach to an RNAV (GPS) type

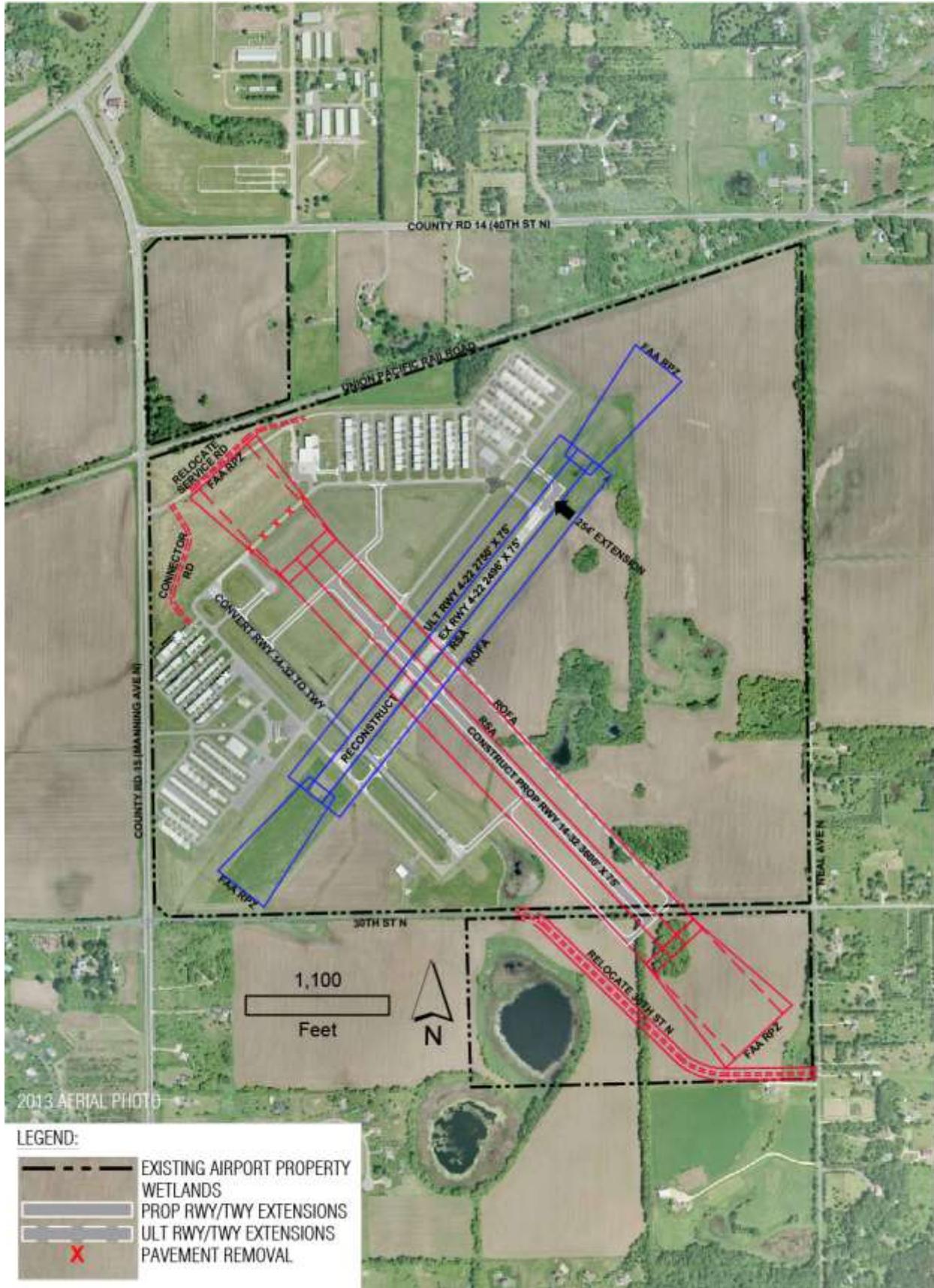
Alternative B is recommended as the Preferred Alternative for the following reasons:

- It provides compatible RPZs entirely on airport property for the replacement Runway 14-32.
- It provides a runway length of 3,600 feet, which is the optimal length identified in the Facility Requirements analysis for the long-term demand at Lake Elmo Airport.

After the 3,600-foot length is constructed, the primary runway will be fully built-out in terms of RPZ compliance, with no further extensions contemplated during the 20-year planning horizon. This will give the surrounding municipalities assurance of the airport's future footprint for comprehensive community planning.

- It maintains the continuity of the existing operational footprint as the primary runway remains on the 14-32 alignment. This ensures optimal wind coverage as well.
- It optimizes the use of existing airport property, including that purchased in the late 1960s and 1970s for the relocation of 30th Street N. No additional property acquisition is required.
- It allows the development program to advance more efficiently without the time needed to complete an RPZ Alternatives Analysis.
- It minimizes operational disruptions during construction as the replacement Runway 14-32 can be constructed with the existing Runway 14-32 in operation.
- It is consistent with the long-term vision for the airport, which has included a relocated and longer primary runway for many years.

Figure ES-4: LTCP Preferred Alternative



ES.6 ENVIRONMENTAL CONSIDERATIONS

The MAC will complete an Environmental Assessment (EA) and/or an Environmental Assessment Worksheet (EAW) to meet Metropolitan Council guidelines and FAA requirements for utilizing Airport Improvement Program (AIP) grant funds. The most notable environmental categories that will require study as a part of any implementation of the Preferred Alternative at Lake Elmo Airport include aircraft noise, sanitary sewer/water utilities, and wetlands.

Noise

To evaluate potential aircraft noise impacts associated with the Preferred Alternative, the MAC prepared Baseline Condition noise contours for Lake Elmo Airport, along with 2035 Preferred Alternative Condition noise contours for comparison. The contours represent noise levels, expressed in the Day-Night Average Sound Level (DNL) metric. The FAA requires the DNL noise metric to determine and analyze noise exposure and aid in the determination of aircraft noise and land use compatibility issues around United States airports.

The FAA currently suggests that three different DNL levels (65, 70, and 75 DNL) be modeled but considers the 65 dB DNL contour line as the threshold of significance for noise impact. As such, sensitive land use areas (e.g., residential) around airports that are located in the 65 dB or greater DNL contours are considered by the FAA as incompatible structures.

The Metropolitan Council suggests that the 60 DNL contour be included for airports in an urban environment and the 55 DNL in cases where airports are located outside the Metropolitan Urban Service Area (MUSA). Currently, Lake Elmo Airport lies outside of the MUSA, so the 55 DNL noise contour will be shown for advisory purposes. However, it is not linked to any requirements for noise attenuation or mitigation.

In summary, when the 2035 Preferred Alternative Condition contours are compared to the Baseline (existing) Condition contours:

- For the 65 DNL contour, the acreage contained within the contour increases by 22 percent, with no residential parcels contained in the contour under either condition. The 65 DNL contour extends off the airport property in the Existing Condition but is contained on airport property in the Preferred Alternative Condition.
- For the 60 DNL contour, the acreage contained within the contour increases by six percent, with no residential parcels contained in the contour under either condition. The 60 DNL contour extends off the airport property in the Existing Condition but is contained on airport property in the Preferred Alternative Condition.
- For the 55 DNL contour, the acreage contained within the contour decreases by five percent but the number of residential parcels contained in the contour increases by 11.

Sanitary Sewer and Water Utilities

Lake Elmo Airport currently lies outside of the Metropolitan Urban Services Area (MUSA). However, the Metropolitan Council Environmental Services (MCES) agency has requested that the MAC provide sanitary sewer and water services for all of the hangar areas in the MAC's Reliever system, including Lake Elmo Airport. This request was primarily related to concerns about non-compliant well and septic systems that may be in existence at the MAC's airports. Compliant well and septic systems are allowed to remain until sanitary sewer and water services are made available.

Lake Elmo Airport has no sanitary sewer and water services available. At the time of this plan, there are no adjoining land that have services. However, residential development is occurring on adjoining properties to the west of the airport. Sanitary sewer and water services are being extended to this new residential development area. Therefore, the opportunity for connection to those systems may arise in the future.

The MAC will continue to study the costs, benefits and feasibility of serving the airport with sanitary sewer and water versus well and septic systems. It is recommended that the steps be taken for installation of sanitary sewer and water facilities at Lake Elmo when a MUSA, and related agreements and access, are available.

Wetlands

There are numerous wetland areas around the airport. Most are regulated under the Wetland Conservation Act (WCA) and the Valley Branch Watershed District. There is at least one Department of Natural Resources (DNR) regulated wetland on site. Approximately 36 acres of wetlands were identified within airport property, with varying wetland types.

Any projects completed at the airport require conformance with the watershed district, as well as WCA and/or DNR regulations regarding wetlands. If wetland impacts are suspected with MAC projects, avoidance, minimization efforts and appropriate mitigation will be assessed. The watershed district also reviews plans for water quality. Previous airport projects have required rate and volume controls, infiltration or other means to enhance water quality. These and other best management practices will continue with future projects listed in the Preferred Alternative.

ES.7 IMPLEMENTATION PLAN

The LTCP is by nature a planning document and does not authorize any construction. Adoption of the LTCP is only the first step in the project implementation process. Before any construction can begin, the project(s) must first be depicted on an FAA-approved Airport Layout Plan (ALP), evaluated through an environmental review process, and then compete for funding through FAA and/or State grant programs. Once funding is secured, final project engineering and design will take approximately one year to complete with contractor bidding and construction following thereafter.

Near-Term Development encompasses the project elements necessary to relocate and extend Runway 14-32 to its ultimate configuration and length of 3,600 feet. It also includes reconstructing existing Runway 04-22 at its existing length. It is anticipated that this development may occur within the next 5-7 years.

Mid-Term Development involves project elements to extend Runway 04-22 to its ultimate length of 2,750 feet, which could be accomplished concurrently with Phase 1 but is not required to achieve the desired utility of the Preferred Alternative. It is anticipated that this development may occur in the 8-20 year timeframe.

Long-Term Development involves projects that are anticipated to occur beyond the 20-year planning horizon.

Project cost estimates for the Preferred Alternative are summarized in **Table ES-2**.

Table ES-2: Preferred Alternative Cost Estimates

Item #	Project Element	Estimated Cost
Near-Term Development (Plan Years 5 - 7)		
1	Construct New RWY 14-32 (3,600' x 75')	\$3,950,000
2	Construct RWY 14-32 Electrical Systems (MIRL, REIL, and PAPI)	\$750,000
3	Construct TWY System for New RWY 14-32 (w/MITL)	\$2,400,000
4	Wetland Mitigation	\$350,000
5	Relocate 30th St N	\$1,200,000
6	Relocate Airport Service Rd	\$250,000
7	Convert Old RWY 14-32 to TWY (w/MITL)	\$525,000
8	Reconstruct Existing RWY 04-22 (2,496' x 75')	\$2,050,000
Near-Term Development Total:		\$11,475,000
Mid-Term Development (Plan Years 8 - 20)		
9	Extend RWY 04-22 to 2,750' (254' x 75' Extension)	\$575,000
10	Construct RWY 04-22 Electrical Systems (MIRL full length, REIL, and PAPI)	\$625,000
11	Construct TWY System to Extended RWY 22 (w/MITL full length)	\$475,000
12	Wetland Mitigation	\$175,000
13	Sewer/Water System Extension to Airport	\$2,000,000
Mid-Term Development Total:		\$3,850,000
Long-Term Development (Beyond the 20-Year Planning Horizon)		
14	Construct TWY System for New RWY 14-32 (w/MITL) (Non-Essential)	\$2,150,000
Long-Term Development Total:		\$2,150,000
Total Development Cost:		\$17,475,000

Notes: Cost estimates reflect 2015 pricing and include engineering costs and contingencies.

Source: SEH and MAC cost estimates

ES.8 PUBLIC INVOLVEMENT PROCESS

The LTCP stakeholder outreach plan consists of three primary phases. The first phase involved meeting with stakeholders before the draft LTCP plan was finalized in order to provide information about the plan's purpose, process, preliminary findings, and timeline.

The meetings held during the first phase of this stakeholder engagement process are listed in **Table ES-3**.

Table ES-3: Phase 1 Stakeholder Engagement Meetings

Audience	Materials Covered	Date	Location
FAA	LTCP Process, Review of Alternatives	08/21/2014	MAC
FAA, MnDOT, Met Council, County	LTCP Process, Review of Alternatives, Preliminary Findings	9/22/2014	MAC
City, County, Townships	LTCP Process, Review of Alternatives, Preliminary Findings	10/13/2014	LE City Hall
FBO	LTCP Process, Review of Alternatives, Preliminary Findings	10/29/2014	FBO
Airport Users and Tenants	LTCP Process, Review of Alternatives, Preliminary Findings	11/18/2014	Airport
MAC Reliever Advisory Council	LTCP Process, Review of Alternatives, Preliminary Findings	12/9/2014	MAC
FAA	LTCP Technical Review Session	2/18/2015	FAA
City, County, Townships	Review of Draft LTCP Recommendations & Public Engagement Plan	4/21/2015	LE City Hall

The second phase will consist of the formal public review period after the draft plan has been completed and the Commission has approved it for public distribution. This public review period will include a 45-day written comment period with two public information meetings scheduled during this timeframe.

The third phase will occur after the public comment period closes. During this time, public feedback will be considered and incorporated into the plan as appropriate. The end result will be a final draft LTCP for Commission adoption and Metropolitan Council formal review. During this time, stakeholder outreach will continue to occur on an as-needed basis.



Metropolitan Airports Commission

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