Appendices

Appendix A – Runway Length Needs Determination
Appendix B – 30th Street North Realignment Alternatives Review
Appendix C – Wetland Delineation, Functional Assessment, and Associated Correspondence
Appendix D – Section 106 Documentation & Correspondence
Appendix E – U.S. Fish & Wildlife Section 7 Consultation Correspondence
Appendix F – Minnesota DNR Natural Heritage Information System (NHIS) Materials
Appendix G – USDA NRCS Farmland Conversion Impact Rating Form AD-1006
Appendix H – Phase I Environmental Site Assessment Report
Appendix I – Wildlife Hazard Site Visit Documentation & USDA-APHIS Correspondence
Appendix J – Aircraft Noise Analysis Report
Appendix K – Agency Scoping Documentation & Correspondence
Appendix L – Public Involvement
Appendix A – Runway Length Needs Determination
This appendix substantiates and documents the need for primary and crosswind runway lengths that meet user needs at Lake Elmo Airport, using the LTCP runway length analysis as a starting point. The following subsections present aircraft operations data and the associated runway length analysis:

- **Existing and Forecasted Aircraft Activity Estimates**
  - LTCP Base Year (2012) Aircraft Operations Estimate
  - Revised Base Year (2016) Aircraft Operations Estimate
  - LTCP Aircraft Operations Forecast (2012 to 2035)
  - Revised Aircraft Operations Forecast (2016 to 2035)

- **Runway Length Analysis**
  - Role and Classification of the Airport
  - FAA Runway Length Guidance
  - Takeoff Operations
  - Landing Operations
  - Crosswind Runway Length
  - Stage Length Considerations
  - Runway Length Conclusions

- **Summary of Recommendations**

### 1. Existing and Forecasted Aircraft Activity Estimates

Aircraft activity estimates for Lake Elmo Airport provide the basis for identifying the critical aircraft for which the runways at the Airport should be designed. According to FAA Advisory Circular (AC) 150/5000-17, *Critical Aircraft and Regular Use Determination*, "the critical aircraft is the most demanding aircraft type, or grouping of aircraft with similar characteristics, that make regular use of the airport. Regular use is 500 annual operations, including both itinerant and local operations but excluding touch-and-go operations. An operation is either a takeoff or a landing."

Aircraft activity estimates also provide the basis for developing several operational inputs used to generate existing and future noise exposure maps with the FAA Aviation Environmental Design Tool (AEDT), such as the number of aircraft operations and the types of aircraft (fleet mix). This report presents the method used to estimate aircraft activity for the Lake Elmo Airport EA/ EAW. These estimates were used to substantiate the purpose and need for proposed airfield improvements and to develop noise exposure contour maps for the no-action and reasonable alternatives.

Aircraft activity at Lake Elmo Airport is analyzed in the following sections:

- LTCP Base Year (2012) Aircraft Operations Estimate
- Revised Base Year (2016) Aircraft Operations Estimate
- LTCP Aircraft Operations Forecast (2012 to 2035)
- Revised Aircraft Operations Forecast (2016 to 2035)
1.1 LTCP Base Year (2012) Aircraft Operations Estimate

This section summarizes the criteria and assumptions used by the LTCP to identify base year aircraft operations and fleet mix at Lake Elmo Airport.

There is no Air Traffic Control Tower (ATCT) at Lake Elmo Airport, so there is no "official" count of aircraft operations. The existing (2014) level of aircraft operations at the Airport (25,727 annual operations, or approximately 70 operations per day) was calculated for the LTCP as follows:

1. The MAC Noise and Operations Monitoring System (MACNOMS) flight tracking system recorded 17,705 flight tracks for aircraft arriving to or departing from Lake Elmo Airport during 2014.
2. The MACNOMS capture rate at all MAC-owned towered reliever airports (MACNOMS tracks compared to the official FAA Tower Count) for 2014 was 66.5%. The Anoka County-Blaine Airport (ANE) capture rate is 68.82%, and was used to adjust the Lake Elmo data set to account for missing flight tracks in MACNOMS.
3. The MACNOMS capture rate adjustment for Lake Elmo is as follows: 17,705 MACNOMS recorded tracks / 68.82% ANE capture rate = 25,727 annual operations.

This estimate is consistent with on-site observations conducted at the Airport during a two-week period in December 2011 and a one-week period in August 2012.

- Average daily aircraft operations were 52 in December 2011 and 87 in August 2012.
- Monthly operations estimates for December 2011 and August 2012 were extrapolated using data from the towered reliever airports.
- A ratio of December and August operations as a percentage of the entire year was established using data from the towered reliever airports.
- This ratio was applied to the monthly estimates at Lake Elmo to estimate total 2012 operations (26,709).

The LTCP used the 2012 base year estimate of 26,709 aircraft operations to prepare forecasts for the years 2015, 2020, 2025, 2030, and 2035. The LTCP estimated operational fleet mix in 2012 by aircraft categories as follows:

- 26,088 (97.7%) single-engine piston operations (including experimental and light sport),
- 112 (0.4%) multi-engine piston operations,
- 56 (0.2%) turboprop operations,
- 4 (<0.1%) jet operations, and
- 449 (1.7%) helicopter operations.

According to the Minneapolis-St. Paul Reliever Airports Activity Forecasts Technical Report (revised October 2014), the percentage shares of base year operations per aircraft type were estimated based on MAC radar data and observations collected during the December 2011 and August 2012 on-site counts. These aircraft type shares assume that the annual shares of single-engine piston, multi-engine piston, and helicopter operations for the entire 2012 calendar year were consistent with observations from the on-site counts, and that MAC radar identified all operations by turboprop and jet aircraft that occurred at Lake Elmo Airport in 2012.
The LTCP used the 2012 annual operations estimates by aircraft category described above as a critical input in deriving the composition of the operational fleet by specific aircraft make and model, for conducting a base case (existing conditions) noise analysis. The process used to derive operations by specific aircraft make and model was as follows:

- MACNOMS data was gathered for the 12-month period ending October 2014, which included 1,187 flight tracks for which the aircraft make and model was known.
- The composition of aircraft types for the 1,187 flight tracks in this dataset for which the aircraft make and model was known was quantified on a per aircraft basis.
- The summary 2012 base year operations numbers described above served as the targets for scaling the MACNOMS fleet mix to equal total annual aircraft operations by operations type (i.e. arrival, departure, touch-and-go) and aircraft category (i.e. single-engine piston, multi-engine piston, turboprop, etc.). Table 1 illustrates the adjustments made to scale the MACNOMS counts to match the 2012 forecast base year operations estimates.
- In cases where there were no MACNOMS flight tracks for which the aircraft make and model was known, flight tracks for similar types of operations by similar aircraft types were substituted. For example, there were no flight tracks for helicopter arrivals or touch-and-goes in the dataset, but there were flight tracks for helicopter departures. Therefore, the helicopter arrivals and touch-and-goes were modeled based on helicopter departure data.

<table>
<thead>
<tr>
<th>Operation Type</th>
<th>Aircraft Group</th>
<th>MACNOMS Count</th>
<th>Forecast Target</th>
<th>Adjustment Factor</th>
<th>Adjusted Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Single Engine Piston + Other</td>
<td>501</td>
<td>11,436</td>
<td>22.826</td>
<td>11,436</td>
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<tr>
<td></td>
<td>Multi-Engine Piston</td>
<td>60</td>
<td>46</td>
<td>0.767</td>
<td>46</td>
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<tr>
<td></td>
<td>Turboprop</td>
<td>26</td>
<td>28</td>
<td>1.077</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>Jets</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Helicopter</td>
<td>0</td>
<td>162</td>
<td></td>
<td>162</td>
</tr>
<tr>
<td></td>
<td><strong>Arrival Total</strong></td>
<td><strong>587</strong></td>
<td><strong>11,674</strong></td>
<td></td>
<td><strong>11,674</strong></td>
</tr>
<tr>
<td></td>
<td>Single Engine Piston + Other</td>
<td>531</td>
<td>11,436</td>
<td>21.537</td>
<td>11,436</td>
</tr>
<tr>
<td></td>
<td>Multi-Engine Piston</td>
<td>39</td>
<td>46</td>
<td>1.179</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td>Turboprop</td>
<td>24</td>
<td>28</td>
<td>1.167</td>
<td>28</td>
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<tr>
<td></td>
<td>Jets</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Helicopter</td>
<td>2</td>
<td>162</td>
<td></td>
<td>162</td>
</tr>
<tr>
<td></td>
<td><strong>Departure Total</strong></td>
<td><strong>596</strong></td>
<td><strong>11,674</strong></td>
<td></td>
<td><strong>11,674</strong></td>
</tr>
<tr>
<td>Touch and Go</td>
<td>Single Engine Piston + Other</td>
<td>4</td>
<td>1,608</td>
<td>402</td>
<td>1,608</td>
</tr>
<tr>
<td></td>
<td>Multi-Engine Piston</td>
<td>0</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Turboprop</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Jets</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Helicopter</td>
<td>0</td>
<td>62.5</td>
<td>62.5</td>
<td>62.5</td>
</tr>
<tr>
<td></td>
<td><strong>Touch and Go Total</strong></td>
<td><strong>4</strong></td>
<td><strong>1,680.5</strong></td>
<td></td>
<td><strong>1,680.5</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Grand Total</strong></td>
<td><strong>1,187</strong></td>
<td><strong>25,028.5</strong></td>
<td></td>
<td><strong>25,028.5</strong></td>
</tr>
</tbody>
</table>

Note: Two military operations identified by MACNOMS are not counted in table above.
1.2 Revised Base Year (2016) Aircraft Operations Estimate

This section describes the approach Mead & Hunt used to develop its own independent aircraft operations estimates for the most recent full calendar year (2016), and explains the rationale for recommending modification of the operational fleet mix estimates developed for and presented in the LTCP. To make these estimates, Mead & Hunt conducted detailed analysis of Airport-specific operations data available from both the FAA Traffic Flow Management System Counts (TFMSC) and the MACNOMS databases. The purpose, data collection methods, and limitations of these databases are summarized below.

The TFMSC is a nationwide database designed to provide information on traffic counts by airport or by city pair. It includes data for flights that fly under Instrument Flight Rules (IFR) and are captured by the FAA’s enroute computers. Most Visual Flight Rules (VFR) and some non-enroute IFR traffic is excluded from these counts. The source data are created when pilots file flight plans and/or when flights are detected by the surveillance system in the National Airspace System (NAS), usually via RADAR. This data source provides an incomplete record of operations at Lake Elmo Airport, because most of its users operate in VFR conditions without an IFR flight plan. However, this data provides valuable information regarding the operational fleet at the Airport because it includes the aircraft make and model associated with each flight it captures.

The MACNOMS is a MAC-owned and operated database designed primarily to help MAC staff analyze aircraft noise impacts, assess noise abatement procedures, and provide public access to flight tracking and detailed aircraft noise data. Deployed in 1992, the system correlates information from a state-of-the-art flight tracking data feed with noise data collected at 39 Remote Monitoring Towers (RMTs) located around Minneapolis-St. Paul International Airport. The flight tracking data feed draws on information provided by FAA enroute radar systems, terminal secondary surveillance systems, Airport Surface Detection Equipment (ASDE-X) systems, Wide Area Multilateration (WAM) systems, and the nationwide Automatic Dependent Surveillance-Broadcast (ADS-B) system. For MACNOMS flights tracks at Lake Elmo, aircraft make and model information is available if the pilot filed an IFR flight plan, or the aircraft has the required cockpit transponder equipment to communicate with the data feed source system.

There were 19,757 total aircraft flight tracks captured by MACNOMS at Lake Elmo Airport in 2016. Based on MAC staff analysis of flight track beginning and end points, Mead & Hunt estimates that 1,215 of the 19,757 tracks (6.1%) were conducted by aircraft flying near but not taking off and landing at the Airport, resulting in an estimated 18,542 total flight tracks associated with actual takeoff and landing operations at Lake Elmo Airport. Table 2 on the next page summarizes these flight tracks based on origin/destination and aircraft engine type information included in the MACNOMS data.
Table 2: Lake Elmo Airport 2016 MACNOMS Flight Tracks by Aircraft Engine and Operation Types

<table>
<thead>
<tr>
<th>Aircraft Engine Type</th>
<th>Operation Type</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Local</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Itinerant</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other Twin Cities Airport</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Outside Twin Cities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Origin / Destination Unknown</td>
<td></td>
</tr>
<tr>
<td>Single-Engine Piston</td>
<td>396</td>
<td>1,798</td>
</tr>
<tr>
<td></td>
<td>233</td>
<td></td>
</tr>
<tr>
<td></td>
<td>333</td>
<td></td>
</tr>
<tr>
<td></td>
<td>836</td>
<td></td>
</tr>
<tr>
<td>Single-Engine Turboprop</td>
<td>0</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Multi-Engine Piston</td>
<td>2</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>17</td>
<td></td>
</tr>
<tr>
<td></td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>Multi-Engine Turboprop</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>1</td>
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</tr>
<tr>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Jet</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Helicopter</td>
<td>0</td>
<td>119</td>
</tr>
<tr>
<td></td>
<td>117</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
<td>10,482</td>
<td>16,522</td>
</tr>
<tr>
<td></td>
<td>1,779</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4,261</td>
<td></td>
</tr>
<tr>
<td>Total Flight Tracks</td>
<td>10,880</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2,143</td>
<td></td>
</tr>
<tr>
<td></td>
<td>363</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5,156</td>
<td></td>
</tr>
<tr>
<td></td>
<td>18,542</td>
<td></td>
</tr>
</tbody>
</table>

Sources: MACNOMS, Mead & Hunt.

Notes: Flight tracks by unknown aircraft types were adjusted to eliminate those conducted by aircraft flying near but not taking off and landing at Lake Elmo Airport, assuming this percentage was the same as among similar flight tracks for which the aircraft type is known. Local operations are defined by FAA as takeoffs and landings conducted by aircraft operating in the traffic pattern or within sight of the tower, or aircraft known to be departing or arriving from flight in local practice areas, or aircraft executing practice instrument approaches at the airport. Itinerant operations are defined as all aircraft operations other than local operations, and essentially represent takeoffs and landings of aircraft going from one airport to another.

1.2.1 Turboprop and Jet Aircraft Flight Tracks

Turboprop and jet aircraft are generally more expensive to own and operate than single-engine piston, multi-engine piston, and helicopter aircraft. To protect their investment and comply with insurance requirements, pilots of these aircraft are more likely to file IFR flight plans and the aircraft are more likely to have state-of-the-art avionics in the cockpit. For these reasons, it is reasonable to assume that MACNOMS captured most turboprop and jet aircraft operations that occurred at Lake Elmo Airport in 2016. Mead & Hunt normalized the turboprop and jet aircraft flight track counts so that for every arrival operation, there was a corresponding departure. The adjusted flight track totals are shown in Table 3 below.

Table 3: 2016 Turboprop and Jet Aircraft Flight Track Estimates

<table>
<thead>
<tr>
<th>Aircraft Engine Type</th>
<th>Local</th>
<th>Itinerant</th>
<th></th>
<th></th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Other Twin Cities Airport</td>
<td>Outside Twin Cities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single-Engine Turboprop</td>
<td>0</td>
<td>6</td>
<td>34</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Multi-Engine Turboprop</td>
<td>0</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Jet</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

Sources: MACNOMS, Mead & Hunt
1.2.2 Single-Engine Piston, Multi-Engine Piston, and Helicopter Flight Tracks

As shown in Table 3, Mead & Hunt estimates that a minimum of 48 flight tracks in the 2016 MACNOMS data set were conducted by turboprop and jet aircraft. To assign the remaining flight tracks to aircraft type categories, Mead & Hunt assumed that these flight tracks were conducted by single-engine piston, multi-engine piston, and helicopter aircraft. The following narrative explains how Mead & Hunt assigned the flight tracks to these three aircraft categories.

Mead & Hunt concluded that both the aircraft make/model and origin/destination airport are known when 1) the pilot filed an IFR flight plan, or 2) the pilot did not file an IFR flight plan, but the aircraft make/model was captured because it had an ADS-B transponder and the origin/destination airport was captured because it was within the Twin Cities metropolitan area. Mead & Hunt further concluded that only the aircraft make/model is known when the pilot did not file a flight plan and the origin/destination airport was outside the Twin Cities metro area, but the aircraft had an ADS-B transponder. Finally, Mead & Hunt concluded that flight tracks for which the aircraft make/model is unknown represent VFR operations by aircraft without an ADS-B transponder.

Mead & Hunt reviewed ADS-B equipage statistics for various aircraft types to determine appropriate assumptions regarding the fleet mix of flight tracks for which the aircraft make/model is unknown. The FAA has mandated that aircraft operating in most controlled airspace install ADS-B transponders by January 1, 2020. Based on available FAA statistics, Mead & Hunt estimates that only 8.1% of the national GA and air taxi fleet was equipped with functioning ADS-B equipment as of September 1, 2016. Multi-engine piston, turboprop, and jet aircraft were more likely to have ADS-B transponders than other types of aircraft, as shown in Table 4.

<table>
<thead>
<tr>
<th>Aircraft Type</th>
<th>ADS-B Equipped (Good Install)</th>
<th>Active GA &amp; Air Taxi Fleet</th>
<th>Estimated Percentage Equipped</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-Engine Piston</td>
<td>11,508</td>
<td>162,775</td>
<td>7.1%</td>
</tr>
<tr>
<td>Rotorcraft</td>
<td>814</td>
<td>10,700</td>
<td>7.6%</td>
</tr>
<tr>
<td>Multi-Engine Piston, Turboprop, &amp; Jet</td>
<td>4,704</td>
<td>36,430</td>
<td>12.9%</td>
</tr>
<tr>
<td>Total</td>
<td>17,026</td>
<td>209,905</td>
<td>8.1%</td>
</tr>
</tbody>
</table>

Sources: FAA Aerospace Forecasts, FAA ADS-B Performance Monitor, Mead & Hunt
Notes: ADS-B equipage by aircraft type derived from FAA statistics as of September 1, 2016. Active GA & Air Taxi Fleet are 2016 domestic fleet estimates from FAA Aerospace Forecast FY2017-2021. Single-engine piston includes experimental, light sport, and other aircraft.

Mead & Hunt also quantified MACNOMS flight tracks conducted by based aircraft, to determine whether an adjustment factor should be applied to account for the higher likelihood that multi-engine piston aircraft are ADS-B equipped, and therefore over-represented among the flight tracks for which the aircraft type is known. This analysis determined that 37 of the 194 (19.0%) airplanes based at Lake Elmo are represented among these flight tracks. Of these, 36 are single-engine piston aircraft, while one is a multi-engine piston aircraft. In other words, 19.3% of the 187 based single-engine piston aircraft are represented among the flight tracks for which the aircraft type is known, while 20.0% of the five based
multi-engine aircraft are represented. Because based single-engine piston aircraft were just as likely to be represented among these flight tracks as based multi-engine piston aircraft, Mead & Hunt concluded that an adjustment factor to account for ADS-B equipage is not appropriate for multi-engine piston aircraft at Lake Elmo Airport.

Local Operations
There were 10,880 MACNOMS flight tracks in 2016, or 58.6% of total flight tracks, which represent local operations at Lake Elmo Airport. This is consistent with the January 2017 FAA Terminal Area Forecast, which estimates that approximately 61.2% of aircraft activity at Lake Elmo Airport consists of local operations. The aircraft type is known for 398 of the 10,880 local flight tracks captured by MACNOMS, 99.5% of which were conducted by single-engine piston aircraft and 0.5% were conducted by multi-engine piston aircraft. This aircraft type split is relatively consistent with the based fleet mix at Lake Elmo Airport, which is 96.4% single-engine piston, 2.6% multi-engine piston, and 1.0% helicopters, which is appropriate because local operations at an airport are typically conducted by aircraft based at that airport.

To allocate the local flight tracks to aircraft type categories, the type shares for which the aircraft type is known were applied to the 10,482 local operations for which the aircraft type is unknown, as shown in Table 5.

<table>
<thead>
<tr>
<th>Aircraft Engine Type</th>
<th>Share Among Flight Tracks for Which Aircraft Type is Known</th>
<th>Estimated Flight Tracks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-Engine Piston</td>
<td>99.5%</td>
<td>10,433</td>
</tr>
<tr>
<td>Multi-Engine Piston</td>
<td>0.5%</td>
<td>49</td>
</tr>
<tr>
<td>Helicopter</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total Flight Tracks</strong></td>
<td></td>
<td><strong>10,482</strong></td>
</tr>
</tbody>
</table>

Sources: MACNOMS, Mead & Hunt

Itinerant Operations
There were 2,506 MACNOMS flight tracks in 2016, or 13.5% of total flight tracks, which represent itinerant operations at Lake Elmo Airport for which the origin/destination airport is known. The aircraft type is known for 727 of these 2,506 itinerant operations. Of these 727 operations, 19 were associated with turboprop or jet aircraft. The fleet mix for the remaining 708 operations varied depending on whether the origin/destination airport was within or outside the Twin Cities metro area, as shown in Table 6 on the next page.
The remaining 1,779 itinerant MACNOMS flight tracks, for which the origin/destination airport is known but the aircraft type is not known, were for flights occurring between Lake Elmo Airport and other airports in the Twin Cities metro area. Of these, four are assumed to have been completed by turboprop and jet aircraft as assigned in Section 1.2.1. The Twin Cities itinerant flight track type shares shown in Table 6 for which the aircraft type is known were applied to the 1,775 Twin Cities itinerant flight tracks for which the aircraft type is unknown, as shown in Table 7.

The origin/destination airport of the remaining 5,156 flight tracks is unknown. The aircraft type is known for 895 of these flight tracks, but unknown for the remaining 4,261 flight tracks. Of these 895 flight tracks, 15 were associated with turboprop aircraft. The fleet mix for the remaining 880 flight tracks for which the aircraft type is known but origin/destination airport is unknown is compared to that for the 350 non-metro itinerant piston and helicopter flight tracks for which the aircraft type is known in Table 8 on the next page.
The similarity of the aircraft type shares for these two flight track categories strongly suggests that the flight tracks for which the origin/destination is unknown represent flight tracks to or from airports outside the Twin Cities metro area. This is also supported by the fact that MACNOMS captures flight tracks at all Twin Cities metro area airports, and therefore the origin and destination for both local flight tracks and flight tracks between Twin Cities metro area airports should already be captured. For these reasons, Mead & Hunt concluded that the 5,156 operations for which the origin/destination airport is unknown represent flights between Lake Elmo and airports outside the Twin Cities metro area. Of these, 25 are assumed to have been completed by turboprop and jet aircraft as assigned in Section 1.2.1, and 880 were conducted by known aircraft types as shown in Table 8. To allocate the remaining 4,251 non-metro itinerant flight tracks to aircraft type categories, the type shares for which the aircraft type is known were applied as shown in Table 9.

### Table 8: 2016 Non-Metro Itinerant Piston & Helicopter Operations and Operations with Unknown Origin/Destination by Known Aircraft Types

<table>
<thead>
<tr>
<th>Aircraft Type</th>
<th>Origin/Destination at Airport Outside Twin Cities</th>
<th>Unknown Origin/Destination Airport</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Operations</td>
<td>Share (%)</td>
</tr>
<tr>
<td>Single-Engine Piston</td>
<td>333</td>
<td>95.1%</td>
</tr>
<tr>
<td>Multi-Engine Piston</td>
<td>17</td>
<td>4.9%</td>
</tr>
<tr>
<td>Helicopter</td>
<td>0</td>
<td>0.0%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>350</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Sources: MACNOMS, Mead & Hunt

### Table 9: Aircraft Type Estimates for Non-Metro Itinerant Piston & Helicopter Flight Tracks by Unknown Aircraft Type

<table>
<thead>
<tr>
<th>Aircraft Engine Type</th>
<th>Share Among Flight Tracks for Which Aircraft Type is Known</th>
<th>Estimated Flight Tracks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-Engine Piston</td>
<td>95.0%</td>
<td>4,038</td>
</tr>
<tr>
<td>Multi-Engine Piston</td>
<td>4.8%</td>
<td>203</td>
</tr>
<tr>
<td>Helicopter</td>
<td>0.2%</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total Flight Tracks</strong></td>
<td></td>
<td><strong>4,251</strong></td>
</tr>
</tbody>
</table>

Sources: MACNOMS, Mead & Hunt

#### 1.2.3 Aircraft Activity Estimate Summary

The 2016 MACNOMS flight tracks for Lake Elmo Airport are summarized in Table 10 on the next page according to the aircraft type assignments described above. The flight track totals in Table 10 were then adjusted using the 72.44% MACNOMS capture rate reported to the state legislature in 2016, to account for missing flight tracks in MACNOMS. After making this adjustment, Mead & Hunt estimates there were 25,596 total aircraft operations at Lake Elmo Airport in 2016, as summarized in Table 11 on the next page.
### Table 10: Lake Elmo 2016 MACNOMS Flight Tracks by Aircraft and Operation Types

<table>
<thead>
<tr>
<th>Aircraft Type</th>
<th>Operation Type</th>
<th>Local</th>
<th>Itinerant</th>
<th>Total Flight Tracks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aircraft Type Assigned by Mead &amp; Hunt</td>
<td>Aircraft Type Known</td>
<td>Other Twin Cities Airport</td>
<td>Outside Twin Cities</td>
</tr>
<tr>
<td>Single-Engine Piston</td>
<td>396</td>
<td>10,433</td>
<td>233</td>
<td>1,155</td>
</tr>
<tr>
<td>Single-Engine Turboprop</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Multi-Engine Piston</td>
<td>2</td>
<td>49</td>
<td>8</td>
<td>40</td>
</tr>
<tr>
<td>Multi-Engine Turboprop</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Jet</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Helicopter</td>
<td>0</td>
<td>0</td>
<td>117</td>
<td>580</td>
</tr>
<tr>
<td><strong>Total Flight Tracks</strong></td>
<td><strong>398</strong></td>
<td><strong>10,482</strong></td>
<td><strong>364</strong></td>
<td><strong>1,780</strong></td>
</tr>
</tbody>
</table>

Sources: MACNOMS, Mead & Hunt

### Table 11: Lake Elmo 2016 Operations Estimate by Aircraft and Operation Types

<table>
<thead>
<tr>
<th>Engine Type</th>
<th>Operation Type</th>
<th>Local</th>
<th>Itinerant</th>
<th>Total Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aircraft Type Assigned by Mead &amp; Hunt</td>
<td>Aircraft Type Known</td>
<td>Other Twin Cities Airport</td>
<td>Outside Twin Cities</td>
</tr>
<tr>
<td>Single-Engine Piston</td>
<td>14,949</td>
<td>1,916</td>
<td>7,188</td>
<td>24,053</td>
</tr>
<tr>
<td>Single-Engine Turboprop</td>
<td>0</td>
<td>8</td>
<td>47</td>
<td>55</td>
</tr>
<tr>
<td>Multi-Engine Piston</td>
<td>70</td>
<td>66</td>
<td>362</td>
<td>498</td>
</tr>
<tr>
<td>Multi-Engine Turboprop</td>
<td>0</td>
<td>2</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Jet</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Helicopter</td>
<td>0</td>
<td>962</td>
<td>17</td>
<td>979</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15,019</strong></td>
<td><strong>2,960</strong></td>
<td><strong>7,617</strong></td>
<td><strong>25,596</strong></td>
</tr>
</tbody>
</table>

Sources: MACNOMS, Mead & Hunt

This 2016 operations estimate is slightly less than the 2012 and 2014 estimates generated for the LTCP, which were 26,709 and 25,727 operations, respectively. This 2016 estimate indicates that the LTCP may underestimate current operations by multi-engine piston and helicopter aircraft. The Mead & Hunt 2016 estimates are compared to the LTCP 2012 estimates in Table 12 on the next page.
### Table 12: Base Year Operations Estimate Comparison

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-Engine Piston</td>
<td>26,088</td>
<td>24,053</td>
</tr>
<tr>
<td>Multi-Engine Piston</td>
<td>112</td>
<td>498</td>
</tr>
<tr>
<td>Turboprop</td>
<td>56</td>
<td>63</td>
</tr>
<tr>
<td>Jet</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Helicopter</td>
<td>449</td>
<td>979</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>26,709</strong></td>
<td><strong>25,596</strong></td>
</tr>
</tbody>
</table>

#### 1.2.4 Aircraft Activity Estimate by Aircraft Make/Model

Mead & Hunt analyzed the prevalence of specific aircraft makes and models at Lake Elmo Airport, to derive aircraft-specific fleet mix estimates for developing a noise analysis and for determining the design family of aircraft for a runway length analysis. Because the makes and models operating at a specific airport vary from year to year, the 2016 MACNOMS information was compared to TFMSC information for the years 2012 to 2016, to verify the aircraft types are using the Airport on a consistent basis. This comparison is shown in Table 13 on the next page. The 2016 MACNOMS percentages shown in Table 12 were then used to categorize the operations summarized in Table 11 by specific aircraft make/model, as shown in Table 14 on the following page. The fleet estimates confirm the design aircraft family at Lake Elmo Airport remains the small, propeller-driven aircraft weighing less than 12,500 pounds and with fewer than 10 passenger seats – which accounted for 24,614 estimated operations in 2016.
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Single-Engine Piston Aircraft</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Piper PA-28/32 Cherokee/Warrior/Dakota/Arrow</td>
<td>822</td>
<td>21.8%</td>
<td>544</td>
<td>30.3%</td>
<td>4</td>
</tr>
<tr>
<td>Van's RV-6/7/8/9/10/12</td>
<td>87</td>
<td>2.3%</td>
<td>369</td>
<td>20.5%</td>
<td>4</td>
</tr>
<tr>
<td>Cessna 140/150/152/170/172/177/180/182/185</td>
<td>921</td>
<td>24.4%</td>
<td>256</td>
<td>14.2%</td>
<td>4</td>
</tr>
<tr>
<td>Cirrus SR20/SR22/SR22-Turbo</td>
<td>744</td>
<td>19.7%</td>
<td>216</td>
<td>12.0%</td>
<td>5</td>
</tr>
<tr>
<td>Beech Bonanza 33/34/35/36</td>
<td>568</td>
<td>15.0%</td>
<td>140</td>
<td>7.8%</td>
<td>6</td>
</tr>
<tr>
<td>Other Single-Engine Piston</td>
<td>50</td>
<td>1.3%</td>
<td>103</td>
<td>5.7%</td>
<td>4</td>
</tr>
<tr>
<td>Cessna 205/206/210</td>
<td>289</td>
<td>7.7%</td>
<td>66</td>
<td>3.7%</td>
<td>6</td>
</tr>
<tr>
<td>Mooney M-20 (various models)</td>
<td>132</td>
<td>3.5%</td>
<td>50</td>
<td>2.8%</td>
<td>4</td>
</tr>
<tr>
<td>Lancair LC-41 Columbia 300/400</td>
<td>48</td>
<td>1.3%</td>
<td>30</td>
<td>1.7%</td>
<td>4</td>
</tr>
<tr>
<td>Rockwell Commander 112</td>
<td>68</td>
<td>1.8%</td>
<td>12</td>
<td>0.7%</td>
<td>4</td>
</tr>
<tr>
<td>Piper PA-24 Comanche</td>
<td>37</td>
<td>1.0%</td>
<td>9</td>
<td>0.5%</td>
<td>6</td>
</tr>
<tr>
<td>Piper PA-46 Malibu</td>
<td>10</td>
<td>0.3%</td>
<td>3</td>
<td>0.2%</td>
<td>6</td>
</tr>
<tr>
<td><strong>Single-Engine Piston Total</strong></td>
<td><strong>3,776</strong></td>
<td></td>
<td><strong>1,798</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Single-Engine Turboprop Aircraft</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Socata TBM-700/850</td>
<td>120</td>
<td>71.9%</td>
<td>23</td>
<td>76.7%</td>
<td>6</td>
</tr>
<tr>
<td>Piper PA-46T Malibu Meridian</td>
<td>12</td>
<td>7.2%</td>
<td>3</td>
<td>10.0%</td>
<td>6</td>
</tr>
<tr>
<td>Pilatus PC-12</td>
<td>35</td>
<td>21.0%</td>
<td>2</td>
<td>6.7%</td>
<td>9</td>
</tr>
<tr>
<td>Cessna 208 Caravan</td>
<td>0</td>
<td>0.0%</td>
<td>2</td>
<td>6.7%</td>
<td>9</td>
</tr>
<tr>
<td><strong>Single-Engine Turboprop Total</strong></td>
<td><strong>167</strong></td>
<td></td>
<td><strong>30</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Multi-Engine Piston Aircraft</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cessna 335/337/340</td>
<td>167</td>
<td>58.6%</td>
<td>31</td>
<td>44.9%</td>
<td>5</td>
</tr>
<tr>
<td>Beech Baron 55/58</td>
<td>37</td>
<td>13.0%</td>
<td>19</td>
<td>27.5%</td>
<td>6</td>
</tr>
<tr>
<td>Cessna 414/421</td>
<td>2</td>
<td>0.8%</td>
<td>7</td>
<td>10.1%</td>
<td>8</td>
</tr>
<tr>
<td>Diamond Twin Star DA50</td>
<td>21</td>
<td>7.4%</td>
<td>3</td>
<td>4.3%</td>
<td>4</td>
</tr>
<tr>
<td>Piper PA-31 Navajo / Chieftain</td>
<td>24</td>
<td>8.4%</td>
<td>2</td>
<td>2.9%</td>
<td>7</td>
</tr>
<tr>
<td>Piper PA-34 Seneca</td>
<td>8</td>
<td>2.8%</td>
<td>2</td>
<td>2.9%</td>
<td>6</td>
</tr>
<tr>
<td>Cessna 310</td>
<td>5</td>
<td>1.8%</td>
<td>2</td>
<td>2.9%</td>
<td>6</td>
</tr>
<tr>
<td>Piper PA-44 Seminole</td>
<td>11</td>
<td>3.9%</td>
<td>1</td>
<td>1.4%</td>
<td>4</td>
</tr>
<tr>
<td>Piper PA-23 Apache/Aztec</td>
<td>3</td>
<td>1.1%</td>
<td>1</td>
<td>1.4%</td>
<td>6</td>
</tr>
<tr>
<td>P-68 Observer</td>
<td>0</td>
<td>0.0%</td>
<td>1</td>
<td>1.4%</td>
<td>6</td>
</tr>
<tr>
<td>Piper PA-30 Twin Comanche</td>
<td>5</td>
<td>1.8%</td>
<td>0</td>
<td>0.0%</td>
<td>6</td>
</tr>
<tr>
<td>Beech 95 Travel Air</td>
<td>2</td>
<td>0.7%</td>
<td>0</td>
<td>0.0%</td>
<td>5</td>
</tr>
<tr>
<td><strong>Multi-Engine Piston Total</strong></td>
<td><strong>285</strong></td>
<td></td>
<td><strong>69</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Multi-Engine Turboprop Aircraft</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swearingen Merlin III</td>
<td>1</td>
<td>10.0%</td>
<td>1</td>
<td>33.3%</td>
<td>9</td>
</tr>
<tr>
<td>Cessna Conquest 441</td>
<td>0</td>
<td>0.0%</td>
<td>1</td>
<td>33.3%</td>
<td>9</td>
</tr>
<tr>
<td>Beech Super King Air 90/200/300/350</td>
<td>7</td>
<td>70.0%</td>
<td>1</td>
<td>33.3%</td>
<td>9</td>
</tr>
<tr>
<td>Rockwell Aero Commander 690</td>
<td>2</td>
<td>20.0%</td>
<td>0</td>
<td>0.0%</td>
<td>6</td>
</tr>
<tr>
<td><strong>Multi-Engine Turboprop Total</strong></td>
<td><strong>10</strong></td>
<td></td>
<td><strong>3</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sources: TFMSC, MACNOMS, Mead & Hunt. Note: Aircraft highlighted in orange were selected for primary runway length analysis; aircraft highlighted in blue were selected for crosswind runway length analysis.
### Table 14: 2016 Operational Fleet Mix Estimates by Aircraft Make/Model

<table>
<thead>
<tr>
<th>Aircraft Make &amp; Model</th>
<th>Share of Flight Tracks in Category</th>
<th>Estimated Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Single-Engine Piston Aircraft</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Piper PA-28/32 Cherokee/Warrior/Dakota/Arrow</td>
<td>30.3%</td>
<td>7,277.44</td>
</tr>
<tr>
<td>Van's RV-6/7/8/9/10/12</td>
<td>20.5%</td>
<td>4,936.35</td>
</tr>
<tr>
<td>Cessna 140/150/152/170/172/177/180/182/185</td>
<td>14.2%</td>
<td>3,424.68</td>
</tr>
<tr>
<td>Cirrus SR20/SR22/SR22-Turbo</td>
<td>12.0%</td>
<td>2,889.57</td>
</tr>
<tr>
<td>Beech Bonanza 33/34/35/36</td>
<td>7.8%</td>
<td>1,872.87</td>
</tr>
<tr>
<td>Other Single-Engine Piston</td>
<td>5.7%</td>
<td>1,377.90</td>
</tr>
<tr>
<td>Cessna 205/206/210</td>
<td>3.7%</td>
<td>882.92</td>
</tr>
<tr>
<td>Mooney M-20 (various models)</td>
<td>2.8%</td>
<td>668.88</td>
</tr>
<tr>
<td>Lancair LC-41 Columbia 300/400</td>
<td>1.7%</td>
<td>401.33</td>
</tr>
<tr>
<td>Rockwell Commander 112</td>
<td>0.7%</td>
<td>160.53</td>
</tr>
<tr>
<td>Piper PA-24 Comanche</td>
<td>0.5%</td>
<td>120.40</td>
</tr>
<tr>
<td>Piper PA-46 Malibu</td>
<td>0.2%</td>
<td>40.13</td>
</tr>
<tr>
<td><strong>Single-Engine Turboprop Aircraft</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Socata TBM-700/850</td>
<td>76.7%</td>
<td>42.17</td>
</tr>
<tr>
<td>Piper PA-46T Malibu Meridian</td>
<td>10.0%</td>
<td>5.50</td>
</tr>
<tr>
<td>Pilatus PC-12</td>
<td>6.7%</td>
<td>3.67</td>
</tr>
<tr>
<td>Cessna 208 Caravan</td>
<td>6.7%</td>
<td>3.67</td>
</tr>
<tr>
<td><strong>Multi-Engine Piston Aircraft</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cessna 335/337/340</td>
<td>27.2%</td>
<td>133.88</td>
</tr>
<tr>
<td>Beech Baron 55/58</td>
<td>16.6%</td>
<td>82.06</td>
</tr>
<tr>
<td>Piper PA-30 Twin Comanche¹</td>
<td>16.2%</td>
<td>80.00</td>
</tr>
<tr>
<td>Piper PA-31 Navajo / Chieftain¹</td>
<td>9.9%</td>
<td>48.64</td>
</tr>
<tr>
<td>Piper PA-23 Apache/Aztec¹</td>
<td>9.0%</td>
<td>44.32</td>
</tr>
<tr>
<td>Cessna T-50 Bobcat¹</td>
<td>8.1%</td>
<td>40.00</td>
</tr>
<tr>
<td>Cessna Chancellor 414</td>
<td>3.0%</td>
<td>15.12</td>
</tr>
<tr>
<td>Cessna Golden Eagle 421</td>
<td>3.0%</td>
<td>15.12</td>
</tr>
<tr>
<td>Diamond Twin Star DA50</td>
<td>2.6%</td>
<td>12.96</td>
</tr>
<tr>
<td>Piper PA-34 Seneca</td>
<td>1.8%</td>
<td>8.64</td>
</tr>
<tr>
<td>Cessna 310</td>
<td>1.8%</td>
<td>8.64</td>
</tr>
<tr>
<td>Piper PA-44 Seminole</td>
<td>0.9%</td>
<td>4.32</td>
</tr>
<tr>
<td>P-68 Observer</td>
<td>0.9%</td>
<td>4.32</td>
</tr>
<tr>
<td><strong>Multi-Engine Turboprop</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beech King Air 200</td>
<td>33.3%</td>
<td>2.67</td>
</tr>
<tr>
<td>Cessna Conquest 441</td>
<td>33.3%</td>
<td>2.67</td>
</tr>
<tr>
<td>Swearingen Merlin III</td>
<td>33.3%</td>
<td>2.67</td>
</tr>
<tr>
<td><strong>Jet Aircraft</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cessna Citation Jet 560XLS</td>
<td>100.0%</td>
<td>3.00</td>
</tr>
<tr>
<td><strong>Helicopters</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Robinson R44</td>
<td>100.0%</td>
<td>979.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>25,596.00</td>
</tr>
</tbody>
</table>

Sources: TFMSC, MACNOMS, Mead & Hunt

¹Multi-engine piston aircraft percentages adjusted to account for operations by these based aircraft types. Based on discussion with Airport staff and tenants, as well as analysis of typical operations by other based aircraft, Mead & Hunt estimates 40 annual operations by each based multi-engine piston aircraft.
1.3 LTCP Aircraft Operations Forecast Overview (2012 to 2035)

This section provides an overview of the methodology used to generate the preferred LTCP aircraft operations forecasts.

For each aircraft type category, the LTCP assumed that aircraft operations would increase proportional to the rate of hours flown per based aircraft. For this reason, aircraft operations were anticipated to grow slightly from 2012 to 2035, even though based aircraft were expected to decline. The Base Case LTCP aircraft operations forecast, which does not consider potential increases in operations due to provision of additional runway length, is shown below in Table 15.

<table>
<thead>
<tr>
<th>Year</th>
<th>Single Engine Piston</th>
<th>Multi-Engine Piston</th>
<th>Turboprop</th>
<th>Microjets</th>
<th>Other Jets</th>
<th>Helicopter</th>
<th>Other*</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>21,664</td>
<td>110</td>
<td>58</td>
<td>2</td>
<td>2</td>
<td>441</td>
<td>3,176</td>
<td>25,454</td>
</tr>
<tr>
<td>2020</td>
<td>20,092</td>
<td>109</td>
<td>59</td>
<td>3</td>
<td>3</td>
<td>662</td>
<td>3,304</td>
<td>24,232</td>
</tr>
<tr>
<td>2025</td>
<td>19,802</td>
<td>100</td>
<td>58</td>
<td>4</td>
<td>4</td>
<td>664</td>
<td>3,276</td>
<td>23,908</td>
</tr>
<tr>
<td>2030</td>
<td>20,946</td>
<td>132</td>
<td>57</td>
<td>5</td>
<td>5</td>
<td>668</td>
<td>3,388</td>
<td>25,200</td>
</tr>
<tr>
<td>2035</td>
<td>21,823</td>
<td>125</td>
<td>56</td>
<td>5</td>
<td>5</td>
<td>672</td>
<td>3,450</td>
<td>26,138</td>
</tr>
</tbody>
</table>

Notes: * Includes Experimental and Light Sport Aircraft

The LTCP also considered the proposed primary runway extension and developed a forecast for this scenario, which found that a runway extension would result in a slight increase in total aircraft operations as it would allow aircraft to use the Airport more often. However, the increase would be limited to turboprop and jet aircraft because the existing runway length is generally sufficient for smaller aircraft. The Extended Runway scenario forecast is shown below in Table 16.

<table>
<thead>
<tr>
<th>Year</th>
<th>Single Engine Piston</th>
<th>Multi-Engine Piston</th>
<th>Turboprop</th>
<th>Microjets</th>
<th>Other Jets</th>
<th>Helicopter</th>
<th>Other*</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>21,664</td>
<td>110</td>
<td>58</td>
<td>2</td>
<td>2</td>
<td>441</td>
<td>3,176</td>
<td>25,454</td>
</tr>
<tr>
<td>2020</td>
<td>20,092</td>
<td>109</td>
<td>323</td>
<td>33</td>
<td>16</td>
<td>662</td>
<td>3,304</td>
<td>24,539</td>
</tr>
<tr>
<td>2025</td>
<td>19,802</td>
<td>100</td>
<td>335</td>
<td>56</td>
<td>28</td>
<td>664</td>
<td>3,276</td>
<td>24,261</td>
</tr>
<tr>
<td>2030</td>
<td>20,946</td>
<td>132</td>
<td>346</td>
<td>90</td>
<td>45</td>
<td>668</td>
<td>3,388</td>
<td>25,615</td>
</tr>
<tr>
<td>2035</td>
<td>21,823</td>
<td>125</td>
<td>358</td>
<td>128</td>
<td>64</td>
<td>672</td>
<td>3,450</td>
<td>26,620</td>
</tr>
</tbody>
</table>

Notes: * Includes Experimental and Light Sport Aircraft
1.4 Revised Aircraft Operations Forecast (2016 to 2035)
The estimated total of 25,596 operations at Lake Elmo Airport in 2016 is consistent with the Base Case LTCP forecast, which projected between 25,000 and 26,000 operations for 2016. The LTCP included High Range and Low Range forecasts, with the Base Case and Extended Runway scenario forecasts falling in between as shown in Chart 1. Because the 2016 operations estimate presented in Section 2 is consistent with the overall LTCP operations forecasts, Mead & Hunt used the overall operation estimates from the LTCP Base Case and Extended Runway scenario forecasts to study future Airport use and associated aircraft noise in the EA/EAW.

Chart 1: LTCP Aircraft Operations Forecast Comparison

![LTCP Aircraft Operations Forecast Comparison](chart1)

Source: Lake Elmo Airport 2035 LTCP

However, as discussed in Section 2, Mead & Hunt’s review of TFMSC and MACNOMS data suggests that the LTCP base year operational fleet mix estimates may have underestimated operations by multi-engine and helicopter aircraft. Based on consideration of the increased utility of an extended primary runway relative to each aircraft category, Mead & Hunt developed percentage estimates of expected future operations given an extended primary runway, which are presented in Table 17 on the next page. These estimates anticipate increases in the share of multi-engine piston, turboprop, and jet aircraft operations because of the additional available runway length. This equates to approximately 3 additional multi-engine piston, 4 additional turboprop, and 0.5 additional jet aircraft operations per week when compared to the base year condition.
Table 17: Existing and Forecast Fleet Mix Percentage Estimates

<table>
<thead>
<tr>
<th>Aircraft Type</th>
<th>2016 Base Year Operations</th>
<th>Future Operations with Extended Primary Runway</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Engine Piston</td>
<td>93.97%</td>
<td>93.00%</td>
</tr>
<tr>
<td>Multi-Engine Piston</td>
<td>1.95%</td>
<td>2.50%</td>
</tr>
<tr>
<td>Turboprop</td>
<td>0.25%</td>
<td>1.00%</td>
</tr>
<tr>
<td>Jets</td>
<td>0.01%</td>
<td>0.10%</td>
</tr>
<tr>
<td>Helicopter</td>
<td>3.82%</td>
<td>3.40%</td>
</tr>
</tbody>
</table>

The percentages shown in Table 17 were applied to the total annual operations from the LTCP extended runway operations forecast scenario to produce the revised operations forecast presented in Table 18. Compared to the LTCP extended runway scenario, the revised forecast operations are higher in single-engine piston, multi-engine piston and helicopters and lower in turboprop and jet aircraft.

Table 18: Revised Aircraft Operations Forecast - Extended Runway Scenario

<table>
<thead>
<tr>
<th>Year</th>
<th>Single Engine Piston</th>
<th>Multi-Engine Piston</th>
<th>Turboprop</th>
<th>Jet</th>
<th>Helicopter</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016*</td>
<td>24,053</td>
<td>498</td>
<td>63</td>
<td>3</td>
<td>979</td>
<td>25,596</td>
</tr>
<tr>
<td>2020</td>
<td>22,821</td>
<td>613</td>
<td>245</td>
<td>25</td>
<td>834</td>
<td>24,539</td>
</tr>
<tr>
<td>2025</td>
<td>22,563</td>
<td>607</td>
<td>243</td>
<td>24</td>
<td>825</td>
<td>24,261</td>
</tr>
<tr>
<td>2030</td>
<td>23,822</td>
<td>640</td>
<td>256</td>
<td>26</td>
<td>871</td>
<td>25,615</td>
</tr>
<tr>
<td>2035</td>
<td>24,757</td>
<td>666</td>
<td>266</td>
<td>27</td>
<td>905</td>
<td>26,620</td>
</tr>
</tbody>
</table>

Source: Lake Elmo Airport 2035 LTCP, MACNOMS, Mead & Hunt
Note: Single-engine piston operations include experimental and light sport aircraft. The 2016 operations represent an estimate of actual activity during that year. The 2016 operations estimate was used as the base case for purposes of studying existing conditions in the EA/EAW.

2. Runway Length Analysis

2.1 Role and Classification of the Airport

The primary role of the Lake Elmo Airport is to serve personal, recreational, and some business aviation users in Washington County and the eastern portion of the Minneapolis-St. Paul metropolitan area. Example business services include flight training and aircraft maintenance. The role of the Airport is not expected to change during the 20-year planning window analyzed in the 2035 LTCP.

The critical aircraft to be accommodated at the Lake Elmo Airport are small, propeller-driven aircraft weighing less than 12,500 pounds with fewer than 10 passenger seats. A wide variety of single and multi-engine aircraft are included within this category. Table 19 outlines a representative mix of aircraft selected for individual evaluation. The aircraft were selected because they are the most demanding aircraft using the Airport consistent with the operations forecasts presented in the previous section.
### Table 19 - Representative Family of Aircraft - Lake Elmo Airport

*Small Airplanes with Maximum Certified Takeoff Weight of 12,500 lbs or less*

<table>
<thead>
<tr>
<th>Aircraft Model</th>
<th>Engine Type</th>
<th>Wingspan (ft)</th>
<th>Maximum Takeoff Weight (lbs)</th>
<th>Operating Empty Weight (lbs)</th>
<th>Maximum Useful Load (lbs)</th>
<th>Passenger Seat Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beechcraft King Air 200</td>
<td>Multi - Turboprop</td>
<td>54.5</td>
<td>12,500</td>
<td>8,750</td>
<td>3,750</td>
<td>7-9</td>
</tr>
<tr>
<td>Pilatus PC-12</td>
<td>Single - Turboprop</td>
<td>53.3</td>
<td>9,921</td>
<td>5,468</td>
<td>4,453</td>
<td>7-9</td>
</tr>
<tr>
<td>Cessna 421C</td>
<td>Multi - Piston</td>
<td>41.1</td>
<td>7,450</td>
<td>4,501</td>
<td>2,949</td>
<td>6-8</td>
</tr>
<tr>
<td>Socata TBM 700</td>
<td>Single - Turboprop</td>
<td>41.6</td>
<td>7,394</td>
<td>6,032</td>
<td>1,362</td>
<td>4-6</td>
</tr>
<tr>
<td>Piper PA 31P-350 Chieftain</td>
<td>Multi - Turboprop</td>
<td>44.5</td>
<td>7,000</td>
<td>4,319</td>
<td>2,681</td>
<td>5-7</td>
</tr>
<tr>
<td>Cessna 414A</td>
<td>Multi - Piston</td>
<td>44.1</td>
<td>6,750</td>
<td>4,365</td>
<td>2,385</td>
<td>6-8</td>
</tr>
<tr>
<td>Cessna 340</td>
<td>Multi - Piston</td>
<td>38.1</td>
<td>6,000</td>
<td>3,921</td>
<td>2,079</td>
<td>4-5</td>
</tr>
<tr>
<td>Cessna 310R</td>
<td>Multi - Piston</td>
<td>36.9</td>
<td>5,500</td>
<td>3,260</td>
<td>2,240</td>
<td>5-6</td>
</tr>
<tr>
<td>Beechcraft Baron G58</td>
<td>Multi - Piston</td>
<td>37.8</td>
<td>5,500</td>
<td>4,030</td>
<td>1,470</td>
<td>4-6</td>
</tr>
<tr>
<td>Piper PA-30 Twin Comanche</td>
<td>Multi - Piston</td>
<td>36.0</td>
<td>3,600</td>
<td>2,160</td>
<td>1,440</td>
<td>4-6</td>
</tr>
</tbody>
</table>

*Source: Aircraft Manufacturers*

This report utilizes both the general runway length guidance provided in FAA Advisory Circular (AC) 150/5325-4B, *Runway Length Recommendations for Airport Design*, for this representative aircraft family, as well as the aircraft manuals for the specific aircraft shown in **Table 19**, to determine individual runway length requirements for both takeoff and landing operations.

Federal, state, regional and local agencies each have their own classification systems for airports. While different in name, there are often similar infrastructure characteristics. The various classifications for the Lake Elmo Airport are described briefly below. These classifications are consistent with the representative family of aircraft identified in Table 19.

**Federal Aviation Administration (FAA):** The Lake Elmo Airport is included in the FAA’s National Plan of Integrated Airport Systems (NPIAS)¹ as a Regional General Aviation (GA) Airport. Airports of this category are in metropolitan areas and serve relatively large populations. They support regional economies with interstate and some long-distance flying, and have high levels of activity, including some jets and multiengine propeller aircraft. The NPIAS also identifies Lake Elmo as a Reliever to the Minneapolis-St. Paul International Airport.

**Metropolitan Airports Commission (MAC):** Within its system of airports, the MAC further classifies its reliever airports as being either “primary” or “complimentary” facilities. The MAC classifies Lake Elmo Airport as a complimentary reliever airport, designed to accommodate the smaller end of the GA traffic spectrum, such as the family of small propeller-driven airplanes with fewer than 10 passenger seats as described above. By the MAC’s definition, the “primary reliever” airports are those better equipped to serve business jets and corporate aircraft in addition to small GA aircraft.

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¹ Additional information available at: [https://www.faa.gov/airports/planning_capacity/npias/]
Minnesota Department of Transportation (MnDOT): The Minnesota State Aviation System Plan (SASP)\(^2\) classifies Lake Elmo as an Intermediate Airport. Airports of this type have a paved and lighted primary runway that is less than 5,000 feet in length. These airports can accommodate all single-engine aircraft, some multi-engine aircraft (including turboprops), and some business jets. Intermediate Airports serve as landing facilities for flight training, aircraft maintenance, and GA aircraft up to the smaller business jet size.

Metropolitan Council: The Metropolitan Council develops regional transportation policy, including the Regional Aviation System Plan, which classifies Lake Elmo as a Minor Airport. Facilities within this definition have a primary runway length between 2,500 and 5,000 feet, with either a precision or non-precision instrument approach. These airports can accommodate personal use and recreational aircraft, business GA, air taxi traffic, and flight training.

2.2 FAA Runway Length Design Guidance

Primary Runway 14-32 at Lake Elmo Airport (21D) is currently 2,849 feet long. To determine the adequacy of the existing runway length, the LTCP documented specific runway length requirements based upon guidance from FAA AC 150/5325-4B *Runway Length Requirements for Airport Design*. The following summarizes some of the important concepts from AC 150/5325-4B regarding regular use and recommended runway length:

- The goal is to construct an available runway length for new runways or extensions to existing runways that is suitable for the critical design airplanes.
- The critical design airplanes (or single airplane) are the aircraft that result in the longest recommended runway length.
- The design objective for the primary runway is to provide a runway length for all airplanes that will regularly use it without causing operational weight restrictions.

The recommended runway length is determined according to a family grouping of airplanes having similar performance characteristics and operating weights. The 2035 LTCP states that the critical aircraft at 21D remain small, propeller-driven airplanes, weighing less than 12,500 pounds and with fewer than 10 passenger seats. The fewer than 10 passenger seat category is further divided into two fleet categories, namely, “95 percent of the fleet” or “100 percent of the fleet”. AC 150/5325-4B provides runway length curves for each of these fleet categories as illustrated below in Chart 2.

\(^2\) Additional information available at: [http://www.dot.state.mn.us/aero/planning/sasp.html](http://www.dot.state.mn.us/aero/planning/sasp.html)
Chart 2: Runway Length Requirements for Small Airplanes with Fewer than 10 Passenger Seats

[Chart Image]

Source: FAA AC 150/5325-4B, Runway Length Recommendations for Airport Design

Using the airport elevation of 932 feet above mean sea level (MSL), and a mean daily maximum temperature of 83 degrees Fahrenheit, Chart 2 recommends a primary runway length between 3,300 and 3,900 feet. The differences between the two fleet categories are based on the airport's location and the amount of aviation activity. AC 150/5325-4B further states that an appropriate runway length can also be determined from airplane flight manuals for the aircraft types to be accommodated. To more precisely define a recommended runway length within the FAA range provided in Chart 2, the following sections analyze runway length requirements for the representative aircraft family using the Lake Elmo Airport.
2.3 Takeoff Operations

In evaluating takeoff operations, two conditions were evaluated. First, takeoff length requirements were determined for operating weights ranging from the maximum gross takeoff weight of each aircraft (100% useful load) down to a 60% useful load. Useful load is the difference between the maximum allowable structural gross weight and the operational empty weight of an aircraft; in other words, useful load consists of passengers, cargo, and fuel. These takeoff lengths are summarized in Table 20 and assume the following airfield conditions:

- Mean daily maximum hot month temperature: 30° Celsius (86° Fahrenheit)
- Airport Elevation: 932' MSL
- Headwind: 0 knots
- Flaps: Typical
- Slope of Runway: Uphill

Table 20 - Runway Length Requirements - Takeoff Operations

<table>
<thead>
<tr>
<th>Aircraft Model</th>
<th>Takeoff Length Requirements for % Useful Load (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>@ 100% UL @ 90% UL @ 75% UL @ 60% UL</td>
</tr>
<tr>
<td>Beechcraft King Air 200</td>
<td>3,300 3,150 2,750 2,600</td>
</tr>
<tr>
<td>Pilatus PC-12</td>
<td>3,300 3,000 2,600 2,100</td>
</tr>
<tr>
<td>Cessna 421C</td>
<td>3,000 2,700 2,320 1,820</td>
</tr>
<tr>
<td>Socata TBM 700</td>
<td>3,290 2,950 2,590 2,090</td>
</tr>
<tr>
<td>Piper PA 31P-350 Chieftain</td>
<td>3,100 2,900 2,700 2,550</td>
</tr>
<tr>
<td>Cessna 414A</td>
<td>3,150 2,900 2,560 2,060</td>
</tr>
<tr>
<td>Cessna 340</td>
<td>2,740 2,600 2,500 2,400</td>
</tr>
<tr>
<td>Cessna 310R</td>
<td>2,000 1,870 1,700 1,580</td>
</tr>
<tr>
<td>Beechcraft Baron G58</td>
<td>2,850 2,700 2,600 2,500</td>
</tr>
<tr>
<td>Piper PA-30 Twin Comanche</td>
<td>2,600 2,420 2,210 2,000</td>
</tr>
<tr>
<td><strong>Average:</strong></td>
<td><strong>2,909 2,699 2,441 2,182</strong></td>
</tr>
</tbody>
</table>

Source: Aircraft manuals

3 While the LTCP used a 5-knot headwind, this analysis takes into account that users often must operate with a tailwind to take off from the more favorable runway end.

4 If provided by the performance chart in question, the actual Runway 14/32 gradient was used.
Second, the length of runway required for an aborted takeoff operation was evaluated, which is referred to as the accelerate-stop distance. The runway lengths required to satisfy these distances are summarized in Table 21 for the same range of useful load percentages, and assume the same airfield conditions.

Table 21 - Runway Length Requirements - Accelerate Stop Distance
Representative Family of Aircraft - Lake Elmo Airport (21D)

<table>
<thead>
<tr>
<th>Aircraft Model</th>
<th>Accelerate Stop Distances for % Useful Load (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>@ 100% UL</td>
</tr>
<tr>
<td>Beechcraft King Air 200</td>
<td>3,600</td>
</tr>
<tr>
<td>Pilatus PC-12</td>
<td>3,800</td>
</tr>
<tr>
<td>Cessna 421C</td>
<td>4,200</td>
</tr>
<tr>
<td>Socata TBM 700</td>
<td>3,750</td>
</tr>
<tr>
<td>Piper PA 31P-350 Chieftain</td>
<td>4,000</td>
</tr>
<tr>
<td>Cessna 414A</td>
<td>4,644</td>
</tr>
<tr>
<td>Cessna 340</td>
<td>3,400</td>
</tr>
<tr>
<td>Cessna 310R</td>
<td>4,000</td>
</tr>
<tr>
<td>Beechcraft Baron G58</td>
<td>3,400</td>
</tr>
<tr>
<td>Piper PA-30 Twin Comanche</td>
<td>3,600</td>
</tr>
<tr>
<td>Average:</td>
<td>3,750</td>
</tr>
</tbody>
</table>

Source: Aircraft manuals

In comparing the runway lengths outlined in Tables 20 and 21, the accelerate-stop distance is the more demanding runway length requirement when considering takeoff operations. As this length provides a factor of safety in the event of an aborted takeoff, it is consistent with the Airport’s key objective for enhancing safety and operational capabilities. The individual runway lengths shown in Table 21 were obtained independently from operating handbooks of these representative aircraft, and align closely to those lengths presented in the 2035 LTCP.

When considering the range of runway lengths for various useful load percentages, a runway length of 3,500 to 3,600 feet would accommodate most aircraft and loading conditions for aborted takeoff operations from 21D, and would accommodate all takeoff length requirements.
2.4 Landing Operations

The runway length required for takeoffs is generally greater than that required for landing operations as the aircraft is usually heavier and must accelerate from a stopped position. However, during periods when the runway is wet and slippery from snow cover or ice, these “contaminated” surface conditions decrease the effectiveness of braking and thereby increase the length of runway needed for landing.

Table 22 illustrates the landing length requirements for the representative family of aircraft under various useful load factors, and assumes the following airfield conditions:

- Dry and uncontaminated runway pavement surface
- Mean daily maximum hot month temperature: 30° Celsius (86° Fahrenheit)
- Airport Elevation: 932’ MSL
- Headwind: 0 knots
- Flaps: Typical
- Slope of Runway: Downhill

<table>
<thead>
<tr>
<th>Aircraft Model</th>
<th>Landing Length Requirements for % Useful Load (ft) @ 100% UL</th>
<th>@ 90% UL</th>
<th>@ 75% UL</th>
<th>@ 60% UL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beechcraft King Air 200</td>
<td>2,500</td>
<td>2,325</td>
<td>2,200</td>
<td>2,150</td>
</tr>
<tr>
<td>Pilatus PC-12</td>
<td>2,400</td>
<td>2,320</td>
<td>2,220</td>
<td>2,120</td>
</tr>
<tr>
<td>Cessna 421C</td>
<td>2,360</td>
<td>2,300</td>
<td>2,230</td>
<td>2,120</td>
</tr>
<tr>
<td>Socata TBM 700</td>
<td>2,660</td>
<td>2,560</td>
<td>2,420</td>
<td>2,300</td>
</tr>
<tr>
<td>Piper PA 31P-350 Chieftain</td>
<td>1,950</td>
<td>1,800</td>
<td>1,700</td>
<td>1,600</td>
</tr>
<tr>
<td>Cessna 414A</td>
<td>2,490</td>
<td>2,400</td>
<td>2,300</td>
<td>2,160</td>
</tr>
<tr>
<td>Cessna 340</td>
<td>1,959</td>
<td>1,890</td>
<td>1,820</td>
<td>1,750</td>
</tr>
<tr>
<td>Cessna 310R</td>
<td>1,620</td>
<td>1,520</td>
<td>1,400</td>
<td>1,300</td>
</tr>
<tr>
<td>Beechcraft Baron G58</td>
<td>2,750</td>
<td>2,650</td>
<td>2,525</td>
<td>2,400</td>
</tr>
<tr>
<td>Piper PA-30 Twin Comanche</td>
<td>2,210</td>
<td>2,150</td>
<td>2,075</td>
<td>2,000</td>
</tr>
<tr>
<td><strong>Average:</strong></td>
<td><strong>2,268</strong></td>
<td><strong>2,168</strong></td>
<td><strong>2,066</strong></td>
<td><strong>1,969</strong></td>
</tr>
</tbody>
</table>

Source: Aircraft manuals

Users of the Lake Elmo Airport were contacted during the LTCP process concerning their runway length requirements. In addition to identifying longer takeoff lengths in the hot summer months because of payload and density-altitude factors, the users also commented on the need for additional landing length during the winter months for slippery conditions when longer landing rolls were required.

The landing length requirements shown in Table 22 are shorter than the takeoff and accelerate-stop distances presented in Section 2.3, but do not include any factors for wet or slippery surface conditions. In referencing the pilot operating handbooks, many identify a 30% increase to be added to the required landing length for slippery conditions or similar surface contamination. Requirements for commuter and on-demand (i.e. charter) operators of turboprop aircraft also have landing limitations that are specified.
within Part 135 code of federal regulations. These regulations specify the need for operators to be able to conduct a full stop landing within 60% of the available runway length at the destination airport, or within 70% of the available runway length at an alternate airport destination. While these regulations generally pertain to turboprop operators only, they do provide a frame of reference for suitable safety factors to be applied when considering winter landing length requirements.

As shown in Table 22, a 2,200-foot runway length would accommodate most landing operations for the family of aircraft shown during dry and uncontaminated conditions. Table 23 illustrates the adjusted landing length requirements when accounting for the various contamination and safety factors discussed above.

<table>
<thead>
<tr>
<th>Adjusted Average Landing Length</th>
<th>Landing Length Requirements for % Useful Load (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>@ 100% UL</td>
</tr>
<tr>
<td>Landing Length in Dry and Uncontaminated Conditions (ft):</td>
<td>2,268</td>
</tr>
<tr>
<td>Landing Length with 30% Increase for Wet and Slippery (ft):</td>
<td>2,948</td>
</tr>
<tr>
<td>Landing within 70% of Available Runway Length (ft):</td>
<td>3,240</td>
</tr>
<tr>
<td>Landing within 60% of Available Runway Length (ft):</td>
<td>3,780</td>
</tr>
</tbody>
</table>

In considering the adjusted landing lengths presented in Table 23, and the accelerate-stop distances presented in Table 21, a primary runway length of 3,500 to 3,600 feet would provide suitable operational distance. This length accounts for the safety factors associated with an aborted operation during takeoff and contaminated surface conditions during landings.

2.5 Crosswind Runway Length

AC 150/5325-4B also provides guidance for determining appropriate crosswind runway length. The runway length for crosswind runways is based on the recommended length for lower crosswind capable airplanes using the primary runway. At Lake Elmo, these consist of light, single-engine aircraft. For this analysis, a grouping of aircraft of this category and type, weighing less than 5,000 pounds, was selected from IFR operational databases maintained by FAA and the MACNOMS database described in Section 1.2.4. Table 24 on the next page summarizes the grouping of the light, single-engine aircraft that make regular use of the Lake Elmo Airport, and the takeoff runway length requirements of these aircraft. Based on the analysis of 2016 MACNOMS data presented in Section 1, approximately 97% of operations on Runway 04/22 are conducted by single-engine piston aircraft, nearly all of which weigh less than 5,000 pounds. Furthermore, the 2016 MACNOMS data indicate that approximately 25% of total aircraft operations at Lake Elmo Airport take place on Runway 04/22. Given the estimated total of 25,596 annual aircraft operations, approximately 6,399 operations were conducted on Runway 04/22 in 2016.

5 Electronic code of federal regulations, Part 135.385 pertains to landing limitations. Additional information is available at: https://www.ecfr.gov/cgi-bin/text-idx?SID=f6264ba184562097b414fe34a507ebbe&node=14:3.0.1.1.11.9.3.14&rgn=div6
The existing crosswind Runway 04/22 is currently 2,496 feet long. According to user input received during development of the Airport’s LTCP, the current crosswind runway length can be uncomfortably short during certain wind conditions. In consideration of user feedback, and the recommended takeoff lengths of the smaller and lighter aircraft identified in Table 24, a runway length of 2,700 to 2,800 feet would most appropriately accommodate crosswind operations at Lake Elmo. This length would accommodate the average takeoff requirements of the smaller and lighter airplanes operating at Lake Elmo Airport on a regular basis. Landing length requirements were not considered by this analysis, as they are generally shorter than the takeoff length requirements for these types of aircraft.

<table>
<thead>
<tr>
<th>Aircraft Model</th>
<th>Wingspan (ft)</th>
<th>Maximum Takeoff Weight (lbs)</th>
<th>Takeoff Runway Length Requirements¹ (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Piper PA-34 Seneca</td>
<td>38.9</td>
<td>4,570</td>
<td>3,000</td>
</tr>
<tr>
<td>Piper PA-46 Malibu</td>
<td>43.0</td>
<td>4,340</td>
<td>2,800</td>
</tr>
<tr>
<td>Lancair IV</td>
<td>35.5</td>
<td>3,850</td>
<td>2,800</td>
</tr>
<tr>
<td>Piper PA-30 Twin Comanche</td>
<td>36.0</td>
<td>3,600</td>
<td>3,600</td>
</tr>
<tr>
<td>Cirrus SR22</td>
<td>38.2</td>
<td>3,600</td>
<td>3,300</td>
</tr>
<tr>
<td>Beechcraft Bonanza 33</td>
<td>33.5</td>
<td>3,400</td>
<td>2,750</td>
</tr>
<tr>
<td>Mooney M20TN</td>
<td>36.5</td>
<td>3,368</td>
<td>2,450</td>
</tr>
<tr>
<td>Piper PA-28 Cherokee</td>
<td>35.0</td>
<td>2,550</td>
<td>2,300</td>
</tr>
<tr>
<td>Cessna 172</td>
<td>36.0</td>
<td>2,300</td>
<td>1,750</td>
</tr>
</tbody>
</table>

Average: 2,771

¹ Takeoff Length based on: Airport Elevation of 932 MSL, 30° Celsius, 10 knot headwind

Source: Aircraft manuals

### 2.6 Stage Length Considerations

In addition to safety, one of the key objectives of the LTCP was to increase the operational capabilities of the design aircraft family. As part of outreach efforts to assess the needs of Airport users, business operators noted the convenience that the Lake Elmo Airport provides to their operations by accommodating direct access to outlying areas in which they conduct business that are not otherwise serviced by major carriers. Users identified the frequent use of the Airport for business operations to a variety of locations throughout the Midwest, but additionally commented on restrictions due to the short runways and lack of instrument approaches.

Flight plans filed for instrument (IFR) operations to and from the Lake Elmo Airport were obtained for the past five years to identify the range of stage lengths that are currently accommodated. While IFR operations represent a small fraction of overall operations, business operators and those conducting longer cross country flights are more likely to file this type of flight plan. Table 25 on the next page illustrates the various ranges of IFR operations (in nautical miles) filed to and from the Lake Elmo Airport from 2012 to 2016.
Table 25 - Stage Length of IFR Operations to/from Lake Elmo Airport
Years 2012 - 2016

<table>
<thead>
<tr>
<th>Stage Length Range (NM)</th>
<th>IFR Departures</th>
<th>IFR Arrivals</th>
<th>Total IFR Operations</th>
<th>Cumulative IFR Operations</th>
<th>Cumulative Percentage of Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 100</td>
<td>433</td>
<td>316</td>
<td>749</td>
<td>749</td>
<td>20%</td>
</tr>
<tr>
<td>100 to 200</td>
<td>570</td>
<td>538</td>
<td>1108</td>
<td>1857</td>
<td>50%</td>
</tr>
<tr>
<td>200 to 300</td>
<td>437</td>
<td>573</td>
<td>1010</td>
<td>2867</td>
<td>77%</td>
</tr>
<tr>
<td>300 to 400</td>
<td>151</td>
<td>171</td>
<td>322</td>
<td>3189</td>
<td>86%</td>
</tr>
<tr>
<td>400 to 500</td>
<td>117</td>
<td>109</td>
<td>226</td>
<td>3415</td>
<td>92%</td>
</tr>
<tr>
<td>500 to 600</td>
<td>48</td>
<td>41</td>
<td>89</td>
<td>3504</td>
<td>94%</td>
</tr>
<tr>
<td>600 to 700</td>
<td>50</td>
<td>35</td>
<td>85</td>
<td>3589</td>
<td>96%</td>
</tr>
<tr>
<td>700 to 800</td>
<td>26</td>
<td>30</td>
<td>56</td>
<td>3645</td>
<td>98%</td>
</tr>
<tr>
<td>800 to 900</td>
<td>15</td>
<td>17</td>
<td>32</td>
<td>3677</td>
<td>99%</td>
</tr>
<tr>
<td>900 to 1000 and greater</td>
<td>9</td>
<td>41</td>
<td>50</td>
<td>3727</td>
<td>100%</td>
</tr>
</tbody>
</table>

Totals (2012 - 2016): 1,856 1,871 3,727

Source: FAA Traffic Flow Management System Counts (TFMSC) Database - City Pair for Calendar Years 2012 - 2016

Table 25 shows that approximately 92% of IFR operations at Lake Elmo were conducted to or from other airports within 500 nautical miles (NM). This affirms the FAA’s NPIAS classification of the Airport as a Regional GA facility. The range of IFR operations is depicted graphically in the map provided in Chart 3.

Chart 3: Range of Stage Length Operations to/from Lake Elmo Airport (2012-2016)
While most operations to and from the Lake Elmo Airport are anticipated to remain concentrated locally within the upper Midwest region, the IFR data shows that longer stage length operations are also conducted to distances that can stretch as far as the east coast, northern Florida and the western Rocky Mountains. In considering the objective to improve facilities for the family of aircraft using the Lake Elmo Airport, the runway lengths identified within the earlier sections will make longer trips to and from Lake Elmo Airport more feasible, and help operators reach a greater service area.

2.7 Runway Length Conclusions

Primary runway length needs were first evaluated utilizing FAA guidance provided in AC 150/5325-4B Runway Length Requirements for Airport Design for small, propeller-driven aircraft weighing less than 12,500 pounds and with fewer than 10 passenger seats. The AC identifies a recommended primary runway length ranging from 3,300 to 3,900 feet. To more precisely identify an appropriate runway length within that range, individual takeoff and landing length requirements for a grouping of representative aircraft were then evaluated. In considering the individual operational requirements, the accelerate-stop distance was found to be the most demanding length, resulting in a recommended primary runway length of 3,500 to 3,600 feet. This length provides sufficient safety to accommodate aborted takeoffs, as well as longer roll out lengths required for landings when the runway surface conditions are wet and slippery, and braking is less effective.

Crosswind runway length needs were determined by evaluating smaller, single-engine aircraft with maximum takeoff weights of less than 5,000 pounds. A grouping of aircraft of this size and type were selected from those making the most regular use of Lake Elmo Airport, and represent airplanes less capable of operating against a crosswind component on the primary runway. Runway length requirements were evaluated from performance charts for these aircraft, and a 2,700 to 2,800-foot runway length for crosswind operations was found to be the most appropriate for Lake Elmo Airport.

Feedback from the Airport users, and an analysis of trip lengths to and from the Lake Elmo Airport were also considered in evaluating the appropriate runway length conditions. The recommended lengths for each runway are summarized in Table 26.

<table>
<thead>
<tr>
<th>Table 26 - Recommended Runway Lengths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary and Crosswing Runways - Lake Elmo Airport (21D)</td>
</tr>
<tr>
<td>Recommended Runway Length</td>
</tr>
<tr>
<td>Primary Runway 14-32: 3,500 feet</td>
</tr>
<tr>
<td>Crosswind Runway 04-22: 2,750 feet</td>
</tr>
</tbody>
</table>

The runway lengths identified in Table 26 are consistent with the findings of the 2035 LTCP completed for the Lake Elmo Airport, and will serve to meet the key objectives of improving the safety and operational capabilities for the users at the Lake Elmo Airport.
3. Summary of Recommendations
The following is a summary of recommendations identified in this appendix:

- **Aircraft Activity.** The share of existing operations by multi-engine piston aircraft may have been underestimated by the LTCP; however, these aircraft are within the critical aircraft family and therefore re-allocation of operations to these aircraft should not change the project as proposed. The revised extended runway operations forecast shown in Table 18 was used to inform the Purpose & Need, Alternatives Analysis, and Environmental Consequences chapters of the EA/EAW.

- **Runway Length.** The required runway lengths identified in the LTCP are consistent with the needs of the representative family of aircraft with the most demanding performance characteristics that operate on either runway.
30th Street North Realignment Alternatives Review

Lake Elmo Airport Environmental Assessment

Report prepared by Mead & Hunt
# Table of Contents

1. **Introduction** .......................................................................................................... 1  
   A. Study Purpose ........................................................................................................ 1  
   B. Location of Study ............................................................................................... 1  

2. **Existing Site Conditions** ...................................................................................... 1  

3. **Alternative Descriptions** .................................................................................... 2  
   A. Previous Build Alternatives 1-3 from the 2035 LTCP ........................................ 2  
      (1) Realignment Alternative 1 ........................................................................ 2  
      (2) Realignment Alternative 2 ........................................................................ 3  
      (3) Realignment Alternative 3 ........................................................................ 3  
   B. Realignment Alternatives 4A and 4B – Realigned 30th Street / Neal Ave ....... 5  
      (4) Alternative 4A - Realigned 30th Street / Neal Ave with a Roundabout .... 5  
      (5) Alternative 4B - Realigned 30th Street / Neal Ave with a Tee Intersection 6  

4. **Traffic** .................................................................................................................... 6  
   A. Existing Traffic Volumes ..................................................................................... 6  
   B. Proposed Traffic Volumes .................................................................................. 6  
   C. Intersection Operations ..................................................................................... 6  
   D. Emergency Response Times ............................................................................. 7  

5. **Alternative Review** ............................................................................................... 8  
   A. Typical Sections ................................................................................................... 8  
   B. Design Vehicles ................................................................................................ 9  
   C. Posted Speed Limits and Design Speed ......................................................... 9  
   D. Roadway Characteristics ................................................................................. 10  
   E. Intersection Characteristics ............................................................................. 11  
      (1) Minor road stop control (one-way) for Alternative 4B ............................... 11  
      (2) All-way, stop-controlled for Alternative 3 ................................................ 12  
      (3) Single lane roundabout for Alternative 4A ............................................ 12  
   F. Right-of-Way (ROW) and Access Management ......................................... 13  
   G. Constructability and Construction Sequencing ............................................ 14  
   H. Environmental Impacts .................................................................................. 14  

6. **Summary** ............................................................................................................. 15
Appendices

Appendix A: Alternative Layouts
Appendix B: Traffic Data
Appendix C: Cost Estimates

Tables

Table 1: ................................................................. 2016 Traffic Count Data
Table 2: .......................................................... Anticipated Changes to Travel Time
Table 3:.................................Alternative Geometric Design Characteristics
Table 4:.................................Anticipated Right-of-Way Needs
Table 5:.................................Anticipated Agricultural and Wetland Impacts
Table 6:.................................................................Alternative Evaluation Matrix

Exhibits

Exhibit 1: Project Location
Exhibit 2: 2035 LTCP 30th Street N Relocation Alignment Alternatives
1. Introduction

A. Study Purpose

In September of 2016, the Metropolitan Airports Commission (MAC) adopted the 2035 Long-Term Comprehensive Plan (LTCP) for the Lake Elmo Airport. The study’s final preferred alternative recommended the construction of a new 3,500-foot Runway 14-32 adjacent to the existing runway, which will be converted into a taxiway for the new runway. The existing 30th Street N is in direct conflict with the proposed new runway.

Three alternatives were presented and analyzed in the LTCP for realigning 30th Street N. This report provides an overview of the road realignment alternatives considered by the LTCP, and presents two additional alternatives to consider during the National Environmental Policy Act (NEPA) process that seek to respond to public concerns while also meeting the project objectives. The purpose of this report is to summarize alternatives considered by the Environmental Assessment (EA), in addition to the preferred alternative alignment identified in the LTCP.

B. Location of Study

The airport is located approximately 12 miles northeast of downtown St. Paul and one mile east of downtown Lake Elmo, within Baytown and West Lakeland Townships. The focal point of the study is 30th Street N (located along the southern edge of Lake Elmo Airport), Neal Avenue North, and the intersection of these two roadways. As shown in Exhibit 1 on the next page, the analysis area is bound by CSAH 14 (40th Street N) to the north, CSAH 65 (Oakgreen Avenue North) to the east, CSAH 10 (10th Street North) to the south, and CSAH 15 (Manning Avenue N) to the west.

2. Existing Site Conditions

Existing land uses within the study area consists of a mix of agricultural, residential, and public (Lake Elmo Airport), however, the land use around the proposed realignment area is primarily agricultural with large lot rural residential property located east of Neal Avenue N and south of the airport. The terrain within the analysis area is classified as level.

Soils maps available from National Resources Conversation Service (NRCS) show the soils in the area generally consist of Antigo Silt Loam, Campia Silt Loam, and Crystal Lake Silt Loam. These soils generally have an A-4 rating under the AASHTO Group Classification, which categorizes this soil type as fair to poor for use as a roadway subgrade material.
3. Alternative Descriptions

Three build alternatives for 30th Street N were presented in the 2035 LTCP. This report reviews these alternatives and develops two additional alternative layouts, which are introduced in the following section and are shown in Appendix A. An Alternative Evaluation Matrix summarizing the impacts of the two new alternatives compared to the preferred alignment from the LTCP (Alternative 3) can be found on Table 6 in Section 6.

Based on public input received during the LTCP and EA processes, 30th Street North is an important local traffic corridor that must be maintained. Therefore, closing 30th Street North was discarded as an alternative and was not considered in detail by the LTCP or EA.

A. Previous Build Alternatives 1-3 from the 2035 LTCP

Alternatives 1-3 as described in the 2035 LTCP are presented below and shown on Exhibit 2.

(1) Realignment Alternative 1

This alternative realigns 30th Street N to the southeast of the relocated Runway 32 RPZ so that it intersects with Neal Avenue approximately ¼-mile south of the existing intersection. The design speed for the relocated roadway is 45 miles per hour. With this alignment option, through traffic
on 30th Street N would experience two additional turning movements in each direction and an increase in total travel distance (about 1,800 feet). Also, 30th Street N through traffic would be introduced onto the segment of Neal Avenue between the intersections. Conversely, local traffic flowing between Manning Avenue and residential developments to the south of the new intersection would be removed from this segment of Neal Avenue and benefit from a reduced travel distance. For the reasons identified above, this alternative was discarded.

(2) Realignment Alternative 2

This alternative realigns 30th Street N around the end of the relocated Runway 32 RPZ but continues the curve to the north so that the roadway reconnects at the existing Neal Avenue alignment and intersection. Access to existing Neal Avenue south of the realigned area would be maintained through construction of a new “T” intersection. The design speed for the relocated roadway is 45 miles per hour. With this alignment option, through traffic on 30th Street N would experience one additional turning movement in each direction and an increase in total travel distance (about 1,500 feet). Compared to Realignment Alternative 1, 30th Street N traffic would be introduced onto a shorter segment of the existing Neal Avenue alignment. Impacts to local traffic flowing between Manning Avenue and residential developments to the south of the new intersection are like those in Alternative 1. For the reasons identified above, this alternative was discarded.

(3) Realignment Alternative 3

This alternative maintains the existing four-way intersection at 30th Street N and Neal Avenue; the realigned roadway curves around the relocated Runway 32 RPZ. Due to the tighter curves, the design speed for the relocated roadway is reduced to 30 miles per hour. With this alignment option, there are no new intersections or turning movements for thru traffic on 30th Street N and no new traffic is introduced onto Neal Avenue. However, this alignment does not allow for the relocated Runway 14/32 to be extended to its recommended length of 3,600 feet as originally proposed and was designed specifically for a shortened 3,500-foot runway, however this layout does intersect the corners of the MnDOT Clear Zone. This alternative was selected as the Final LTCP Preferred Alternative and will be compared to the two new realignment concepts in Sections 4, 5, and 6 of this report.
EXHIBIT 2: 2035 LTCP 30TH STREET N RELOCATION ALIGNMENT ALTERNATIVES

**ALTERNATIVE 1**
- SPEED LIMIT: 45 mph
- COMPATIBLE WITH AIRFIELD ALTERNATIVE B (3,800')
- COMPATIBLE WITH AIRFIELD ALTERNATIVE C (3,900')
- ADDS 30TH ST N TRAFFIC TO A PORTION OF NEAL AVE N
- REQUIRES CONSTRUCTION OF ADDITIONAL INTERSECTION

**ALTERNATIVE 2**
- SPEED LIMIT: 45 mph
- COMPATIBLE WITH AIRFIELD ALTERNATIVE B (3,600')
- COMPATIBLE WITH AIRFIELD ALTERNATIVE C (3,900')
- ADDS 30TH ST N TRAFFIC TO A PORTION OF NEAL AVE N
- REQUIRES CONSTRUCTION OF ADDITIONAL INTERSECTION

**ALTERNATIVE 3**
- SPEED LIMIT: 30 mph
- RESTRICTS AIRFIELD ALT. B RUNWAY LENGTH TO 3,150'
- RESTRICTS AIRFIELD ALT. C RUNWAY LENGTH TO 3,750'
- NO ADDITIONAL INTERSECTION REQUIRED
B. Realignment Alternatives 4A and 4B – Realigned 30th Street / Neal Ave

The roadway alignment shown in the Alternative 4A and 4B layouts are modified hybrid versions of Alternatives 2 and 3. Assuming a Runway 14/32 length of 3,500 feet and reduced runway protection zone (RPZ) size as identified by the LTCP Final Preferred Development Alternative, these alternatives shift the road alignment to the northwest, introducing a longer straight section to incorporate an intersection treatment. The Alternate Layouts in Appendix A show the two intersection treatment options. Alternative 4A includes a roundabout at the intersection of realigned 30th Street N and Neal Avenue N, while Alternative 4B shows a tee intersection option.

These alternatives realign 30th Street N to the southeast of the proposed Runway 32 RPZ and intersects realigned portions of Neal Avenue N at a proposed intersection 600 feet southwest of the existing intersection. This layout intersects the corners of the MnDOT Clear Zone to minimize impacts to adjacent residential properties along Neal Avenue N.

The proposed design speed for 30th Street N west of the proposed intersection is 60 MPH transitioning to 35 MPH prior to entering the intersection. Realigned 30th Street N to the east of the intersection and Neal Avenue N to the south of the intersection would have design speeds of 35 MPH. See Section 5.C for more information regarding existing and proposed posted speed limits and design speeds. An access road is proposed on the southeast leg of the intersection to connect to the existing Neal Avenue N to provide access to the adjacent property owners and has a design speed of 25 MPH. Both alternatives effectively move the four-way stop controlled intersection to the southwest and increase the total travel distance on 30th Street N by approximately 985 feet compared to the existing condition.

Both alternatives would also move through traffic further away from the residential properties located on Neal Avenue North, creating a larger buffer between traffic and existing residential properties.

The following intersection types were evaluated on this alignment alternative:

1. Alternative 4A - Realigned 30th Street / Neal Ave with a Roundabout

   Alternative 4A constructs a single lane roundabout at the proposed intersection of 30th Street N and Neal Avenue N. This alternative provides the following considerations:
   - Reduced travel delays at the intersection.
   - Several state DOTs and the Insurance Institute for Highway Safety have found roundabouts reduce severe crashes, especially at right angles.
   - Does not prioritize traffic on one entering roadway over another.
   - Provides traffic calming along 30th Street N between curves with different speed zones along the proposed realignment.
   - Roundabout provides options for landscape and creation of a gateway into the adjacent residential areas.
   - More expensive construction and right-of-way costs than the tee intersection option.
(2) Alternative 4B - Realigned 30th Street / Neal Ave with a Tee Intersection

Alternative 4B constructs a tee intersection that provides a left turn with a through bypass for the 30th Street N westbound traffic and a right-turn lane onto Neal Ave N from eastbound 30th Street N. Along Neal Avenue N, northbound traffic will be required to stop at the intersection and wait for gaps in the 30th Street N traffic. This alternative provides the following considerations:

- Increased travel delays along Neal Avenue N at the intersection for the stop condition.
- Decreased travel delays along 30th Street N.
- Prioritize traffic on 30th Street N over traffic on Neal Avenue N.
- Intersection is located within a speed change zone along 30th Street N between the two curves.
- Intersection sight distance from Neal Avenue N requires driver to look more than 90 degrees to the right for vehicles while turning left onto 30th Street N due to curvature of the roadway.
- Less expensive construction and right-of-way costs than the roundabout option.

4. Traffic

Traffic in the area was evaluated along 30th Street N and Neal Avenue N based on count data available from Washington County count stations located west of CSAH 15 and east of CSAH 65.

A. Existing Traffic Volumes

Existing traffic volumes were collected by Washington County at the following count stations:

<table>
<thead>
<tr>
<th>Roadway Location</th>
<th>Date of Count</th>
<th>Volume from count</th>
</tr>
</thead>
<tbody>
<tr>
<td>30th St. N East of CSAH 15</td>
<td>Monday July 18 – Wednesday July 20, 2016</td>
<td>1478</td>
</tr>
<tr>
<td>30th St. N East of CSAH 65</td>
<td>Tuesday May 24 – Thursday May 26, 2016</td>
<td>1024</td>
</tr>
</tbody>
</table>

The volume signifies a daily total and is the total number of vehicles for both directions of travel. An hourly breakdown of data from these counts can be found in Appendix B.

B. Proposed Traffic Volumes

Traffic forecasts were based off the Manning Avenue corridor study prepared for Washington County in 2014. The report can be found at: [https://www.co.washington.mn.us/DocumentCenter/View/7426](https://www.co.washington.mn.us/DocumentCenter/View/7426). Based on growth factors in the area, the projected average daily traffic (ADT) for 30th Street N is anticipated to be 2,000 vehicles per day by 2030.

C. Intersection Operations

Various intersection alternatives including roundabouts and tee intersections are proposed as part of this study. Based on the proposed traffic volumes above, hourly volumes were developed and a capacity analysis of the proposed layouts was run using Highway Capacity Software (HCS). The results of this
analysis can be found in Appendix B. Based the capacity analysis, the proposed intersection alternatives for 30th Street N with Neal Avenue N are anticipated to provide a minimum Level-of-Service (LOS) of A, which signifies minimal delays are anticipated during the peak hour of travel.

**D. Emergency Response Times**

Comments received during public review of the 2035 LTCP identified potential increases in emergency response times as a concern of residents. An initial review of the travel times for each new alternative is shown and compared to Alternative 3 below in Table 2. The travel time differences were determined by computing the travel time along the proposed alternative beginning at the existing intersection of 30th Street N / Manning Avenue N and traveling eastbound to 30th Street N / Neal Avenue N, and comparing them to the base travel time along the existing roadway. The travel times are computed based on the difference in length of proposed roadway compared to the existing length, the anticipated posted speed limit along the roadway, and delay associated with the proposed intersection type. The delay at the intersection is the approach delay which includes stopped-time delay and the time loss due to deceleration from the approach speed to a stop and the time loss due to re-acceleration back to the desired speed. This delay is computed utilizing Highway Capacity Software (HCS) based on estimated peak hour volumes. It should be noted that emergency response times could be higher or lower since the first responder’s vehicles travel speed may differ from the anticipated posted speed limit. In addition, changes to travel time differ under each alternative based on whether the destination is east or south of the study area.

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Anticipated Changes to Travel Time (seconds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>+46.1</td>
</tr>
<tr>
<td>4A</td>
<td>+28.5</td>
</tr>
<tr>
<td>4B</td>
<td>+26.8</td>
</tr>
</tbody>
</table>

**Table 2: Anticipated Changes to Travel Time Compared to Existing Condition**

<table>
<thead>
<tr>
<th>FROM MANNING AVENUE N TO EAST OF NEAL AVENUE N ALONG 30TH STREET N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternative</td>
</tr>
<tr>
<td>-------------</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4A</td>
</tr>
<tr>
<td>4B</td>
</tr>
</tbody>
</table>

**FROM MANNING AVENUE N TO NEAL AVENUE N SOUTH OF 30TH STREET N**

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Anticipated Changes to Travel Time (seconds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>+46.1</td>
</tr>
<tr>
<td>4A</td>
<td>+10.8</td>
</tr>
<tr>
<td>4B</td>
<td>+6.8</td>
</tr>
</tbody>
</table>

Notes:
- Alternative 3 did not include approach delay since the existing and proposed alternatives ends at the all-way stop controlled intersection and the approach delay would be the same for both conditions. Alternative travel time change is based solely on the increased length and the decrease in the anticipated posted speed.
- Alternatives 4A and 4B existing condition includes an additional approach delay of 8.9 seconds for the existing all-way stop control intersection of 30th Street N with Neal Avenue N per the highway capacity manual. The proposed alternatives do not have approach delay at this location since the existing all-way stop is anticipated to be removed.
- Alternative 4A includes an approach delay of 3.1 sec. on the approach of each leg of the roundabout per the results of the Highway Capacity Software.
- Alternative 4B does not includes a deceleration/acceleration delay for vehicles traveling eastbound on 30th Avenue N since no stop control is present and includes a deceleration/acceleration delay only for vehicles turning right onto Neal Avenue N.
The Airport and adjacent areas in Bayport and West Lakeland Townships to the immediate north, south, and east are within the Bayport Fire Department (BFD) service area, while adjacent areas to the immediate west are within the City of Lake Elmo Fire Department service area. Because it is located outside the City of Lake Elmo, the proposed realignment of 30th Street N would not affect primary emergency response west of the Airport. The realigned segment of 30th Street N is located entirely within the BFD service area. The BFD headquarters building is located approximately four and a half miles northeast of and is an approximate seven-minute drive from the Airport.

The project team met with BFD staff during the EA process to assess potential impacts to emergency response associated with the realignment of 30th Street N. The realignment of 30th Street N is not anticipated to be a detriment to initial emergency response times from BFD to any locations within its service area. This conclusion is based on information provided by BFD that indicates the affected segment of 30th Street N would not be used during its initial response to emergencies at any location within its service area. The primary use of 30th Street N with respect to emergency response would be for shuttling municipal water from hydrants in the City of Lake Elmo to replenish water capacity when fighting fires in areas east of the airport that do not have water service. The BFD fleet has a combined water tank capacity of over 4,000 gallons, and is supported by mutual aid responders from Stillwater, Lower St. Croix, Lake Elmo, and Hudson with a combined fleet capacity of over 10,000 gallons. Based on fleet capacity and planned extension of water services to new residential areas immediately west of the airport, the project team does not believe that the changes in travel times shown in Table 2 represent an adverse effect to water shuttles that cannot be mitigated by available means.

5. Alternative Review

This section provides a detailed review, analysis, and comparison of Alternatives 3, 4A, and 4B. The 30th Street N roadway east of Manning Avenue N is functionally classified as a major collector based on the Functional Classification System prepared by the Metropolitan Council in September of 2014 (http://giswebsite.metc.state.mn.us/mapgallery/pdfs/large_reference_fun_class.pdf). According the 2030 Washington County transportation plan, “collector roadways serve shorter trips and allow more direct access from local streets and driveways. These roadways collect and distribute traffic to the arterial system from neighborhoods as well as commercial and industrial areas.” Neal Avenue to the immediate south of 30th Street N is functionally classified as a local road, which “connect blocks within residential neighborhoods as well as commercial and industrial areas.” These classifications define a roadway’s purpose and use, and are important in determining which roadway, shoulder, and right-of-way widths would be applied to each segment of roadway based on the town standards.

A. Typical Sections

A rural typical section was assumed for the build alternatives due to the existing location and characteristics of the project setting. The project is in an undeveloped area and characterized by relatively higher / rural speed limits. The assumed typical section is based on Baytown and West Lakeland...
Township street design standards, which call for the following minimum pavement widths for a collector roadway:

- Minimum Roadway Width 24 feet
- Shoulder Width 8 feet

Note: The difference between the West Lakeland and Baytown Township street design standards is that the West Lakeland standard requires a 4-foot shoulder width for a collector roadway, whereas the Baytown standard requires an 8-foot shoulder width. Furthermore, the Baytown Township standards require an 8-foot shoulder width for collector roads and a 4-foot shoulder width for local roads. For this study, an 8-foot shoulder width was utilized for both 30th Street N and Neal Avenue N to determine the costs and impact of the proposed alternatives.

B. Design Vehicles

For the design of horizontal alignment, super elevations, and roundabout design in Alternative 4A, the WB-19 (WB-62) semi tractor-trailer combination design vehicle was utilized. For the design of turning movements and sight lines at the tee and all-way stop intersections in Alternative 3 and 4B, the SU (single unit) design vehicle was utilized.

As noted previously, the project team met with the Baytown Fire Department during the EA process to discuss the alternative layouts presented in this report. Following the meeting, the design and turning movements within the cul de sacs in Alternatives 4A and 4B were checked against the following vehicles utilized by the fire department:

- 2001 Pierce Dash
- 2007 Pierce Velocity
- 2014 Rosenbauer Commander
- 2001 Kenworth tandem

The turning movements evaluated for the fire department included the ability of the engines to turn around and maneuver within the cul de sac and the ability of water tenders to circulate between a water source and a drop tank located on the cul de sac. All turning movements were checked utilizing AutoTurn design software.

C. Posted Speed Limits and Design Speed

Posted speed limits are relatively high in the project area. The following posted speed limits were observed within the project area:

- 30th Street N (between Manning Ave N and Neal Ave N) 55 MPH
- 30th Street N (east of Neal Ave N) 45 MPH
- Neal Street North (south of 30th Street N) 45 MPH
- Neal Street North (north of 30th Street N) Unposted

Design speed is the speed used to determine the various geometric design features of a roadway. The design speeds for each alternative vary for each roadway, are shown on the Alternative Layouts, and are
anticipated to be 5 miles per hour higher than the posted speed limits. This assumption is based on industry best practice, as well as the MnDOT Road Design Manual, which states that “it is typically desirable to choose a design speed that equals or exceeds the anticipated posted speed, and complements the highway type, setting, functional classification, traffic volume, and terrain.” The design speeds are described in the alternative description section based on guidance provided in MnDOT Road Design Manual for rural highways and are super-elevated based on a maximum rate of 6% slope across the roadway.

D. Roadway Characteristics

The roadway geometric design characteristics for Alternatives 3, 4A, and 4B are presented below in Table 3.

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Alternative 3</th>
<th>Alternative 4A</th>
<th>Alternative 4B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final LTCP Alternative</td>
<td>Modified Hybrid with New Roundabout</td>
<td>Modified Hybrid with New T-Intersection</td>
<td></td>
</tr>
<tr>
<td>Design Speed</td>
<td>30-mph</td>
<td>60-mph transitioning to 35-mph</td>
<td>60-mph transitioning to 35-mph</td>
</tr>
<tr>
<td>Curve Radius Radius #1</td>
<td>R = 675’</td>
<td>R = 1,273’</td>
<td></td>
</tr>
<tr>
<td>Length = 544.18</td>
<td>Length = 1,035.50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SE% = 5.7%</td>
<td>SE% = 6.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radius #2</td>
<td>R = 500’</td>
<td>R = 498’</td>
<td></td>
</tr>
<tr>
<td>Length = 1,157.85</td>
<td>Length = 981.32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SE% = 6.0%</td>
<td>SE% = 3.5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radius #3</td>
<td>R = 215’</td>
<td>R = 315’</td>
<td></td>
</tr>
<tr>
<td>Length = 295.96’</td>
<td>Length = 376.90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SE% = 6.0%</td>
<td>SE% = 6.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intersection Type</td>
<td>All-way stop</td>
<td>Roundabout</td>
<td>Tee Intersection</td>
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<tr>
<td>No. of Conflict Points</td>
<td>32</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Required Field of View</td>
<td>213°</td>
<td>133°</td>
<td>173°</td>
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<tr>
<td>Typical Section</td>
<td>12’ Travel Lanes with 8’ gravel shoulders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross Slope</td>
<td>2% Typical</td>
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<td></td>
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<tr>
<td>Paved Surface</td>
<td>Assumed Asphalt Paved with Gravel Base</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:
- Radius are presented starting on the west end on the proposed alternative and proceeding easterly.
- The 60-mph design speed for Alternatives 4A and 4B applies west of the southernmost curve of the proposed realigned road.
Key characteristics to highlight for this review include the curve radius, vehicle conflict points, and field of vision or sight distance.

(1) **Horizontal Curve Radius**

The horizontal curve radius of the layout is directly related to the design speed. A shorter, smaller radius curve will generally be associated with lower design speeds than a larger, longer radius. This is also demonstrated in the travel time changes presented in Table 2. Alternative 3 generally has smaller curve radii along the entire alignment than Alternatives 4A/4B. This results in a speed change from 55 mph to 30 mph occurring prior to entering the project area for Alternative 3, whereas Alternative 4A/4B uses a larger radius on the west end of the project area, allowing the 55 mph speed limit to continue into the project area before requiring a speed reduction to 30 mph.

(2) **Vehicular Conflict Points**

A vehicular conflict point is the point at which the paths of two through or turning highway users (motorist, pedestrian, bicyclist) diverge, merge, or cross. An increased number of conflict points is generally associated with increased levels of roadway accidents, so reducing the number of conflicts points is an approach to improve safety along the road corridor.

(3) **Field of Vision**

Field of vision and sight distance are critical components of the intersection operation and safety. How sight lines affect the intersection differ based on the type of traffic control that is in place. This is described in more detail in the next section.

E. **Intersection Characteristics**

Three different intersection treatments are presented in the alternatives. Below is a brief description of the intersection control types and the advantages and disadvantages of each alternative.

(1) **Minor road stop control (one-way) for Alternative 4B**

This treatment was applied to the new intersection proposed by Alternative 4B. It includes a stop sign on the south approach along Neal Avenue N and no stop sign for traffic on 30th Street N. This is the most common type of intersection installed on rural roadway systems that are determined to need minimal traffic control.

Advantages

- Low installation costs
- Low maintenance costs
- Reduced number of vehicular conflict points (total of 9)
- Continuous traffic flow for major approaches.

Cons:

- Higher stop control delay during peak periods for minor approach.
• Requires longer sight lines be maintained for visibility and safety for stopped vehicle to
gauge, react, and enter traffic stream safely.
• Risk for severe crashes as traffic increases.

(2) All-way, stop-controlled for Alternative 3

This intersection treatment was applied to Alternative 3 and maintains the existing all-way stop
control at the intersection of 30th Street N and Neal Avenue N. All-way, stop control can be useful
as a safety measure at intersections if certain traffic volume and safety conditions exist. Safety
concerns typically associated with all-way stops include pedestrians, bicyclists, and all road users
expecting other road users to stop, inability to provide adequate sight distance, or where the
volume of traffic on the intersecting roads is approximately equal and when traffic conditions are
met in accordance to the Manual of Uniform Traffic Control Devices (MUTCD).

Advantages
• Provides for orderly flow of traffic
• Reduce the severity and frequency of right angle and left turn crashes over minor road
  stop control
• Relatively inexpensive and quick to implement
• Does not require extensive sight lines like the minor road stop control intersection, but
  sight distance is required for vehicles to react in case one vehicle is non-compliant with
  the traffic sign (i.e. failure to stop).

Disadvantages
• Some types of crashes may increase (i.e. rear end)
• Highest number of vehicular conflict points (total of 32)
• Limited to lower volume intersections
• Increases delay to all legs of the intersection
• Total intersection capacity is limited
• Providing for U turns can be difficult and may be prohibited

(3) Single lane roundabout for Alternative 4A

This treatment was applied to the new intersection proposed by Alternative 4A and consists of a
three-way roundabout with yield signs along all three approaches. Roundabouts are circular
intersections with specific design and traffic control features. These features include yield control
of all entering traffic, channelized approaches, and appropriate geometric curvature to ensure that
travel speeds on the circulatory roadway are typically less than 30 miles per hour (mph). Also,
traffic movement is possible only in a counter-clockwise direction within the roundabout.
Roundabout intersections eliminate several vehicle conflict points typically associated with
traditional intersections. A four-legged, single lane roundabout has 75 percent fewer vehicle
conflict points than a traditional stop-controlled intersection. Roundabouts also enhance safety by
reducing vehicle speeds both in and through the intersection.
Advantages

- Provides for orderly flow of traffic
- Lowest number of vehicular conflict points (total of 6)
- Minimizes the severity and frequency of most crash types (89 percent decrease in fatal crashes, a 74 percent decrease in life-altering injury crashes, and a 39 percent decrease in all crashes)
- Provides traffic calming by reducing vehicular speeds on all approaches
- U turns can be executed safely and easily
- Less delay than other types of intersection control (reduced fuel consumption, better air quality)
- Does not require extensive sight lines like the minor road stop control intersection, but sight distance is required for vehicles to see next approach and vehicle within circulatory roadway and react.

Disadvantages

- Highest installation costs
- May need additional right of way at intersection
- Typically requires additional features such as landscaping, lighting, and truck aprons
- Typically requires more initial design effort than other intersection types
- Works best with single lane approaches

F. Right-of-Way (ROW) and Access Management

Right-of-way (ROW) impacts were estimated assuming a 50-foot offset from the centerline of the proposed pavement for both the 30th Street North and Neal Avenue North roadways. This assumption coincides with the minimum ROW width of 100 feet for a collector roadway as required in the Baytown and West Lakeland Township street design standards. Although the standard 60-foot ROW width for a local road is narrower, a 100-foot ROW was used for Neal Avenue N to account for uneven terrain in some areas which may require a wider ROW to accommodate the proposed design. This assumption also allows for a standard ditch section. Existing and proposed ROW is shown on the Alternative layouts. Proposed modifications to existing property access points in also shown on the Alternative Layouts in Appendix A.

The following table breaks down the right-of-way needed for each alternative into right-of-way required within airport property, right-of-way required outside of airport property, and total right-of-way required:

<table>
<thead>
<tr>
<th>Alternative</th>
<th>ROW within Airport Property (Acres)</th>
<th>ROW outside of Airport Property (Acres)</th>
<th>Total ROW Required (Acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>7.24</td>
<td>0.00</td>
<td>7.24</td>
</tr>
<tr>
<td>4A</td>
<td>9.51</td>
<td>0.00</td>
<td>9.51</td>
</tr>
<tr>
<td>4B</td>
<td>9.29</td>
<td>0.00</td>
<td>9.29</td>
</tr>
</tbody>
</table>
The right-of-way needs for each alternative are shown on the Alternate Layouts in Appendix A.

G. Constructability and Construction Sequencing

The proposed roadways are on new alignments, south of the existing 30th Street N roadway. It is anticipated the existing roadway will remain open to traffic while the new roadway and associated intersections are constructed. Short term closures of 30th Street N and Neal Street N would be required to construct the connections to the existing roadway. These closures would be non-concurrent to maintain access to residents along these routes.

H. Environmental Impacts

Based on the National Historic Preservation Act Section 106 investigation completed for the EA, there are no historical or archeological sites affected by Alternatives 3, 4A, or 4B. The primary known environmental impacts are the need for additional right-of-way required Airport property currently being used for agricultural purposes and encroachments to wetlands located adjacent to 30th Street N. The right-of-way need from agricultural properties and wetland encroachments for each new alternative are estimated and compared to Alternative 3 in Table 5 and on the Alternative Layout in Appendix A.

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Agricultural Row Required (Acres)</th>
<th>Anticipated Wetland Impact within ROW (Acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>7.24</td>
<td>0.124</td>
</tr>
<tr>
<td>4A</td>
<td>9.51</td>
<td>0.115</td>
</tr>
<tr>
<td>4B</td>
<td>9.29</td>
<td>0.115</td>
</tr>
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</table>
6. Summary

Several parameters were used to review the three build alternatives presented in this study. Table 6 summarizes the outcome of alternative review. Design characteristics and travel time increases associated with Alternatives 4A and 4B are preferable to those associated with Alternative 3. However, these new alternatives would be more costly to implement.

<table>
<thead>
<tr>
<th></th>
<th>Alternative 3</th>
<th>Alternative 4A</th>
<th>Alternative 4B</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Final LTCP</strong></td>
<td>$1.0 million</td>
<td>$1.5 million</td>
<td>$1.4 million</td>
</tr>
<tr>
<td><strong>Cost</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Design Characteristics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vehicle Points of Conflict at Intersection</td>
<td>32</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Required Field of Vision at Intersection</td>
<td>213°</td>
<td>133°</td>
<td>173°</td>
</tr>
<tr>
<td>Radius of Easternmost Curve</td>
<td>200 feet</td>
<td>315 feet</td>
<td>315 feet</td>
</tr>
<tr>
<td>Travel Time Increase from Manning Avenue to East of Existing 30th/Neal Intersection</td>
<td>+ 46.1 seconds</td>
<td>+ 28.5 seconds</td>
<td>+ 26.8 seconds</td>
</tr>
<tr>
<td>Travel Time Increase from Manning Avenue to South of Existing 30th/Neal Intersection</td>
<td>+ 46.1 seconds</td>
<td>+ 10.8 seconds</td>
<td>+ 6.8 seconds</td>
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<td>Environmental Factors (approx.)</td>
<td>0.12 acres</td>
<td>0.12 acres</td>
<td>0.12 acres</td>
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Appendix A: Alternative Layouts
Appendix B: Traffic Data
## Traffic Count Data

### 68841 - 30th St E of CR 65

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**Total** 1024
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<td></td>
</tr>
<tr>
<td>20:00 - 20:59</td>
<td>49</td>
<td>67</td>
<td>58</td>
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<tr>
<td>21:00 - 21:59</td>
<td>43</td>
<td>40</td>
<td>42</td>
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</tr>
<tr>
<td>22:00 - 22:59</td>
<td>18</td>
<td>31</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>23:00 - 23:59</td>
<td>14</td>
<td>13</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1478</strong></td>
<td></td>
<td></td>
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</table>
## General Information
- Analyst: DLW
- Agency or Co.: Mead & Hunt
- Date Performed: 4/21/2017
- Analysis Year: Design
- Time Analyzed: Peak Hour Alternate 1
- Project Description: Lake Elmo Airport

## Site Information
- Intersection: 30th Street & Neil Avenue
- E/W Street Name: 30th Street
- N/S Street Name: Neil Avenue
- Analysis Time Period (hrs): 0.25
- Peak Hour Factor: 0.92

## Volume Adjustments and Site Characteristics

<table>
<thead>
<tr>
<th>Approach</th>
<th>EB</th>
<th>WB</th>
<th>NB</th>
<th>SB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Movement</td>
<td>U</td>
<td>L</td>
<td>T</td>
<td>R</td>
</tr>
<tr>
<td>Number of Lanes (N)</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
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<tr>
<td>Lane Assignment</td>
<td>LTR</td>
<td>LTR</td>
<td>LTR</td>
<td>LTR</td>
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<tr>
<td>Volume (V), veh/h</td>
<td>0</td>
<td>20</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>Percent Heavy Vehicles, %</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Flow Rate (vPCE), pc/h</td>
<td>0</td>
<td>22</td>
<td>1</td>
<td>16</td>
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<tr>
<td>Right-Turn Bypass</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
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<tr>
<td>Conflicting Lanes</td>
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<td>1</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Pedestrians Crossing, p/h</td>
<td>0</td>
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## Critical and Follow-Up Headway Adjustment

<table>
<thead>
<tr>
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<th>SB</th>
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</thead>
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<tr>
<td>Lane</td>
<td>Left</td>
<td>Right</td>
<td>Bypass</td>
<td>Left</td>
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<tr>
<td>Critical Headway (s)</td>
<td>4.9763</td>
<td>4.9763</td>
<td>4.9763</td>
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<td>Follow-Up Headway (s)</td>
<td>2.6087</td>
<td>2.6087</td>
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## Flow Computations, Capacity and v/c Ratios

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<th>EB</th>
<th>WB</th>
<th>NB</th>
<th>SB</th>
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</thead>
<tbody>
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<td>Lane</td>
<td>Left</td>
<td>Right</td>
<td>Bypass</td>
<td>Left</td>
</tr>
<tr>
<td>Entry Flow (vL), pc/h</td>
<td>39</td>
<td>4</td>
<td>28</td>
<td>67</td>
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<tr>
<td>Entry Volume veh/h</td>
<td>39</td>
<td>4</td>
<td>28</td>
<td>66</td>
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<tr>
<td>Circulating Flow (vC), pc/h</td>
<td>67</td>
<td>49</td>
<td>78</td>
<td>19</td>
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<tr>
<td>Exiting Flow (vE), pc/h</td>
<td>57</td>
<td>19</td>
<td>34</td>
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<td>Capacity (c), veh/h</td>
<td>1289</td>
<td>1313</td>
<td>1274</td>
<td>1354</td>
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<td>v/c Ratio (x)</td>
<td>0.03</td>
<td>0.00</td>
<td>0.02</td>
<td>0.05</td>
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## Delay and Level of Service

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<th>EB</th>
<th>WB</th>
<th>NB</th>
<th>SB</th>
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<tbody>
<tr>
<td>Lane</td>
<td>Left</td>
<td>Right</td>
<td>Bypass</td>
<td>Left</td>
</tr>
<tr>
<td>Lane Control Delay (d), s/veh</td>
<td>3.1</td>
<td>2.8</td>
<td>3.0</td>
<td>3.1</td>
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<tr>
<td>Lane LOS</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>95% Queue, veh</td>
<td>0.1</td>
<td>0.0</td>
<td>0.1</td>
<td>0.2</td>
</tr>
<tr>
<td>Approach Delay, s/veh</td>
<td>3.1</td>
<td>2.8</td>
<td>3.0</td>
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<tr>
<td>Approach LOS</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
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<tr>
<td>Intersection Delay, s/veh</td>
<td>3.1</td>
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HCS7 Two-Way Stop-Control Report

General Information

Analyst: DLW
Agency/Co.: Mead & Hunt
Date Performed: 4/21/2017
Analysis Year: North-South
Time Analyzed: Design Peak Hour Alt 2
Intersection Orientation: North-South

Site Information

Intersection: Neil Avenue & 30th Street
Jurisdiction: Neil Avenue
East/West Street: Neil Avenue
North/South Street: 30th Street
Peak Hour Factor: 0.92
Analysis Time Period (hrs): 0.25

Lanes

Major Street: North-South

Vehicle Volumes and Adjustments

<table>
<thead>
<tr>
<th>Approach</th>
<th>Eastbound</th>
<th>Westbound</th>
<th>Northbound</th>
<th>Southbound</th>
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</thead>
<tbody>
<tr>
<td>Movement</td>
<td>U L T R</td>
<td>U L T R</td>
<td>U L T R</td>
<td>U L T R</td>
</tr>
<tr>
<td>Priority</td>
<td>10 11 12</td>
<td>7 8 9</td>
<td>1U 1 2 3</td>
<td>4U 4 5 6</td>
</tr>
<tr>
<td>Number of Lanes</td>
<td>0 1 0</td>
<td>0 0 0</td>
<td>0 0 1 0</td>
<td>0 0 1 0</td>
</tr>
<tr>
<td>Configuration</td>
<td>LR</td>
<td>LT</td>
<td>TR</td>
<td></td>
</tr>
<tr>
<td>Volume, V (veh/h)</td>
<td>20 15</td>
<td>15 10</td>
<td>10 50</td>
<td></td>
</tr>
<tr>
<td>Percent Heavy Vehicles (%)</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent Grade (%)</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Right Turn Channelized</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Median Type/Storage</td>
<td>Undivided</td>
<td></td>
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Critical and Follow-up Headways

Base Critical Headway (sec)
Critical Headway (sec)
Base Follow-Up Headway (sec)
Follow-Up Headway (sec)

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h) | Capacity, c (veh/h) | v/c Ratio | 95% Queue Length, Q₉₅ (veh) | Control Delay (s/veh) | Level of Service, LOS | Approach Delay (s/veh) | Approach LOS |
<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
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<tbody>
<tr>
<td>38</td>
<td>962</td>
<td>0.04</td>
<td>0.1</td>
<td>8.9</td>
<td>A</td>
<td>8.9</td>
<td>A</td>
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<tr>
<td>16</td>
<td>1543</td>
<td>0.01</td>
<td>0.0</td>
<td>7.4</td>
<td>A</td>
<td>4.4</td>
<td>A</td>
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</table>

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### General Information

<table>
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<th>DLW</th>
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<tr>
<td>Agency/Co.</td>
<td>Mead &amp; Hunt</td>
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<tr>
<td>Date Performed</td>
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<td>Analysis Year</td>
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<tr>
<td>Time Analyzed</td>
<td>Design Peak Hour Alt 3</td>
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<tr>
<td>Intersection Orientation</td>
<td>East-West</td>
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<td>Project Description</td>
<td>Lake Elmo Airport</td>
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### Site Information

<table>
<thead>
<tr>
<th>Intersection</th>
<th>30th Street &amp; Neil Avenue</th>
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<tbody>
<tr>
<td>Jurisdiction</td>
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<tr>
<td>East/West Street</td>
<td>30th Street</td>
</tr>
<tr>
<td>North/South Street</td>
<td>Neil Avenue</td>
</tr>
<tr>
<td>Analysis Time Period (hrs)</td>
<td>0.25</td>
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### Lanes

**Main Street:** East-West

### Vehicle Volumes and Adjustments

<table>
<thead>
<tr>
<th>Approach Movement</th>
<th>Eastbound</th>
<th>Westbound</th>
<th>Northbound</th>
<th>Southbound</th>
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</thead>
<tbody>
<tr>
<td>Priority</td>
<td>1U 1 2 3 4U 4 5 6 7 8 9 10 11 12</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Number of Lanes</td>
<td>0 0 1 0 0 0 1 0 0 1 0 0 0 0 0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Configuration</td>
<td>TR LT LR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volume V (veh/h)</td>
<td>20 15 10 50 15 10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent Heavy Vehicles (%)</td>
<td>1 1 1</td>
<td></td>
<td></td>
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### Critical and Follow-up Headways

<table>
<thead>
<tr>
<th>Base Critical Headway (sec)</th>
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</thead>
<tbody>
<tr>
<td>Critical Headway (sec)</td>
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</tr>
<tr>
<td>Base Follow-Up Headway (sec)</td>
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</tr>
<tr>
<td>Follow-Up Headway (sec)</td>
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</tr>
</tbody>
</table>

### Delay, Queue Length, and Level of Service

<table>
<thead>
<tr>
<th>Flow Rate v (veh/h)</th>
<th>11</th>
<th>27</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity c (veh/h)</td>
<td>1578</td>
<td>946</td>
</tr>
<tr>
<td>v/c Ratio</td>
<td>0.01</td>
<td>0.03</td>
</tr>
<tr>
<td>95% Queue Length Q₉₅ (veh)</td>
<td>0.0</td>
<td>0.1</td>
</tr>
<tr>
<td>Control Delay (s/veh)</td>
<td>7.3</td>
<td>8.9</td>
</tr>
<tr>
<td>Level of Service, LOS</td>
<td>A</td>
<td>A</td>
</tr>
</tbody>
</table>

### Approach Delay (s/veh)

<table>
<thead>
<tr>
<th>Approach Delay (s/veh)</th>
<th>1.3</th>
<th>8.9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approach LOS</td>
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<td></td>
</tr>
</tbody>
</table>

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Design Peak Hour for Alternate 3 TWSC1.xtw

---

**Notes:**

- The report details traffic analysis for the intersection of 30th Street & Neil Avenue, performed by DLW for Mead & Hunt.
- The analysis was conducted on 4/21/2017, with a time analysis of Design Peak Hour Alt 3, and an analysis time period of 0.25 hours.
- The project description indicates it is related to Lake Elmo Airport.

**Vehicles:**

- **Majors:** East-West
- **Priority:** 1U 1 2 3 4U 4 5 6 7 8 9 10 11 12
- **Number of Lanes:**
  - Eastbound: 0 0 1 0 0 0 1 0 0 1 0 0 0 0 0
  - Westbound: 0 0 1 0 0 0 1 0 0 1 0 0 0 0 0
- **Configuration:** TR LT LR
- **Volume:**
  - Eastbound: 20 15 10 50 15 10
  - Westbound: 0 0 0 0 0 0
- **Percent Heavy Vehicles:**
  - Eastbound: 1 1 1
  - Westbound: 0
- **Proportion Time Blocked:**
  - Eastbound: 0
  - Westbound: 0

**Headways:**

- **Base Critical Headway:**
  - Eastbound: 11 seconds
  - Westbound: 27 seconds
- **Critical Headway:**
  - Eastbound: 1578 veh/h
  - Westbound: 946 veh/h
- **Follow-Up Headway:**
  - Eastbound: 0.01
  - Westbound: 0.03

**Queue Length:**

- **95% Queue Length:**
  - Eastbound: 0.0
  - Westbound: 0.1

**Delay:**

- **Control Delay:**
  - Eastbound: 7.3 seconds
  - Westbound: 8.9 seconds

**Level of Service (LOS):**

- **Approach Delay:**
  - Eastbound: A
  - Westbound: A
Appendix C: Cost Estimate Summaries
## PRELIMINARY COST ESTIMATE
### 30th STREET NORTH REALIGNMENT ALTERNATE 3

<table>
<thead>
<tr>
<th>ITEM</th>
<th>ITEM DESCRIPTION</th>
<th>UNIT</th>
<th>QUANTITY</th>
<th>UNIT PRICE</th>
<th>TOTAL COST (ROUNDED)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>REMOVAL</td>
<td>STA</td>
<td>26</td>
<td>$550.00</td>
<td>$14,300.00</td>
</tr>
<tr>
<td>2</td>
<td>NEW PAVEMENT</td>
<td>TON</td>
<td>2375</td>
<td>$75.00</td>
<td>$178,200.00</td>
</tr>
<tr>
<td></td>
<td>HMA Asphalt Pavement</td>
<td>TON</td>
<td>2375</td>
<td>$75.00</td>
<td>$178,200.00</td>
</tr>
<tr>
<td></td>
<td>Concrete Curb and Gutter</td>
<td>LF</td>
<td>0</td>
<td>$15.00</td>
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<td></td>
<td>Base Aggregate Dense 1 1/4-Inch</td>
<td>Tons</td>
<td>8200</td>
<td>$20.00</td>
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<td>3</td>
<td>EARTHWORK</td>
<td>YD³</td>
<td>15000</td>
<td>$6.00</td>
<td>$90,000.00</td>
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<td></td>
<td>Common</td>
<td>YD³</td>
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<td>$0.00</td>
<td>$0.00</td>
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<tr>
<td>4</td>
<td>DRAINAGE</td>
<td>L.S.</td>
<td>7.5 % of Items 1-3</td>
<td>N/A</td>
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<tr>
<td>5</td>
<td>EROSION CONTROL</td>
<td>L.S.</td>
<td>2 % of Items 1-3</td>
<td>N/A</td>
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<td>6</td>
<td>TRAFFIC CONTROL</td>
<td>L.S.</td>
<td>5 % of Items 1-3</td>
<td>N/A</td>
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<tr>
<td>7</td>
<td>LIGHTING</td>
<td>L.S.</td>
<td>4 % of Items 1-3</td>
<td>N/A</td>
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<td>8</td>
<td>SIGNING/MARKINGS</td>
<td>L.S.</td>
<td>3 % of Items 1-3</td>
<td>N/A</td>
<td>$13,400.00</td>
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<tr>
<td>9</td>
<td>OVERHEAD SIGN STRUCTURES</td>
<td>EACH</td>
<td>0</td>
<td>$0.00</td>
<td>$0.00</td>
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<tr>
<td>10</td>
<td>MOBILIZATION</td>
<td>L.S.</td>
<td>7 % of Items 1-10 &amp; 13</td>
<td>N/A</td>
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<tr>
<td>11</td>
<td>ROADWAY INCIDENTALS</td>
<td>L.S.</td>
<td>30 % of Items 1-3</td>
<td>N/A</td>
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<td>12</td>
<td>BOX CULVERTS</td>
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<td>RETAINING WALLS</td>
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<tr>
<td></td>
<td>STRUCTURAL INCIDENTALS</td>
<td>L.S.</td>
<td>10 % of Structures</td>
<td>N/A</td>
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<tr>
<td>13</td>
<td>CONTINGENCY</td>
<td>L.S.</td>
<td>15 % of Items 1-13</td>
<td>N/A</td>
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<tr>
<td>14</td>
<td>CONSTRUCTION DELIVERY</td>
<td>L.S.</td>
<td>15 % of Items 1-13</td>
<td>N/A</td>
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<td>15</td>
<td>ROW ACQUISITION</td>
<td>AC</td>
<td>0.00</td>
<td>$7,500.00</td>
<td>$0.00</td>
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<td>16</td>
<td>REAL ESTATE INCIDENTALS</td>
<td>L.S.</td>
<td>20 % of Item 16</td>
<td>N/A</td>
<td>$0.00</td>
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<tr>
<td>17</td>
<td>REAL ESTATE DELIVERY</td>
<td>L.S.</td>
<td>25 % of Item 16</td>
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<td>$0.00</td>
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<td>18</td>
<td>CONTINGENCY</td>
<td>L.S.</td>
<td>15 % of Items 1-18</td>
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</tbody>
</table>

### TOTAL ROADWAY COSTS (Items 1-12) $740,900.00

### TOTAL STRUCTURE COSTS (Item 13) $0.00

### TOTAL CONSTRUCTION COSTS (Items 1-14) $852,035.00

### TOTAL ROW COSTS (Items 16-18) $0.00

### GRAND TOTAL PROJECT COST $979,935.00
## PRELIMINARY COST ESTIMATE
### 30th STREET NORTH REALIGNMENT ALTERNATE 4A

<table>
<thead>
<tr>
<th>ITEM DESCRIPTION</th>
<th>UNIT</th>
<th>QUANTITY</th>
<th>UNIT PRICE</th>
<th>TOTAL COST (ROUNDED)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>REMOVAL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obliterate Old Roadway</td>
<td>STA</td>
<td>33</td>
<td>$550.00</td>
<td>$18,150.00</td>
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<tr>
<td><strong>NEW PAVEMENT</strong></td>
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</tr>
<tr>
<td>HMA Asphalt Pavement</td>
<td>TON</td>
<td>3650</td>
<td>$75.00</td>
<td>$273,800.00</td>
</tr>
<tr>
<td>Concrete Curb and Gutter</td>
<td>LF</td>
<td>2305</td>
<td>$15.00</td>
<td>$34,600.00</td>
</tr>
<tr>
<td>Base Aggregate Dense 1 1/4-Inch</td>
<td>Tons</td>
<td>12500</td>
<td>$20.00</td>
<td>$250,000.00</td>
</tr>
<tr>
<td><strong>EARTHWORK</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Common</td>
<td>YD³</td>
<td>15000</td>
<td>$6.00</td>
<td>$90,000.00</td>
</tr>
<tr>
<td>Borrow</td>
<td>YD³</td>
<td>0</td>
<td>$0.00</td>
<td>$0.00</td>
</tr>
<tr>
<td><strong>DRAINAGE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L.S.</td>
<td></td>
<td>7.5 % of Items 1-3</td>
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</tr>
<tr>
<td>EROSION CONTROL</td>
<td></td>
<td>2 % of Items 1-3</td>
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<td>$13,400.00</td>
</tr>
<tr>
<td>TRAFFIC CONTROL</td>
<td></td>
<td>5 % of Items 1-3</td>
<td>N/A</td>
<td>$33,400.00</td>
</tr>
<tr>
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<td></td>
<td>4 % of Items 1-3</td>
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<td>$26,700.00</td>
</tr>
<tr>
<td>SIGNING/MARKINGS</td>
<td></td>
<td>3 % of Items 1-3</td>
<td>N/A</td>
<td>$20,000.00</td>
</tr>
<tr>
<td>OVERHEAD SIGN STRUCTURES</td>
<td>EACH</td>
<td>0</td>
<td></td>
<td>$0.00</td>
</tr>
<tr>
<td>TRAFFIC SIGNALS</td>
<td></td>
<td>5 % of Items 1-10 &amp; 13</td>
<td>$150,000</td>
<td>$40,600.00</td>
</tr>
<tr>
<td>MOBILIZATION</td>
<td></td>
<td>30 % of Items 1-13</td>
<td>N/A</td>
<td>$255,200.00</td>
</tr>
<tr>
<td><strong>ROADWAY INCIDENTALS</strong></td>
<td>L.S.</td>
<td>30 % of Items 1-3</td>
<td>N/A</td>
<td>$255,200.00</td>
</tr>
<tr>
<td><strong>STRUCTURES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Box Culverts</td>
<td></td>
<td></td>
<td></td>
<td>$0.00</td>
</tr>
<tr>
<td>Retaining Walls</td>
<td></td>
<td></td>
<td></td>
<td>$0.00</td>
</tr>
<tr>
<td>Structural Incidentals</td>
<td>L.S.</td>
<td>10 % of Structures</td>
<td>N/A</td>
<td>$0.00</td>
</tr>
<tr>
<td><strong>CONSTRUCTION DELIVERY</strong></td>
<td>L.S.</td>
<td>15 % of Items 1-13</td>
<td>N/A</td>
<td>$165,877.50</td>
</tr>
<tr>
<td><strong>ROW ACQUISITION</strong></td>
<td>AC</td>
<td>0.00</td>
<td>$7,500.00</td>
<td>$0.00</td>
</tr>
<tr>
<td>REAL ESTATE INCIDENTALS</td>
<td>L.S.</td>
<td>20 % of Item 16</td>
<td>N/A</td>
<td>$0.00</td>
</tr>
<tr>
<td>REAL ESTATE DELIVERY</td>
<td>L.S.</td>
<td>25 % of Item 16</td>
<td>N/A</td>
<td>$0.00</td>
</tr>
<tr>
<td><strong>CONTINGENCY</strong></td>
<td></td>
<td></td>
<td></td>
<td>$190,800.00</td>
</tr>
<tr>
<td><strong>TOTAL ROW COSTS (Items 16-18)</strong></td>
<td></td>
<td></td>
<td></td>
<td>$0.00</td>
</tr>
<tr>
<td><strong>GRAND TOTAL PROJECT COST</strong></td>
<td></td>
<td></td>
<td></td>
<td>$1,462,527.50</td>
</tr>
</tbody>
</table>

**Subtotal Roadway Costs (Items 1-13)** | $666,550.00 |

**Subtotal Construction Costs (Items 1-13)** | $1,105,850.00 |

**Subtotal Construction Costs (Items 1-14)** | $1,271,727.50 |

**TOTAL STRUCTURE COSTS (Item 13)** | $0.00 |

**TOTAL ROADWAY COSTS (Items 1-12)** | $1,105,850.00 |

**TOTAL ROADWAY COSTS (Items 1-12)** | $1,105,850.00 |

**TOTAL CONSTRUCTION COSTS (Items 1-14)** | $1,271,727.50 |

**TOTAL ROW COSTS (Items 16-18)** | $0.00 |

**GRAND TOTAL PROJECT COST** | $1,462,527.50 |
# Preliminary Cost Estimate

### 30th Street North Realignment Alternate 4B

<table>
<thead>
<tr>
<th>Item</th>
<th>Item Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Total Cost (Rounded)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>REMOVAL</td>
<td>STA</td>
<td>33</td>
<td>$550.00</td>
<td>$18,150.00</td>
</tr>
<tr>
<td>2</td>
<td>NEW PAVEMENT</td>
<td>TON</td>
<td>3670</td>
<td>$75.00</td>
<td>$275,300.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LF</td>
<td>200</td>
<td>$15.00</td>
<td>$3,000.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tons</td>
<td>12600</td>
<td>$20.00</td>
<td>$252,000.00</td>
</tr>
<tr>
<td>3</td>
<td>EARTHWORK</td>
<td>YD³</td>
<td>15000</td>
<td>$6.00</td>
<td>$90,000.00</td>
</tr>
<tr>
<td>4</td>
<td>DRAINAGE</td>
<td>L.S.</td>
<td>7.5% of Items 1-3</td>
<td>N/A</td>
<td>$47,900.00</td>
</tr>
<tr>
<td>5</td>
<td>EROSION CONTROL</td>
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<td>2% of Items 1-3</td>
<td>N/A</td>
<td>$12,800.00</td>
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<tr>
<td>6</td>
<td>TRAFFIC CONTROL</td>
<td>L.S.</td>
<td>5% of Items 1-3</td>
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<td>$32,000.00</td>
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<tr>
<td>7</td>
<td>LIGHTING</td>
<td>L.S.</td>
<td>0% of Items 1-3</td>
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<td>$0.00</td>
</tr>
<tr>
<td>8</td>
<td>SIGNING/MARKINGS</td>
<td>L.S.</td>
<td>3% of Items 1-3</td>
<td>N/A</td>
<td>$19,200.00</td>
</tr>
<tr>
<td>9</td>
<td>OVERHEAD SIGN STRUCTURES</td>
<td>EACH</td>
<td>0</td>
<td>$0.00</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>TRAFFIC SIGNALS</td>
<td>EACH</td>
<td>0</td>
<td>$150,000</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>MOBILIZATION</td>
<td>L.S.</td>
<td>5% of Items 1-10 &amp; 13</td>
<td>N/A</td>
<td>$37,600.00</td>
</tr>
<tr>
<td>12</td>
<td>ROADWAY INCIDENTALS</td>
<td>L.S.</td>
<td>30% of Items 1-3</td>
<td>N/A</td>
<td>$236,400.00</td>
</tr>
<tr>
<td>13</td>
<td>STRUCTURES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Box Culverts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Retaining Walls</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Structural Incidentals</td>
<td>L.S.</td>
<td>10% of Structures</td>
<td>N/A</td>
<td>$0.00</td>
</tr>
<tr>
<td>14</td>
<td>CONSTRUCTION DELIVERY</td>
<td>L.S.</td>
<td>15% of Items 1-13</td>
<td>N/A</td>
<td>$153,652.50</td>
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<tr>
<td>15</td>
<td>ROW ACQUISITION</td>
<td>AC</td>
<td>0.00</td>
<td>$7,500.00</td>
<td>$0.00</td>
</tr>
<tr>
<td>16</td>
<td>REAL ESTATE INCIDENTALS</td>
<td>L.S.</td>
<td>20% of Item 16</td>
<td>N/A</td>
<td>$0.00</td>
</tr>
<tr>
<td>17</td>
<td>REAL ESTATE DELIVERY</td>
<td>L.S.</td>
<td>25% of Item 16</td>
<td>N/A</td>
<td>$0.00</td>
</tr>
<tr>
<td>18</td>
<td>CONTINGENCY</td>
<td>L.S.</td>
<td>15% of Items 1-18</td>
<td>N/A</td>
<td>$176,800.00</td>
</tr>
</tbody>
</table>

**Total Roadway Costs (Items 1-12):** $1,024,350.00

**Total Structure Costs (Item 13):** $0.00

**Subtotal Construction Costs (Items 1-13):** $1,024,350.00

**Total Construction Costs (Items 1-14):** $1,178,002.50

**Total Row Costs (Items 16-18):** $0.00

**Grand Total Project Cost:** $1,354,802.50
Appendix C – Wetland Delineation, Functional Assessment, and Associated Correspondence
Minnesota Wetland Conservation Act
Notice of Decision

Local Government Unit (LGU)
Valley Branch Watershed District (VBWD)

Address
P.O. Box 838
Lake Elmo, MN 55042

1. PROJECT INFORMATION

Applicant Name: Chad Leque, Metropolitan Airports Commission
Project Name: Lake Elmo Airport
Date of Application: 9/25/2017
Application Number

☐ Attach site locator map.

Type of Decision:

☒ Wetland Boundary or Type
☐ No-Loss
☐ Exemption
☐ Sequencing
☐ Replacement Plan
☐ Banking Plan

Technical Evaluation Panel (TEP) Findings and Recommendation (if any):

☐ Approve
☐ Approve with conditions
☐ Deny

Summary (or attach): No TEP Findings Report

2. LOCAL GOVERNMENT UNIT DECISION

Date of Decision: 11/9/2017

☒ Approved
☐ Approved with conditions (include below)
☐ Denied

LGU Findings and Conclusions (attach additional sheets as necessary):

On behalf of the Metropolitan Airports Commission, Mead & Hunt submitted a wetland delineation report and request for wetland boundary and type concurrence associated with the Lake Elmo Airport Runway Relocation and Improvements project in Lake Elmo, Minnesota (Sec. 18 and 19, T29N, R20W) within Washington County. The wetland delineation report and Notice of Application were provided to the TEP on 10/3/2017. A site review was conducted on 10/17/2017. Those present at the site review were Jay Riggs, Washington Conservation District; Ben Meyer, Board of Water and Soil Resources; Karen Wold, Barr Engineering Co. for the VBWD; and Brauna Hartzell, Mead & Hunt. During the site review, several changes were made to the wetland types. Mead & Hunt revised the wetland delineation report to reflect these changes and reference consistent wetland types throughout the report. The revised wetland delineation report was provided to TEP members. The comment period ended on 10/30/2017, and no other comments were received.

The revised wetland types are as follows:

<table>
<thead>
<tr>
<th>Wetland Type</th>
<th>Circular 39 Type</th>
<th>Cowardin Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seasonally Flooded Basin</td>
<td>Type 1</td>
<td>PEMA</td>
</tr>
<tr>
<td>Fresh (wet) Meadow</td>
<td>Type 2</td>
<td>PEMB</td>
</tr>
<tr>
<td>Fresh (wet) Meadow</td>
<td>Type 2</td>
<td>PEMB</td>
</tr>
</tbody>
</table>

BWSR Forms 7-1-10
Page 1 of 4
<table>
<thead>
<tr>
<th></th>
<th>Fresh (wet) Meadow</th>
<th>Type</th>
<th>Approver</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Fresh (wet) Meadow</td>
<td>Type 2</td>
<td>PEMB</td>
</tr>
<tr>
<td>5</td>
<td>Fresh (wet) Meadow</td>
<td>Type 2</td>
<td>PEMB</td>
</tr>
<tr>
<td>6</td>
<td>Fresh (wet) Meadow</td>
<td>Type 2</td>
<td>PEMB</td>
</tr>
<tr>
<td>7</td>
<td>Fresh (wet) Meadow</td>
<td>Type 2</td>
<td>PEMB</td>
</tr>
<tr>
<td>8</td>
<td>Fresh (wet) Meadow /Deep Marsh</td>
<td>Type 2/ Type 4</td>
<td>PEMB/ABF</td>
</tr>
<tr>
<td>9</td>
<td>Fresh (wet) Meadow /Shallow Marsh</td>
<td>Type 2/ Type 3</td>
<td>PEMB/C</td>
</tr>
</tbody>
</table>

1. Wetland 1 continues beyond the AOI boundary; delineated boundary within the AOI consists of forested fields and wetland fringe.

The wetland boundaries and revised types within the evaluation area are accurate based on the requirements of the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual, the 2012 Northcentral and Northeast Regional Supplement, and the 2015 Guidance for Submittal of Delineation Reports to the USACE and WCA LGU in Minnesota, Version 2.0.

The VBWD approves the wetland boundaries and types within the evaluation area.

For Replacement Plans using credits from the State Wetland Bank:

<table>
<thead>
<tr>
<th>Bank Account #</th>
<th>Bank Service Area</th>
<th>County</th>
<th>Credits Approved for Withdrawal (sq. ft. or nearest .01 acre)</th>
</tr>
</thead>
</table>

Replacement Plan Approval Conditions. In addition to any conditions specified by the LGU, the approval of a Wetland Replacement Plan is conditional upon the following:

- **Financial Assurance:** For project-specific replacement that is not in-advance, a financial assurance specified by the LGU must be submitted to the LGU in accordance with MN Rule 8420.0522, Subp. 9 (List amount and type in LGU Findings).

- **Deed Recording:** For project-specific replacement, evidence must be provided to the LGU that the BWSR “Declaration of Restrictions and Covenants” and “Consent to Replacement Wetland” forms have been filed with the county recorder’s office in which the replacement wetland is located.

- **Credit Withdrawal:** For replacement consisting of wetland bank credits, confirmation that BWSR has withdrawn the credits from the state wetland bank as specified in the approved replacement plan.

*Wetlands may not be impacted until all applicable conditions have been met!*

LGU Authorized Signature:

Signing and mailing of this completed form to the appropriate recipients in accordance with 8420.0255, Subp. 5 provides notice that a decision was made by the LGU under the Wetland Conservation Act as specified above. If additional details on the decision exist, they have been provided to the landowner and are available from the LGU upon request.

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>David J. Buchek</td>
<td>Valley Branch WD Board President</td>
</tr>
</tbody>
</table>

Signature

Date: 11/9/2017
Phone Number and E-mail: 651-770-1730
djbuchek@yahoo.com

**THIS DECISION ONLY APPLIES TO THE MINNESOTA WETLAND CONSERVATION ACT.** Additional approvals or permits from local, state, and federal agencies may be required. Check with all appropriate authorities before commencing work in or near wetlands.
Applicants proceed at their own risk if work authorized by this decision is started before the time period for appeal (30 days) has expired. If this decision is reversed or revised under appeal, the applicant may be responsible for restoring or replacing all wetland impacts.

This decision is valid for five years from the date of decision unless a longer period is advised by the TEP and specified in this notice of decision.

3. APPEAL OF THIS DECISION

Pursuant to MN Rule 8420.0905, any appeal of this decision can only be commenced by mailing a petition for appeal, including applicable fee, within thirty (30) calendar days of the date of the mailing of this Notice to the following as indicated:

Check one:

☐ Appeal of an LGU staff decision. Send petition and $_____ fee (if applicable) to:

☐ Appeal of LGU governing body decision. Send petition and $500 filing fee to:
  Executive Director
  Minnesota Board of Water and Soil Resources
  520 Lafayette Road North
  St. Paul, MN 55155

4. LIST OF ADDRESSEES

☐ SWCD TEP member: Jay Riggs - Washington Conservation District
☐ BWSR TEP member: Ben Meyer
☐ DNR TEP member: Becky Horton and Jenifer Sorensen
☐ WD or WMO (if applicable): John Hanson
☐ Applicant (notice only) and Landowner (if different): Chad Leqve (Metropolitan Airports Commission), Brauna Hartzell and Evan Barrett (Mead & Hunt, Inc.)
☐ Corps of Engineers Project Manager: Tom Hingsberger
☐ BWSR Wetland Bank Coordinator (wetland bank plan decisions only)

5. MAILING INFORMATION

➤ For a list of BWSR TEP representatives: [www.bwsr.state.mn.us/aboutbwsr/workareas/WCA_areas.pdf](http://www.bwsr.state.mn.us/aboutbwsr/workareas/WCA_areas.pdf)

➤ For a list of DNR TEP representatives: [www.bwsr.state.mn.us/wetlands/wca/DNR_TEP_contacts.pdf](http://www.bwsr.state.mn.us/wetlands/wca/DNR_TEP_contacts.pdf)

➤ Department of Natural Resources Regional Offices:

<table>
<thead>
<tr>
<th>NW Region:</th>
<th>NE Region:</th>
<th>Central Region:</th>
<th>Southern Region:</th>
</tr>
</thead>
</table>

For a map of DNR Administrative Regions, see: [http://files.dnr.state.mn.us/aboutdnr/dnr_regions.pdf](http://files.dnr.state.mn.us/aboutdnr/dnr_regions.pdf)

➤ For a list of Corps of Project Managers: [www.mvp.usace.army.mil/regulatory/default.asp?pageld=687](http://www.mvp.usace.army.mil/regulatory/default.asp?pageld=687) or send to:

  US Army Corps of Engineers
  St. Paul District, ATTN: OP-R
  180 Fifth St. East, Suite 700
  St. Paul, MN 55101-1678

➤ For Wetland Bank Plan applications, also send a copy of the application to:

  Minnesota Board of Water and Soil Resources
  Wetland Bank Coordinator
  520 Lafayette Road North
  St. Paul, MN 55155
6. ATTACHMENTS

In addition to the site locator map, list any other attachments:
☑ wetland delineation map
LAKE ELMO AIRPORT
Proposed Runway 14/32 Relocation and Associated Improvements

Area A
(116.3 acres)

Area B
(8.0 acres)

Area C
(4.7 acres)

Area D
(1.1 acres)

Area of Interest (AOI)

LRR Subregion: K

USACE Regional Supplement: NC/NE

Area = 130.1 acres

Project Location

T29N, R20W, S18 and S19
Baybown and West Lakeland Townships
Washington County, MN

LRR Subregion: K

Map Source: National Geographic Society
Project Information

T29N, R20W, S18 and S19
City of Lake Elmo
Washington County, MN
Area of Interest = 130.1 acres
Field work conducted:
June 5 - 9, 2017

* Mn Public Waters Data: Public Waters (PW) Basin and Watercourse Delineations, Washington County, MN Geospatial Commons

** Mn Public Waters Revised: Based on field-collected GPS points, aerial photography, and LiDAR topographic data

*** Delineated Wetland Boundary: Field work conducted
June 5 - 9, 2017

Contour Source: Minnesota Geospatial Commons, Minnesota Elevation Mapping Project, Twin Cities Metro Region 2011

Image Source: MnGEO WMS Image Service, Washington County (2016 color 7-county)
**Minneapolis Wetland Conservation Act**  
**Notice of Decision**

**Local Government Unit (LGU)**  
Valley Branch Watershed District (VBWD)

**Address**  
P.O. Box 838  
Lake Elmo, MN 55042

---

### 1. PROJECT INFORMATION

<table>
<thead>
<tr>
<th>Applicant Name</th>
<th>Project Name</th>
<th>Date of Application</th>
<th>Application Number</th>
</tr>
</thead>
</table>
| Chad Levee, Metropolitan Airports Commission | Lake Elmo Airport | 12/4/2017  
12/21/2017 additional information | |

☐ Attach site locator map.

**Type of Decision:**

- ☐ Wetland Boundary or Type
- ✅ No-Loss
- ☐ Exemption
- ☐ Sequencing
- ☐ Replacement Plan
- ☐ Banking Plan

**Technical Evaluation Panel (TEP) Findings and Recommendation (if any):**

- ☐ Approve
- ☐ Approve with conditions
- ☐ Deny

Summary (or attach): No TEP Findings Report

---

### 2. LOCAL GOVERNMENT UNIT DECISION

**Date of Decision:** 01/25/2018

- ✅ Approved
- ☐ Approved with conditions (include below)  
- ☐ Denied

LGU Findings and Conclusions (attach additional sheets as necessary):

On behalf of the Metropolitan Airports Commission, Mead & Hunt, Inc. submitted a request for a WCA no-loss incidental wetland determination associated with the Lake Elmo Airport Runway Relocation and Improvements project in Lake Elmo, Minnesota (Sec. 18 and 19, T29N, R20W), within Washington County.

The wetland boundaries and types were previously approved by the VBWD on 11/09/2017.

The incidental wetland request submittal provides documentation that Wetlands 3, 6, and 7 are incidental wetlands, according to MN Rule 8420.0105 Subp. 2 D, and not regulated within the scope of the WCA.

The submittal was provided to TEP members for review and comment. TEP members Ben Meyer, from the Minnesota Board of Water and Soil Resources; Jay Riggs, from the Washington Conservation District; and Karen Wold, with Barr Engineering Co. for the VBWD, all agree that the soil mapping and historical imagery for these three areas do not show a wetland prior to the runway construction. Therefore, these are wetland areas created in non-wetland areas solely by actions. Because it was not the purpose of these actions to create the wetland, the areas meet the definition of incidental wetlands.

The VBWD approves the incidental wetland determination for Wetlands 3, 6, and 7 according to MN Rule 8420.0105 Subp. 2 D and any project work within these areas as WCA no-loss activity.
For Replacement Plans using credits from the State Wetland Bank:

<table>
<thead>
<tr>
<th>Bank Account #</th>
<th>Bank Service Area</th>
<th>County</th>
<th>Credits Approved for Withdrawal (sq. ft. or nearest .01 acre)</th>
</tr>
</thead>
</table>

Replacement Plan Approval Conditions. In addition to any conditions specified by the LGU, the approval of a Wetland Replacement Plan is conditional upon the following:

☐ **Financial Assurance:** For project-specific replacement that is not in-advance, a financial assurance specified by the LGU must be submitted to the LGU in accordance with MN Rule 8420.0522, Subp. 9 (List amount and type in LGU Findings).

☐ **Deed Recording:** For project-specific replacement, evidence must be provided to the LGU that the BWSR "Declaration of Restrictions and Covenants" and "Consent to Replacement Wetland" forms have been filed with the county recorder's office in which the replacement wetland is located.

☐ **Credit Withdrawal:** For replacement consisting of wetland bank credits, confirmation that BWSR has withdrawn the credits from the state wetland bank as specified in the approved replacement plan.

Wetlands may not be impacted until all applicable conditions have been met!

**LGU Authorized Signature:**

Signing and mailing of this completed form to the appropriate recipients in accordance with 8420.0255, Subp. 5 provides notice that a decision was made by the LGU under the Wetland Conservation Act as specified above. If additional details on the decision exist, they have been provided to the landowner and are available from the LGU upon request.

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jill Lucas</td>
<td>Valley Branch WD Board President</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Signature</th>
<th>Date</th>
<th>Phone Number and E-mail</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Signature]</td>
<td>1/25/2018</td>
<td>612-860-0551 <a href="mailto:Jill.m.lucas@gmail.com">Jill.m.lucas@gmail.com</a></td>
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</tbody>
</table>

THIS DECISION ONLY APPLIES TO THE MINNESOTA WETLAND CONSERVATION ACT. Additional approvals or permits from local, state, and federal agencies may be required. Check with all appropriate authorities before commencing work in or near wetlands.

Applicants proceed at their own risk if work authorized by this decision is started before the time period for appeal (30 days) has expired. If this decision is reversed or revised under appeal, the applicant may be responsible for restoring or replacing all wetland impacts.

This decision is valid for five years from the date of decision unless a longer period is advised by the TEP and specified in this notice of decision.

---

3. **APPEAL OF THIS DECISION**

Pursuant to MN Rule 8420.0905, any appeal of this decision can only be commenced by mailing a petition for appeal, including applicable fee, within thirty (30) calendar days of the date of the mailing of this Notice to the following as indicated:

Check one:

☐ Appeal of an LGU staff decision. Send petition and $____ fee (if applicable) to:

☒ Appeal of LGU governing body decision. Send petition and $500 filing fee to:

  Executive Director
  Minnesota Board of Water and Soil Resources
  520 Lafayette Road North
  St. Paul, MN 55155
4. LIST OF ADDRESSEES

- SWCD TEP member: Jay Riggs - Washington Conservation District
- BWSR TEP member: Ben Meyer
- DNR TEP member: Becky Horton and Jenifer Sorensen
- WD or WMO (if applicable): John Hanson
- Applicant (notice only) and Landowner (if different): Chad Leqve (Metropolitan Airports Commission), Brauna Hartzell and Evan Barrett (Mead & Hunt, Inc.)
- Corps of Engineers Project Manager: Tom Hingsberger
- BWSR Wetland Bank Coordinator (wetland bank plan decisions only)

5. MAILING INFORMATION

- For a list of BWSR TEP representatives: [www.bwsr.state.mn.us/aboutbwsr/workareas/WCA_areas.pdf](http://www.bwsr.state.mn.us/aboutbwsr/workareas/WCA_areas.pdf)
- For a list of DNR TEP representatives: [www.bwsr.state.mn.us/wetlands/wca/DNR_TEP_contacts.pdf](http://www.bwsr.state.mn.us/wetlands/wca/DNR_TEP_contacts.pdf)
- For a map of DNR Administrative Regions, see: [http://files.dnr.state.mn.us/aboutdnr/dnr_regions.pdf](http://files.dnr.state.mn.us/aboutdnr/dnr_regions.pdf)

- For a list of Corps of Project Managers: [www.mvp.usace.army.mil/regulatory/default.asp?pageid=687](http://www.mvp.usace.army.mil/regulatory/default.asp?pageid=687) or send to:
  
  US Army Corps of Engineers
  St. Paul District, ATTN: OP-R
  180 Fifth St. East, Suite 700
  St. Paul, MN 55101-1678

- For Wetland Bank Plan applications, also send a copy of the application to:
  Minnesota Board of Water and Soil Resources
  Wetland Bank Coordinator
  520 Lafayette Road North
  St. Paul, MN 55155

6. ATTACHMENTS

- In addition to the site locator map, list any other attachments:
  - application
Project Location and Topography

LAKE ELMO AIRPORT
Proposed Runway 14/32 Relocation
and Associated Improvements

Legend

Area of Interest (AOI)
LRR Subregion: K

Map Source: National Geographic Society

Area A
(116.3 acres)

Area B
(8.0 acres)

Area C
(4.7 acres)

Area D
(1.1 acres)

Project Location

T29N, R20W, S18 and S19
Baytown and West Lakeland Townships
Washington County, MN
LRR Subregion: K
USACE Regional Supplement: NC/NE
Area = 130.1 acres
### Wetland Boundary Map

#### Sheet Key

- **Map Sheet**
- **Wetland Boundary**
- **Wetland within AOI**
- **Outside AOI**
- **Area of Interest**
- **Airport Property Boundary**

#### Wetland Boundary Map

**LAKE ELMO AIRPORT**

Proposed Runway 14-32 Runway Shift

#### Project Information

- **T29N, R20W, S18 and S19**
- City of Lake Elmo
- Washington County, MN
- Area of Interest = 130.1 acres
- Field work conducted: June 5 - 9, 2017

#### Image Source:

MnGEO WMS Image Service, Washington County (2016 color 7-county)

### Wetland Boundary Data

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### Wetland Description

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<td>Fresh (wet) Meadow (Shallow Marsh)</td>
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Good morning Ms. Wold & Mr. Hingsberger,
On behalf of the Metropolitan Airports Commission, I would like to request the following with respect to our wetland delineation at Lake Elmo Airport. Below are links to a technical memorandum and related documentation that provide supporting documentation for these requests.

- From the Valley Branch Watershed District and Technical Evaluation Panel, we would like to request an incidental wetland review of Wetlands 3, 6, and 7.
- From the U.S. Army Corps of Engineers, we would like to request an approved jurisdictional determination for all nine wetlands identified in the wetland delineation report.

Please provide an approximate time frame we should expect for responses to these requests, and let Brauna Hartzell and I know if you have any questions or concerns.

Thank you!

R. Evan Barrett, AICP | Planner, Aviation Services
Mead & Hunt, Inc | 7900 West 78th Street, Suite 370 | Minneapolis, MN 55439
[evan.barrett@meadhunt.com](mailto:evan.barrett@meadhunt.com) | www.meadhunt.com
**DESCRIPTION OF CONTENTS**

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**COPIES:**

Brauna Hartzell  
(Mead & Hunt, Inc.)
Technical Report

To: U.S. Army Corps of Engineers, St. Paul District
   Valley Branch Watershed District
From: Mead & Hunt, Inc.
Date: December 4, 2017
Subject: Lake Elmo Airport (21D)
Runway 14/32 Relocation and Associated Improvements
Request for U.S. Army Corps of Engineers Approved Jurisdictional Determination and
MN Wetland Conservation Act Incidental Wetland Determination

1. Determination Requests

Mead & Hunt, as agent for the Metropolitan Airports Commission (MAC), is requesting an approved jurisdictional determination from the USCOE to determine which, if any, of the nine wetlands delineated at Lake Elmo Airport are jurisdictional waters of the United States and therefore fall under the jurisdiction of Section 404 of the Clean Water Act (CWA). We understand that this review will take approximately 60 days to complete.

Preliminary jurisdictional determinations are advisory in nature and are not appealable while approved jurisdictional determinations document whether a wetland and/or waterbody is subject to regulatory jurisdiction under Section 404 of the CWA. Proposed activities that result in dredge or fill material being discharged into jurisdictional wetlands are regulated through a permit review process. Compensatory mitigation will be required for unavoidable impacts to regulated wetlands.

Wetlands in Minnesota are also regulated under the Minnesota Wetland Conservation Act (WCA). Unavoidable impacts to regulated wetlands require a replacement plan. However, certain types of wetlands created within non-wetland areas due to drainage practices, impoundments, and the like, are not regulated by the WCA. Impacts to wetlands of this type do not require a replacement plan under the WCA. Therefore, Mead & Hunt is requesting an incidental wetland review of Wetlands 3, 6, and 7 from the local government unit (LGU) under WCA, Valley Branch Watershed District. These wetlands appear to have been created in association with drainage ditches and/or adverse construction grading and may be determined incidental.

The overlapping but separate frameworks regulating wetlands in Minnesota at the federal and state levels are complex. The purpose of these determination requests is to clarify the status of delineated wetlands under both federal and state regulation at Lake Elmo. This information will be crucial in evaluating required mitigation for potential wetland impacts associated with proposed actions at the Airport.

A wetland boundary map is included with this memo which shows the locations and types of these specific wetlands. Documentation is provided as part of this memo for both determination requests.
Included as supplemental information to this memo for use in these determinations are materials included in the *Wetland Delineation and Functional Assessment Report* previously submitted to the USCOE and the LGU. More detailed site history and background can also be found in the delineation report as well as site photos and a wetland functional assessment. Supplemental materials provided here include:

- A detailed topographic map generated from LiDAR data collected by the Minnesota Elevation Mapping Project (2011)
- NRCS Hydric Soils Mapping
- Aquatic Resources Map showing National Wetland Inventory mapping, MN Public Waters, and Stream data from the National Hydrography Dataset
- Washington County, MN Public Waters Map (with Lake Elmo Airport Area highlighted)
- Historic Aerial Photo Review
- Wetland Boundary Maps (with detailed topographic information included)

2. Background
Lake Elmo Airport (21D) is a general aviation reliever airport owned and operated by the Metropolitan Airports Commission (MAC). The airport is located approximately 20 miles east of downtown St. Paul, Minnesota. The airfield at 21D consists of two runways, supporting taxiways, and numerous privately owned hangars. Runway 14/32 is the primary runway and is 2,849 feet long and 75 feet wide. The crosswind runway (Runway 4/22) is 2,496 feet long and 75 feet wide. There are two non-precision instrument approaches to the Airport, which has no control tower. Fueling, flight training, and aircraft maintenance services are available from a fixed-base operator. The primary role of the airport is to serve personal, recreational, and business aviation users.

MAC has prepared a number of Long-Term Comprehensive Plans (LTCP) for the Airport, beginning in 1966 with updates in 1976, 1992, 2008, and 2016. The LTCP identifies future facility needs, delineates the future footprint of the Airport, and aims to bring the Airport into alignment with Federal Aviation Administration (FAA) guidance and standards.

A joint federal Environmental Assessment (EA) / State Environmental Assessment Worksheet (EAW) is being completed to identify and evaluate environmental impacts associated with proposed actions to address future facility needs and various deficiencies identified at the Airport. In support of this effort, a wetland delineation and functional assessment was performed by Mead & Hunt, Inc. (Mead & Hunt) in 2017.

A Technical Evaluation Panel (TEP) field review meeting was held at the Airport on October 17, 2017 and a Minnesota Wetland Conservation Act (WCA) Notice of Decision was approved by the Valley Branch Watershed District (VBWDD), the LGU, on November 9, 2017. The wetland boundaries and types were approved by this Decision.

Nine wetlands were delineated at the Airport and consist primarily of Fresh (wet) Meadow (Type 2) wetlands. Table 1 lists the delineated wetlands and types.

<table>
<thead>
<tr>
<th>Wetland</th>
<th>Wetland Type</th>
<th>Circular 39 Type</th>
<th>Cowardin Type</th>
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<td>Seasonally Flooded Basin</td>
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</table>

### 3. Regulatory Agencies
Wetlands and other waters are regulated by a variety of agencies, including those at the federal, state, and local level. Overlapping jurisdictional responsibilities can sometimes cover the same wetland, as described below.

#### A. Federal
The U.S. Army Corps of Engineers (USCOE) and the U.S. Environmental Protection Agency (EPA), under Section 404 of the Clean Water Act (CWA), regulate discharge of dredged or fill materials to Waters of the U.S., including wetlands, as well as work within the channel of navigable waters as defined by Section 10 of the Rivers and Harbors Act. The current regulatory definition of “Waters of the U.S.” is complex and is under review. Operationally, the definition has reverted to the 1986/1988 definition.

To determine which wetlands may be regulated under Section 404, jurisdictional determinations are performed by the USCOE. A preliminary jurisdictional determination (JD) by the USCOE requires less time to complete, is advisory in nature, and may not be appealed. An approved jurisdictional determination by the USCOE results in documentation of the presence or absence of Waters of the U.S. and therefore whether a wetland and/or waterbody is subject to regulatory jurisdiction under Section 404 of the CWA. Approved JDs are valid for a period of five years from issuance.

Section 404 requires a permit before dredge or fill material may be discharged into Waters of the U.S. Prior to applying for a 404 permit, steps must be taken to avoid impacts to wetlands, minimize potential impacts, and to provide compensatory mitigation for all remaining unavoidable impacts.
B. State

At the State level, the Minnesota Department of Natural Resources (DNR) regulates areas listed as Public Waters – those areas below the Ordinary High Water of wetlands and waters. Public waters wetlands are a subset of the broader category of “public waters” regulated by the DNR, which includes most lakes and larger streams and rivers. Public waters wetlands are defined in Minn. Stat. § 103G.005, subd. 15a, as follows:

"Public waters wetlands" means all types 3, 4, and 5 wetlands, as defined in United States Fish and Wildlife Service Circular No. 39 (1971 edition), not included within the definition of public waters, that are ten or more acres in size in unincorporated areas or 2-1/2 or more acres in incorporated areas.²

MN Public Water 82046100 lies in close proximity to the project area of interest and is associated with Wetland 1.

C. Local

Under the Wetland Conservation Act of 1991, the State of Minnesota regulates wetlands not protected under the DNR's public waters permit program. Wetlands regulated under the WCA are defined in Minn. Stat. § 103G.005, subd. 19:

"Wetlands" means lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this definition, wetlands must have the following three attributes: (1) have a predominance of hydric soils; (2) be inundated or saturated by surface water or ground water at a frequency and duration sufficient to support a prevalence of hydrophytic vegetation typically adapted for life in saturated soil conditions; and (3) under normal circumstances support a prevalence of hydrophytic vegetation.²

Under the WCA, responsibility for administration is shared by both local and state government. A local government unit (LGU), typically a city, county, watershed district or soil and water conservation district, has responsibility for administering provisions under the WCA at the local level. On state lands, the state agency with administrative responsibility for the land is also responsible for administering the WCA.

The WCA, however, does not regulate “incidental wetlands” as given in Chapter 8420 of the Minnesota Administrative Rules under Part 8420.0105, subp. 2D:

"Incidental wetlands" are wetland areas that the landowner can demonstrate, to the satisfaction of the local government unit, were created in nonwetland areas solely by actions, the purpose of which was not to create the wetland. Incidental wetlands include drainage ditches.

² "WETLANDS REGULATION IN MINNESOTA", Minnesota Board of Water and Soil Resources, May 2003 (Accessed on-line at http://www.bwsr.state.mn.us/wetlands/publications)
impoundments, or excavations constructed in nonwetlands solely for the purpose of effluent treatment, containment of waste material, storm water retention or detention, drainage, soil and water conservation practices, and water quality improvements and not as part of a wetland replacement process that may, over time, take on wetland characteristics."

A replacement plan is required for unavoidable impacts to wetlands covered under WCA; a replacement plan, therefore, is not required for impacts to wetlands determined to be incidental.

4. Discussion of Subject Wetlands 3, 6, and 7

The airport was constructed around 1951-1952 (located in the southwest quarter of Section 18, T29N, R20W) on lands consistently in agricultural production since at least 1938 (the first available aerial photo). As can be seen in the series of aerial photos covering from 1938 to 2016, lands surrounding the airfield within Section 18 have been in agricultural production from completion of airport construction to today. Lands within the infield area are hayed or mown regularly and other areas outside of the airfield, but on Airport property, are in row crop production. Wet signatures, except those associated with isolated wetlands consistently seen in the series of aerial photos, appear to be absent in areas on Airport property under cultivation.

Soils in this part of the Section 18 are covered primarily by Crystal Lake silt Loam, 1 to 3 percent slopes (449) with a hydric rating of just 3 percent and non-hydric Antigo silt loam, 2 to 6 percent slopes (49B). These fertile well-drained soils support the nearly continuous agricultural production observed. See Soils mapping provided for coverage of these soil series.

Delineated Wetlands 1, 2, 5, 8, and 9 are consistent with previously mapped National Wetland Inventory (NWI) wetlands shown on the Aquatic Resources Map. However, Wetlands 3, 6, and 7 are not identified on the NWI. Wetlands 6 and 7 (See Wetland Boundary Maps 2 and 3, respectively) are ditch wetlands associated with culvert outlets designed to drain infield areas at the Airport. Wetland 6 is located at the base of a culvert near the end of Runway 14 and directs drainage to the west. Wetland 7 is located near the intersection of the two runways and drains from a large culvert into a wide swale that connects to Wetland 9. Both of these wetlands have developed as a result of the consistent hydrological support that the culvert drainage provides. These wetlands occur in moderately well-drained Crystal Lake silt loam and likely are incidental to the construction of the drainage system for the airport.

Wetland 3 is located near the Runway 22 end (See Wetland Boundary Map 1). Grading at a topographic high of 930 feet above sea level extends beyond the end of the runway for approximately 200 feet. Wetland 3 is located on the west side at the base of the slope associated with this runway safety area grading. The fillslope associated with the connecting taxiway bounds the southern side of the wetland. A swale, running parallel to the hangar area taxi lane, drains areas to the north and likely some of the associated hangar development to the west. Wetland 3, though, does not appear to connect hydrologically to the swale or the culvert draining to the south under the connector taxiway. Surface run-off from slopes on the east and south likely collects in this isolated low spot and supports this Fresh (wet) Meadow Type 2 wetland.
Wetland 3 occurs on soils mapped as well-drained non-hydric Antigo silt loam, 2 to 6 percent slopes (49B). From the aerial photo review, it appears that the area at the end of the runway was consistently in agricultural production until the runway was constructed and that grading for fill slopes and the runway safety area contributed to the formation of this wetland in non-wetland soils. Therefore, Wetland 3 is incidental to the construction of the runway and its drainage system.

5. Summary

This memorandum and its attachments support a request for jurisdictional determinations by the USCOE and the VBWD. Mead & Hunt is requesting an approved jurisdictional determination by the USCOE for all nine wetlands delineated at the Airport and an incidental wetland determination from the VBWD for Wetland 3, 6, and 7.
PART ONE: Applicant Information

If applicant is an entity (company, government entity, partnership, etc.), an authorized contact person must be identified. If the applicant is using an agent (consultant, lawyer, or other third party) and has authorized them to act on their behalf, the agent’s contact information must also be provided.

Applicant/Landowner Name: Chad Leqve (Metropolitan Airports Commission)
Mailing Address: 6040 28TH AVE S, MINNEAPOLIS MN 55450
Phone: 612-725-6326
E-mail Address: Chad.leqve@mspmac.org

Authorized Contact (do not complete if same as above):
Mailing Address:
Phone:
E-mail Address:

Agent Name: Evan Barrett (Mead & Hunt, Inc.)
Mailing Address: 7900 West 78th Street, Suite 370, Minneapolis, MN 55439
Phone: 952-641-8820
E-mail Address: evan.barrett@meadhunt.com

PART TWO: Site Location Information

County: Washington
City/Township: Lake Elmo (Baytown/West Lakeland Townships)

Parcel ID and/or Address: 3275 MANNING AVE N
Legal Description (Section, Township, Range): Section 18 and 19, T29N, R20W
Lat/Long (decimal degrees): 44.997089N, 92.857562W

Attach a map showing the location of the site in relation to local streets, roads, highways. (See Appendix A of delineation report)

Approximate size of site (acres) or if a linear project, length (feet): 130 acres

PART THREE: General Project/Site Information

If this application is related to a delineation approval, exemption determination, jurisdictional determination, or other correspondence submitted prior to this application then describe that here and provide the Corps of Engineers project number.

Describe the project that is being proposed, the project purpose and need, and schedule for implementation and completion. The project description must fully describe the nature and scope of the proposed activity including a description of all project elements that effect aquatic resources (wetland, lake, tributary, etc.) and must also include plans and cross section or profile drawings showing the location, character, and dimensions of all proposed activities and aquatic resource impacts.
PART FOUR: Aquatic Resource Impact Summary

If your proposed project involves a direct or indirect impact to an aquatic resource (wetland, lake, tributary, etc.) identify each impact in the table below. Include all anticipated impacts, including those expected to be temporary. Attach an overhead view map, aerial photo, and/or drawing showing all of the aquatic resources in the project area and the location(s) of the proposed impacts. Label each aquatic resource on the map with a reference number or letter and identify the impacts in the following table.

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<th>Duration of Impact (Permanent P or Temporary T)</th>
<th>Size of Impact</th>
<th>Overall Size of Aquatic Resource</th>
<th>Existing Plant Community Type(s) in Impact Area</th>
<th>County, Major Watershed #, and Bank Service Area # of Impact Area</th>
</tr>
</thead>
</table>

1. If impacts are temporary; enter the duration of the impacts in days next to the "T". For example, a project with a temporary access fill that would be removed after 220 days would be entered "T(220)".

2. Impacts less than 0.01 acre should be reported in square feet. Impacts 0.01 acre or greater should be reported as acres and rounded to the nearest 0.01 acre. Tributary impacts must be reported in linear feet of impact and an area of impact by indicating first the linear feet of impact along the flowline of the stream followed by the area impact in parentheses. For example, a project that impacts 50 feet of a stream that is 6 feet wide would be reported as 50 ft (300 square feet).

3. This is generally only applicable if you are applying for a de minimis exemption under MN Rules 8420.0420 Subp. 8, otherwise enter "N/A".

4. Use Wetland Plants and Plant Community Types of Minnesota and Wisconsin 3rd Ed. as modified in MN Rules 8420.0405 Subp. 2.

5. Refer to Major Watershed and Bank Service Area maps in MN Rules 8420.0522 Subp. 7.

If any of the above identified impacts have already occurred, identify which impacts they are and the circumstances associated with each:

PART FIVE: Applicant Signature

☒ Check here if you are requesting a pre-application consultation with the Corps and LGU based on the information you have provided. Regulatory entities will not initiate a formal application review if this box is checked.

By signature below, I attest that the information in this application is complete and accurate. I further attest that I possess the authority to undertake the work described herein.

Signature:  
Date: 9/25/2017

I hereby authorize to act on my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this application.

1 The term "impact" as used in this joint application form is a generic term used for disclosure purposes to identify activities that may require approval from one or more regulatory agencies. For purposes of this form it is not meant to indicate whether or not those activities may require mitigation/replacement.

Minnesota Interagency Water Resource Application Form February 2014
Attachment B

Supporting Information for Applications Involving Exemptions, No Loss Determinations, and Activities Not Requiring Mitigation

Complete this part if you maintain that the identified aquatic resource impacts in Part Four do not require wetland replacement/compensatory mitigation OR if you are seeking verification that the proposed water resource impacts are either exempt from replacement or are not under CWA/WCA jurisdiction.

Identify the specific exemption or no-loss provision for which you believe your project or site qualifies:

- We are seeking verification that wetlands 3, 6, and 7 (identified in a previously submitted wetland delineation report for Lake Elmo Airport) are incidental and therefore do not fall under CWA/WCA jurisdiction.

Provide a detailed explanation of how your project or site qualifies for the above. Be specific and provide and refer to attachments and exhibits that support your contention. Applicants should refer to rules (e.g. WCA rules), guidance documents (e.g. BWSR guidance, Corps guidance letters/public notices), and permit conditions (e.g. Corps General Permit conditions) to determine the necessary information to support the application. Applicants are strongly encouraged to contact the WCA LGU and Corps Project Manager prior to submitting an application if they are unsure of what type of information to provide:

- A detailed technical memo with supporting documentation (historic aerial photography, soils, and delineated wetland boundary maps) was submitted to the US Army Corps of Engineers, St. Paul District and the Valley Branch Watershed District (VBWD) on December 4, 2017. Additional information and clarification was requested by the VBWD on December 21, 2017. This Attachment B is also included as part of the supplemental information submittal. Information submitted as part of this additional info request includes historical aerial photos zoomed in to focus on the three wetlands in this review.
Hydric Rating by Map Unit—Washington County, Minnesota
(Lake Elmo Airport (21D))

Natural Resources Conservation Service
Web Soil Survey
National Cooperative Soil Survey

Map Scale: 1:16,100 if printed on A landscape (11" x 8.5") sheet.

Map projection: Web Mercator   Corner coordinates: WGS84   Edge tics: UTM Zone 15N WGS84
Hydric Rating by Map Unit—Washington County, Minnesota
(Lake Elmo Airport (21D))

**MAP LEGEND**

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<thead>
<tr>
<th>Area of Interest (AOI)</th>
<th>Transportation</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Rails</td>
</tr>
<tr>
<td></td>
<td>Interstate Highways</td>
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</tr>
<tr>
<td></td>
<td>Major Roads</td>
</tr>
<tr>
<td></td>
<td>Local Roads</td>
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**Soils**

- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

**Soil Rating Polygons**

**Soil Rating Lines**

- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

**Soil Rating Points**

- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

**Water Features**

- Streams and Canals

**MAP INFORMATION**

The soil surveys that comprise your AOI were mapped at 1:15,800.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL: [Web Mercator (EPSG:3857)]

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Washington County, Minnesota

Survey Area Data: Version 11, Sep 19, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 16, 2012—Apr 26, 2012

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.
## Hydric Rating by Map Unit

<table>
<thead>
<tr>
<th>Map unit symbol</th>
<th>Map unit name</th>
<th>Rating</th>
<th>Acres in AOI</th>
<th>Percent of AOI</th>
</tr>
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<tbody>
<tr>
<td>49</td>
<td>Antigo silt loam, 0 to 2 percent slopes</td>
<td>0</td>
<td>166.4</td>
<td>17.8%</td>
</tr>
<tr>
<td>49B</td>
<td>Antigo silt loam, 2 to 6 percent slopes</td>
<td>0</td>
<td>68.2</td>
<td>7.3%</td>
</tr>
<tr>
<td>49C</td>
<td>Antigo silt loam, 6 to 15 percent slopes</td>
<td>0</td>
<td>8.9</td>
<td>1.0%</td>
</tr>
<tr>
<td>120</td>
<td>Brill silt loam</td>
<td>5</td>
<td>5.4</td>
<td>0.6%</td>
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<tr>
<td>153B</td>
<td>Santiago silt loam, 2 to 6 percent slopes</td>
<td>0</td>
<td>11.3</td>
<td>1.2%</td>
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<tr>
<td>155B</td>
<td>Chetek sandy loam, 0 to 6 percent slopes</td>
<td>0</td>
<td>39.3</td>
<td>4.2%</td>
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<tr>
<td>155C</td>
<td>Chetek sandy loam, 6 to 12 percent slopes</td>
<td>0</td>
<td>21.7</td>
<td>2.3%</td>
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<tr>
<td>155D</td>
<td>Chetek sandy loam, 12 to 25 percent slopes</td>
<td>0</td>
<td>4.2</td>
<td>0.5%</td>
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<td>189</td>
<td>Auburndale silt loam, 0 to 2 percent slopes</td>
<td>95</td>
<td>12.5</td>
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<td>264</td>
<td>Freeon silt loam, 2 to 6 percent slopes</td>
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<td>11.0</td>
<td>1.2%</td>
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<tr>
<td>266</td>
<td>Freer silt loam</td>
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<td>367B</td>
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<td>449</td>
<td>Crystal Lake silt loam, 1 to 3 percent slopes</td>
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<td>34.3%</td>
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<td>452</td>
<td>Comstock silt loam</td>
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<td>53.9</td>
<td>5.8%</td>
</tr>
<tr>
<td>456</td>
<td>Barronett silt loam</td>
<td>92</td>
<td>2.8</td>
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<tr>
<td>507</td>
<td>Poskin silt loam</td>
<td>3</td>
<td>8.3</td>
<td>0.9%</td>
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<tr>
<td>1055</td>
<td>Aquolls and Histosols, ponded</td>
<td>100</td>
<td>31.4</td>
<td>3.4%</td>
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<tr>
<td>1847</td>
<td>Barronett silt loam, sandy substratum</td>
<td>90</td>
<td>1.7</td>
<td>0.2%</td>
</tr>
</tbody>
</table>

**Totals for Area of Interest**

<p>| | |</p>
<table>
<thead>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>935.5</td>
</tr>
<tr>
<td></td>
<td>100.0%</td>
</tr>
</tbody>
</table>
Description

This rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

The thematic map is color coded based on the composition of hydric components. The five color classes are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components.

In Web Soil Survey, the Summary by Map Unit table that is displayed below the map pane contains a column named 'Rating'. In this column the percentage of each map unit that is classified as hydric is displayed.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

References:


**Rating Options**

*Aggregation Method:* Percent Present

*Component Percent Cutoff:* None Specified

*Tie-break Rule:* Lower
LAKE ELMO AIRPORT
Proposed Runway 14-32 Runway Shift

Project Information
T29N, R20W, S18 and S19
City of Lake Elmo
Washington County, MN
Area of Interest = 130.1 acres
Field work conducted:
June 5 - 9, 2017

Wetland Data: National Wetlands Inventory (NWI), Minnesota Public Waters, and National Hydrography Dataset

Mn Public Waters Data: Public Waters (PW) Basin and Watersource Delineations, Washington County, MN Geospatial Commons
Stream Data: National Hydrography Dataset (NHD), USGS

Image Source: MnGEO WMS Image Service, Washington County (2016 color 7-county)
Historic Aerial Imagery
LAKE ELMO AIRPORT
Proposed Runway 14-32 Runway Shift

Images are not to scale

Project Information
T29N, R20W, S18 and S19
City of Lake Elmo
Washington County, MN
Area of Interest = 130.1 acres
Field work conducted:
June 5 - 9, 2017

Path: X:\2838700\161542.02\TECH\GIS_CAD\Maps\21D_HistoricImageryReview1.mxd
Image Source: Minnesota Historical Aerial Photographs, U of MN
Image Date: 7/28/1938

Path: X:\2838700\161542.02\TECH\GIS_CAD\Maps\21D_HistoricImageryReview1.mxd
Image Source: Minnesota Historical Aerial Photographs, U of MN
Image Date: 5/8/1947
Historic Aerial Imagery
LAKE ELMO AIRPORT
Proposed Runway 14-32 Runway Shift

Images are not to scale
Historic Aerial Imagery
LAKE ELMO AIRPORT
Proposed Runway 14-32 Runway Shift

Images are not to scale

Project Information
T29N, R20W, S18 and S19
City of Lake Elmo
Washington County, MN
Area of Interest = 130.1 acres
Field work conducted: June 5 - 9, 2017
Historic Aerial Imagery
LAKE ELMO AIRPORT
Proposed Runway 14-32 Runway Shift

Legend
- Airport Property Boundary

Project Information
T29N, R20W, S18 and S19
City of Lake Elmo,
Washington County, MN
Area of Interest = 130.1 acres
Field work conducted:
June 5 - 9, 2017
Historic Aerial Imagery
LAKE ELMO AIRPORT
Proposed Runway 14-32 Runway Shift

Legend
- - - - Airport Property Boundary

Project Information
T29N, R20W, S18 and S19
City of Lake Elmo
Washington County, MN
Area of Interest = 130.1 acres
Field work conducted: June 5 - 9, 2017
Historic Aerial Imagery
LAKE ELMO AIRPORT
Proposed Runway 14-32 Runway Shift

Legend
Airport Property Boundary

Project Information
T29N, R20W, S18 and S19
City of Lake Elmo
Washington County, MN
Area of Interest = 130.1 acres
Field work conducted:
June 5 - 9, 2017

Image Date: 2013
Image Source: MnGEO Aerial Photography (2013 Washington)

Image Date: 2016
Image Source: MnGEO Aerial Photography (2016 color 7-county)
Historic Aerial Imagery
LAKE ELMO AIRPORT
Proposed Runway 14-32 Runway Shift

Legend
- Project AOI
- Delineated Wetland Boundary
- PLSS Section Line
- Airport Property Boundary
- Index Contour
- Intermediate Contour

(contour interval is 2 feet)

Project Information
T29N, R20W, S18 and S19
City of Lake Elmo
Washington County, MN
Area of Interest = 130.1 acres
Field work conducted: June 5 - 9, 2017

Image Source: Minnesota Historical Aerial Photographs, U of MN
Image Date: 7/28/1938

Image Source: Minnesota Historical Aerial Photographs, U of MN
Image Date: 5/8/1947

Image Source: Minnesota Historical Aerial Photographs, U of MN
Image Date: 7/28/1938

Image Source: Minnesota Historical Aerial Photographs, U of MN
Image Date: 5/8/1947
Historic Aerial Imagery

LAKE ELMO AIRPORT
Proposed Runway 14-32 Runway Shift

Legend
- Yellow: Project AOI
- Green: Delineated Wetland Boundary
- Blue: Airport Property Boundary
- Orange: Index Contour
- Light Orange: Intermediate Contour
- Red: PLSS Section Line

Image Source: Minnesota Historical Aerial Photographs, U of MN
Image Date: 5/30/1957
Image Date: 10/2/1964

Project Information
T29N, R20W, S18 and S19
City of Lake Elmo
Washington County, MN
Area of Interest = 130.1 acres
Field work conducted: June 5 - 9, 2017
Historic Aerial Imagery
LAKE ELMO AIRPORT
Proposed Runway 14-32 Runway Shift

Legend
- **Project AOI**
- **Delineated Wetland Boundary**
- **Airport Property Boundary**
- **Index Contour**
- **Intermediate Contour**
(Contour interval is 2 feet)

Project Information
T29N, R20W, S18 and S19
City of Lake Elmo
Washington County, MN
Area of interest = 130.1 acres
Field work conducted:
June 5 - 9, 2017

Image Date: 10/28/1953
Image Source: Minnesota Historical Aerial Photographs, U of MN

Image Date: 11/28/1966
Image Source: USGS

Contour Source: Minnesota Geospatial Commons, Minnesota Elevation Mapping Project, Twin Cities Metro Region 2011
Historic Aerial Imagery
LAKE ELMO AIRPORT
Proposed Runway 14-32 Runway Shift

Legend
- Project AOI
- Delineated
- Wetland Boundary
- PLSS Section Line
- Airport Property Boundary
- Index Contour
- Intermediate Contour

(Contour interval is 2 feet)

Project Information
T29N, R20W, S18 and S19
City of Lake Elmo
Washington County, MN
Area of Interest = 130.1 acres
Field work conducted:
June 5 - 9, 2017

Image Date: 10/16/1972
Image Source: USGS

Image Date: 5/1/1980
Image Source: USGS

Contour Source: Minnesota Geospatial Commons, Minnesota Elevation Mapping Project, Twin Cities Metro Region 2011
Historic Aerial Imagery
LAKE ELMO AIRPORT
Proposed Runway 14-32 Runway Shift

Legend
- Project AOI
- Delineated Wetland Boundary
- PLSS Section Line
- Airport Property Boundary
- Index Contour
- Intermediate Contour
(Contour interval is 2 feet)

Project Information
T29N, R20W, S18 and S19
City of Lake Elmo
Washington County, MN
Area of Interest = 130.1 acres
Field work conducted: June 5 - 9, 2017
### Wetland Boundary Map

**Sheet Key**

LAKE ELMO AIRPORT

**Proposed Runway 14-32 Runway Shift**

**Legend**

- Map Sheet
- Wetland Boundary
- Wetland within AOI
- Outside AOI
- Area of Interest
- Airport Property Boundary

<table>
<thead>
<tr>
<th>Wetland Number</th>
<th>Description</th>
<th>Circular 39 Type</th>
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<tbody>
<tr>
<td>1</td>
<td>Seasonally Flooded Basin</td>
<td>Type 1</td>
</tr>
<tr>
<td>2</td>
<td>Fresh (wet) Meadow</td>
<td>Type 2</td>
</tr>
<tr>
<td>3</td>
<td>Fresh (wet) Meadow</td>
<td>Type 2</td>
</tr>
<tr>
<td>4</td>
<td>Fresh (wet) Meadow</td>
<td>Type 2</td>
</tr>
<tr>
<td>5</td>
<td>Fresh (wet) Meadow</td>
<td>Type 2</td>
</tr>
<tr>
<td>6</td>
<td>Fresh (wet) Meadow (Ditch Wetland)</td>
<td>Type 2</td>
</tr>
<tr>
<td>7</td>
<td>Fresh (wet) Meadow (Ditch Wetland)</td>
<td>Type 2</td>
</tr>
<tr>
<td>8</td>
<td>Fresh (wet) Meadow/Deep Marsh</td>
<td>Type 2/Type 4</td>
</tr>
<tr>
<td>9</td>
<td>Fresh (wet) Meadow/Shallow Marsh</td>
<td>Type 2/Type 3</td>
</tr>
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</table>

### Wetland Table

<table>
<thead>
<tr>
<th>Wetland Number</th>
<th>Area within AOI (acres)</th>
<th>Area within AOI (sq. ft)</th>
<th>Area outside AOI (acres)</th>
<th>Area outside AOI (sq. ft)</th>
<th>Total Area (acres)</th>
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**Project Information**

T29N, R20W, S18 and S19
City of Lake Elmo
Washington County, MN
Area of interest = 130.1 acres
Field work conducted:
June 5 - 9, 2017

**Image Source:** MnGEO WMS Image Service, Washington County (2016 color 7-county)
Wetland Boundary Map
LAKE ELMO AIRPORT
Proposed Runway 14-32 Runway Shift

Legend
- Photo Location
- Data Point Location
- Wetland Boundary
- Wetland within AOI
- Wetland outside AOI
- Culvert End Location
- Flow Direction
- Ditch/Swale Flow
- Area of Interest
- Airport Property Boundary

Project Information

T29N, R20W, S18 and S19
City of Lake Elmo
Washington County, MN
Area of Interest = 130.1 acres
Field work conducted:
June 5 - 9, 2017

Image Source:
MnGEO WMS Image Service, Washington County (2016 color 7-county)
Contour Source:
Minnesota Geospatial Commons, Minnesota Elevation Mapping Project Twin Cities Metro Region 2011
Wetland Boundary Map
LAKE ELMO AIRPORT
Proposed Runway 14-32 Runway Shift

Project Information
T29N, R20W, S18 and S19
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Washington County, MN
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Field work conducted: June 5 - 9, 2017

Image Source: MnGEO WMS Image Service, Washington County (2016 color 7-county)
Contour Source: Minnesota Geospatial Commons, Minnesota Elevation Mapping Project Twin Cities Metro Region 2011
**Project Information**

- **Area of Interest**: 130.1 acres
- **Field work conducted**: June 5 - 9, 2017

**Image Source**: MnGEO WMS Image Service, Washington County (2016 color 7-county)

**Contour Source**: Minnesota Geospatial Commons, Minnesota Elevation Mapping Project Twin Cities Metro Region 2011
Wetland Boundary Map
LAKE ELMO AIRPORT
Proposed Runway 14-32 Runway Shift

Project Information
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Washington County, MN
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Image Source: MnGEO WMS Image Service, Washington County (2016 color 7-county)
Contour Source: Minnesota Geospatial Commons, Minnesota Elevation Mapping Project
Twin Cities Metro Region 2011

Map 6 of 6

Legend
- Photo Location
- Data Point Location
- Wetland Boundary
- Wetland within AOI
- Wetland outside AOI
- Culvert End Location
- Flow Direction
- Ditch/Swale Flow
- Area of Interest
- Airport Property Boundary

Elevation contour interval is 2 feet
Wetland Delineation and Function Assessment Report
(final)

Lake Elmo (21D) Airport
Runway 14/32 Relocation and Associated Improvements

Report prepared for
Metropolitan Airports Commission
Minneapolis, Minnesota

Report prepared by
Mead & Hunt
www.meadhunt.com

October 2017
# Table of Contents

1. Introduction .............................................................................................................. 1

2. Methods .................................................................................................................... 3

3. Results and Discussion ............................................................................................ 5
   A. Site Description....................................................................................................... 5
      (1) Soils Mapping.................................................................................................... 5
      (2) Aquatic Resources ........................................................................................... 7
      (3) Historic Aerial Photograph Review ................................................................. 7
      (4) Antecedent Climatic Conditions ...................................................................... 8
   B. Findings ................................................................................................................... 8
      (1) Wetlands .......................................................................................................... 8
          (a) Wetland 1 (PEMA/Type 1) ........................................................................ 9
          (b) Wetland 2 (PEMB/Type 2) ...................................................................... 11
          (c) Wetland 3 (PEMB/Type 2) ...................................................................... 12
          (d) Wetland 4 (PEMB/Type 2) ...................................................................... 14
          (e) Wetland 5 (PEMB/Type 2) ...................................................................... 15
          (f) Wetlands 6 and 7 (PEMB/Type 2) ............................................................. 16
          (g) Wetland 8 (PEMB/Type 2 and PABF/Type 4) ........................................ 17
          (h) Wetland 9 (PEMB/Type 2 and PEMC/Type 3) ........................................ 18
   C. Uplands ................................................................................................................. 19
   D. Functional Assessment ........................................................................................... 20
   E. Summary .................................................................................................................. 20
      (1) Other waters .................................................................................................... 21

4. Conclusion .................................................................................................................. 22

5. Certification and Limitations .................................................................................... 23

6. References .................................................................................................................. 24
### Table of Contents

#### Appendices

A  Project Location and Topography Map  
B  Detailed Topographic Map, NRCS Soils Map, and Aquatic Resources Map  
C  Historical Aerial Photography  
D  Offsite Hydrology Evaluation  
E  WETS Analysis and Climatic Data  
F  Wetland Boundary Maps  
G  Data Sheets with Field Photographs  
H  MNRAM Functional Assessment Forms  
I  Delineator Qualifications

#### Tables

<table>
<thead>
<tr>
<th>Tables</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Summary of Soils in Area of Interest ........................................ 6</td>
</tr>
<tr>
<td>2</td>
<td>Summary of Delineated Wetlands within the Area of Interest ........ 9</td>
</tr>
<tr>
<td>3</td>
<td>Wetland and Functional Assessment IDs ........................................ 20</td>
</tr>
</tbody>
</table>
1. Introduction

Lake Elmo Airport (21D) is a general aviation reliever airport owned and operated by the Metropolitan Airports Commission (MAC). The airport is located just east of St. Paul, Minnesota. The Airport is bordered by Manning Avenue N. (MN 15) to the west, a Union Pacific Railroad line on the north, and 30th Street N. to the south. Airport property covers approximately 640 acres over three parcels. The central parcel includes the main airfield and associated facilities, roads, and hangar areas. Additional parcels of land extend ownership to the north along Manning Avenue to 40th Street N. (Minnesota Trunk Highway 14), encompassing about 40 acres, and to the south of 30th Street N. for an additional 80 acres. To the south and east, the Airport is bordered by rolling farmland and woodlands with scattered residences, and lies within the Downs Lake subwatershed of the St. Croix River - Stillwater watershed. Areas west of the Airport consist primarily of single-family residential development. A project location map is presented in Appendix A.

The airfield at 21D consists of two runways, two supporting taxiways, and numerous privately owned hangars. Runway 14/32 is the primary runway and is 2,850 feet long and 75 feet wide. The crosswind runway (Runway 4/22) is 2,497 feet long and 75 feet wide. There are two non-precision instrument approaches to the Airport, which has no control tower. Fueling, flight training, and aircraft maintenance services are available from a fixed-base operator. The primary role of the airport is to serve personal, recreational, and business aviation users. The Airport provides business services including flight training and aircraft maintenance.

MAC has prepared a number of Long-Term Comprehensive Plans (LTCP) for the Airport, beginning in 1966 with updates in 1976, 1992, and 2008. The draft 2035 LTCP identifies future facility needs, delineates the future footprint of the Airport, and aims to bring the Airport into safety compliance with Federal Aviation Administration (FAA) guidelines.

The purpose of the proposed action at 21D is to pursue the following three general infrastructure goals for the Airport:

1) Address failing, end-of-life infrastructure;

2) Enhance safety for Airport users and neighbors; and

3) Improve facilities for the family of aircraft using and expected to use the Airport.

The need for the proposed action is based on the following four deficiencies at the existing facility:

1) The existing runway and taxiway pavements are deteriorating and need to be replaced.

2) Runway 14/32 has several incompatible land uses within its runway protection zones (RPZs), including a railroad and two public roads.

3) The existing lengths of Runway 14/32 and 4/22 do not meet the needs of current Airport operators and their aircraft.
4) The existing instrument approach procedures do not utilize the latest available navigational technology.

The proposed action will address these deficiencies by achieving the following four specific objectives:

1) Improve the runway and taxiway pavement condition;
2) Minimize incompatible land uses in the RPZs;
3) Meet runway length needs for existing users; and
4) Upgrade the instrument approach procedures.

In support of an alternatives analysis that explores meeting these goals, a wetland delineation and functional assessment was conducted by Mead & Hunt, Inc. (Mead & Hunt) within an Area of Interest (AOI) on June 5-9, 2017. The AOI comprises 130.1 acres spread over four separate areas and is located in Sections 18 and 19, Township 29 North, Range 20 West, Washington County, Minnesota. A total of nine wetlands were identified within the AOI.

This report summarizes the results of the wetland delineation. Delineator qualifications are provided in Appendix I. Mead & Hunt staff who performed the wetland delineation are:

- Brauna Hartzell, BS Biological Science, Florida State University, 1982; MS Environmental Monitoring, University of Wisconsin-Madison, 1994; 15 years wetland delineation practice.
- Kim Shannon, BS Biology, Oklahoma State University, 1994; MS Applied and Natural Science (Botany), Oklahoma State University, 1997; 10 years wetland delineation practice.
2. Methods

The wetland determination made use of available resources to provide context and background information and to assist in the field assessment including:

- U.S. Geological Survey (USGS) topographic maps and 2-foot elevation contours provided by Minnesota Geospatial Commons, Minnesota Elevation Mapping Project, 2011.


- U.S. Fish and Wildlife National Wetland Inventory (NWI) mapping with update for East-Central Minnesota at https://www.fws.gov/wetlands/data/mapper.html

- 2016 National Wetland Plant List (Lichvar, R.W., D. L. Banks, W. N. Kirchner, and N. C. Melvin, 2016)

- Climatic norms at Minneapolis/St. Paul Airport, MN from USDA WETS tables at https://www.wcc.nrcs.usda.gov/climate/navigate_wets.html


- Minnesota Wetland Functional Assessment (MNARAM) data provided by the Valley Branch Watershed District Engineer (via email dated 3/3/2017).

- Aerial photography (MnGEO WMS Image Service, MnDNR Department of Forestry, US Geological Survey, GoogleEarth)

The field methods used conform to the Routine Onsite Method of the 1987 U.S. Army Corps of Engineers’ (USACE) Wetland Delineation Manual, as enhanced by the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (U.S. Army Corps of Engineers, 2011). Soil characteristics were examined by digging pits with a 16-inch tile spade and hydrologic indicators were visually assessed. Soil pits were left open for a minimum of 15 minutes to adequately assess the water table. Munsell Soil Color charts were used to determine the hue, value, and chroma for the matrix and any redoximorphic features in each soil layer.

Vegetation was documented on the North Central/Northeast Regional (NC/NE) data forms. Percent cover of each species in each stratum was estimated. The herbaceous stratum was sampled within a 5-foot radius plot; a 15-foot radius plot for the shrub/sapling stratum; and a 30-foot radius plot for the tree and woody vine stratum. The 2016 National Wetland Plant List (Lichvar, R.W., et al, 2016) was used to determine the wetland indicator status for each species and the 50/20 rule was applied to determine dominance.
Antecedent precipitation was assessed following procedures developed by the NRCS. Precipitation data three months prior to fieldwork were compared to 30-year precipitation averages (1981-2010) to determine if hydrologic conditions were normal, wetter, or drier than normal for the area.

An offsite hydrology investigation per guidance established by the St. Paul District (USACE, 2016) was performed to assess areas in agricultural production for saturated soil or standing water. Each area identified was investigated in the field and documented.

All area within the AOI was examined. A total of 19 data points—ten in uplands and nine in wetlands—were established to characterize the range of soil, vegetation, and hydrologic conditions. Wetland boundary points were indicated by wire pin flags placed approximately 25-50 feet apart. These sampling points and wetland boundary flags were surveyed with a Trimble Geo7X capable of sub-meter accuracy and mapped using Geographic Information System (GIS) software.

The following appendices are included with this report:

- Appendix A – Project Location and Topography Map
- Appendix B – Detailed Topographic Map, NRCS Soils Map, and Aquatic Resources Map
- Appendix C – Historical Aerial Photography
- Appendix D – Offsite Hydrology Evaluation
- Appendix E – WETS Analysis and Climatic Data
- Appendix F – Wetland Boundary Maps
- Appendix G – Data Sheets with Field Photographs
- Appendix H – MNRAM Functional Assessment Forms
- Appendix I – Delineator Qualifications
3. Results and Discussion

A. Site Description

The AOI covers approximately 130 acres split across four separate areas. The largest section of the AOI, approximately 116 acres in size, extends across areas of the airfield, crossing over 30th Street to include most of the airport parcel south of 30th Street. Smaller sections of the AOI cover the safety area north of Runway 22 end (8.0 acres), an area on the western edge of the Airport along Manning Avenue (4.7 acres), and a small area adjacent to Runway 14/32 and northeast of the main hanger complex just over 1 acre in size. A project location map is presented in Appendix A.

Portions of the AOI are under row-crop cultivation east of Runway 4/22. Scattered woodlands and wetlands appear in this area. Undeveloped infield areas to the west of Runway 4/22 consist of grasses and forbs mown or hayed on a regular basis. The airfield is generally flat with little elevation change; the eastern side is somewhat higher at approximately 930 feet (NAVD 1988), gently sloping to the west and south to about 920 feet at the Airport entrance on Manning Avenue. See Appendix B for a detailed Topographic Map.

Drainage flows generally from northeast to southwest as it moves under 30th Street and Manning Avenue via numerous culverts. Within Airport property, the main southerly drainage conveys flows to a depressional shallow marsh and seasonally flooded basin near the Runway 32 end north of 30th Street. This wetland is connected hydrologically to a larger depressional shallow marsh south of 30th Street via a culvert. Area south of 30th Street is cultivated, although prior to construction of the road these two wetlands were likely physically connected.

Airport lands not in agricultural production are actively managed by regular mowing or periodic haying. At the time of field work, the west side (uncultivated areas) of the Airport had not been mown for some time, making vegetation readily identifiable. Most of these uncultivated areas were dominated by a mix of grasses and forbs consisting of Kentucky blue grass, orchard grass, red clover, common yarrow, milkweed, and Canada thistle. Farm fields on the east side of Runway 4/22 and south of 30th Street were under cultivation. Isolated woodlands and depressional areas appeared undisturbed.

(1) Soils Mapping

Most of the AOI is covered by three soils: well drained Antigo silt loams (0 to 2 percent slopes and 2 to 6 percent slopes) and moderately well drained Crystal Lake silt loam (1 to 3 percent slopes). Typical soil profiles for Antigo silt loams (49 and 49B) show a dark grayish brown (10YR 4/2) silt loam over a brown (10YR 5/3) silt loam. Crystal Lake silt loam (449) also shows a dark grayish brown (10YR 4/2) silt loam in the A horizon; however, underlying this is a light brownish gray (10YR 6/2) silt loam with few fine prominent yellowish red (5YR 4/6) masses of iron accumulation. Antigo silt loams and their minor components are non-hydric while Crystal Lake silt loam contains a minor component, Barronett silt loam at 3%, which is hydric.

Depressional areas within the AOI generally are covered by hydric soils from the poorly drained Auburndale series and by ponded, very poorly drained Aquolls and Histosols. A very dark grayish
brown (10YR 3/2) silt loam covers a grayish brown (10YR 5/2) silt loam with many medium prominent strong brown (7.5YR 5/8) masses of iron accumulation in a typical soil profile for the Auburndale series. Areas mapped as Aquolls and Histosols are rated as hydric.

Soils present within the AOI are summarized in Table 1. Soils mapping for the AOI is presented in Appendix B.

### Table 1. Summary of Soils in Area of Interest

<table>
<thead>
<tr>
<th>Map unit symbol</th>
<th>Map unit name</th>
<th>Soil Unit Component Percentage</th>
<th>Landform</th>
<th>Hydric Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>49</td>
<td>Antigo silt loam, 0 to 2 percent slopes</td>
<td>Antigo/ minor comp. 80/20</td>
<td>Terraces, flats</td>
<td>No</td>
</tr>
<tr>
<td>49B</td>
<td>Antigo silt loam, 2 to 6 percent slopes</td>
<td>Antigo/ minor comp. 80/20</td>
<td>Terraces, flats, hillslopes</td>
<td>No</td>
</tr>
<tr>
<td>153B</td>
<td>Santiago silt loam, 2 to 6 percent slopes</td>
<td>Santiago/ minor comp. 90/10</td>
<td>Moraines</td>
<td>No</td>
</tr>
<tr>
<td>155B</td>
<td>Chetek sandy loam, 0 to 6 percent slopes</td>
<td>Chetek/ minor comp. 90/10</td>
<td>Outwash plains</td>
<td>No</td>
</tr>
<tr>
<td>155C</td>
<td>Chetek sandy loam, 6 to 12 percent slopes</td>
<td>Chetek/ minor comp. 90/10</td>
<td>Pitted outwash plains</td>
<td>No</td>
</tr>
<tr>
<td>155D</td>
<td>Chetek sandy loam, 12 to 25 percent slopes</td>
<td>Chetek/ minor comp. 90/10</td>
<td>Pitted outwash plains</td>
<td>No</td>
</tr>
<tr>
<td>189</td>
<td>Auburndale silt loam, 0 to 2 percent slopes</td>
<td>Auburndale/ minor comp. 85/15</td>
<td>Ground moraines</td>
<td>Yes</td>
</tr>
<tr>
<td>266</td>
<td>Freer silt loam</td>
<td>Freer/ minor comp. 90/10</td>
<td>Moraines</td>
<td>No</td>
</tr>
<tr>
<td>367B</td>
<td>Campia silt loam, 0 to 8 percent slopes</td>
<td>Campia/ minor comp. 90/10</td>
<td>Lake plains</td>
<td>No</td>
</tr>
<tr>
<td>449</td>
<td>Crystal Lake silt loam, 1 to 3 percent slopes</td>
<td>Crystal Lake/ minor comp. 90/10</td>
<td>Lake plains</td>
<td>No</td>
</tr>
<tr>
<td>452</td>
<td>Comstock silt loam</td>
<td>Comstock/ minor comp. 90/10</td>
<td>Lake plains</td>
<td>No</td>
</tr>
<tr>
<td>1055</td>
<td>Aquolls and Histosols, ponded</td>
<td>Histosols/Aquolls 50/50</td>
<td>Depressions on moraines</td>
<td>Yes</td>
</tr>
</tbody>
</table>
(2) Aquatic Resources
The National Wetland Inventory (NWI) indicates several areas of mapped wetlands within the AOI: two areas mapped as seasonally flooded emergent (PEM1C) with a fringe of temporary-flooded emergent (PEM1A), both within the eastern portion of the AOI. A small pocket of forested wetland (PFO1A) is mapped adjacent to an emergent wetland (PEM1A) just northeast of the Runway 22 end. A small emergent seasonally flooded wetland, mapped as PEM1A, lies at the very eastern edge of the AOI, just west of Neal Avenue.

Just outside of the AOI, south of 30th Street is a large open-water cattail swamp ringed by emergent vegetation and mapped as PEM1A, PEM1C, and PABG. The northern edge of this wetland was investigated because of its close proximity to the AOI and its likely connection to the wetland complex north of 30th Street. This wetland is identified as an unnamed MN Public Water (82-461W) and appears to be an isolated wetland with no downstream connections.

An unnamed intermittent stream flows southerly through the western half of Section 19 to Downs Lake. This lake is located west of Manning Avenue and south of the airport. The stream does not flow through the AOI.

Wetlands within the AOI are classified as Circular 39 Types 1 and 3. See Appendix B for aquatic resources mapping.

(3) Historic Aerial Photograph Review
Aerial photographs from 1938, 1947, 1953, 1966, 1972, 1980, 1994, 1997, 2000, 2002, 2004, 2008, 2010, and 2012-2016 were reviewed to assess areas within the AOI that have been and continue to be in agricultural production. A representative sample of these photos is presented in Appendix C. The earliest photograph of the area, taken in 1938, shows the general vicinity of the AOI mostly under cultivation with Manning Avenue, 30th Street, and the rail line in their current configuration. Two farmsteads are located within Sections 18 and 19, one at the southeast corner of Section 18 and one in the northeast corner of Section 19, situated across from each other on 30th Street. Four areas of isolated wetlands are seen much as they are today: the large swamp complex south of 30th Street, a similar smaller swamp area just north of 30th Street, an isolated depressional wooded wetland in the southeast quarter of Section 18, and a grouping of four smaller wooded areas just south of the rail line.

Land use remained the same over the next 10 years with little if any change seen in the 1947 photo. The airport was constructed around 1951-1952 and, with the exception of the airfield area (located in the southwest quarter of Section 18), the surrounding lands remained largely in agricultural production in 1953. By 1966, hangars were being developed on the west side of the airport with further hangar development seen in 1972, at which point the current configuration of runways and taxiways was set. It appears that the farmstead south of 30th Street may have been abandoned, noting the lack of driveway access and the growth of tree canopy.
Section 3
Results and Discussion

The north side hangar development was well under way by the early 1990s and largely built out by 2000. The farmstead north of 30th Street was abandoned by 1994 and reversion to forest had nearly closed the canopy.

A small saturated area can be seen in a number of photos starting in 1994 located north of the Runway 22 end. Over the course of numerous photos (1994, 1997, 2004, 2010, 2013, and 2016), this area consistently shows saturated wet signatures; two years a wet signature did not appear. This location was investigated during field work and is documented as Wetland 4 in the Findings section below.

The pattern of agricultural use, both row cropping and forage production, in areas east of the airfield and south of 30th Street within Airport property, observed since the Airport’s construction, continues to the present and reflects conditions encountered at the time of field work in 2017. Isolated depressional wetlands appear to be intact and little disturbance was observed in these aerial photos.

No other wet signatures were observed in the farmed fields within the AOI with the exception of area just south of 30th Street situated between the two swamp complexes. This area has been farmed for many years and will be addressed separately as it relates to delineated wetlands, discussed in the following section under Wetland 1. An evaluation of this area using the methodology and guidelines described by the USACE for Offsite Hydrology and Wetland Determinations (USACE, 2016) is presented in Appendix D.

(4) Antecedent Climatic Conditions
A precipitation worksheet using the gridded method from the Minnesota Climatology Working Group was calculated for the three months prior to field work. This analysis indicated that climatic conditions were wetter than normal. Additionally, a WETS analysis using long-term climatic normal data from Minneapolis/St Paul Airport and rain data from the Woodbury, Minnesota, precipitation gage shows a total of 11.8 inches as compared to the long-term average of 7.56 inches. Based on the WETS analysis, hydrologic conditions were wetter than normal (see Appendix E).

B. Findings

(1) Wetlands
A total of nine wetlands were delineated within the AOI. Wetland boundary maps with sampling point locations are presented in Appendix F followed by data sheets and field photographs in Appendix G. Table 2 summarizes the delineated wetlands which are described in detail below.
Table 2. Summary of Delineated Wetlands within the Area of Interest

<table>
<thead>
<tr>
<th>Wetland</th>
<th>Wetland Type</th>
<th>Circular 39 Type</th>
<th>Dominant Vegetation</th>
<th>Area within AOI (Sq. Ft)</th>
<th>Area within AOI (Acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Seasonally Flooded Basin¹</td>
<td>Type 1</td>
<td>Agricultural Field</td>
<td>8,142.91</td>
<td>0.187</td>
</tr>
<tr>
<td>2</td>
<td>Fresh (wet) Meadow</td>
<td>Type 2</td>
<td>Reed canary grass</td>
<td>5,079.60</td>
<td>0.117</td>
</tr>
<tr>
<td>3</td>
<td>Fresh (wet) Meadow</td>
<td>Type 2</td>
<td>Tall buttercup, horsetail, and broom sedge</td>
<td>4,776.96</td>
<td>0.110</td>
</tr>
<tr>
<td>4</td>
<td>Fresh (wet) Meadow</td>
<td>Type 2</td>
<td>Path rush, American manna grass</td>
<td>7,271.28</td>
<td>0.167</td>
</tr>
<tr>
<td>5</td>
<td>Fresh (wet) Meadow</td>
<td>Type 2/</td>
<td>Reed canary grass</td>
<td>4,104.29</td>
<td>0.094</td>
</tr>
<tr>
<td>6</td>
<td>Fresh (wet) Meadow (Ditch Wetland)</td>
<td>Type 2</td>
<td>American manna grass, reed canary grass</td>
<td>389.31</td>
<td>0.009</td>
</tr>
<tr>
<td>7</td>
<td>Fresh (wet) Meadow (Ditch Wetland)</td>
<td>Type 2</td>
<td>Reed canary grass</td>
<td>555.23</td>
<td>0.013</td>
</tr>
<tr>
<td>8</td>
<td>Fresh (wet) Meadow /Deep Marsh</td>
<td>Type 2/ Type 4</td>
<td>Reed canary grass, black willow, box elder</td>
<td>113,165.03</td>
<td>2.598</td>
</tr>
<tr>
<td>9</td>
<td>Fresh (wet) Meadow /Shallow Marsh</td>
<td>Type 2/ Type 3</td>
<td>Reed canary grass, sensitive fern</td>
<td>113,866.44</td>
<td>2.614</td>
</tr>
</tbody>
</table>

¹ Wetland 1 continues beyond the AOI boundary; delineated boundary within the AOI consists of farmed fields and wetland fringe.

(a) Wetland 1 (PEMA/Type 1)
Wetland 1 (W1) is a shallow basin located south of 30th Street with two central cores of open water populated with cattails and surrounded by a wide dense fringe dominated by reed canary grass. NWI mapping shows the central open water cores mapped as aquatic bed (PABG) with an inner ring mapped as seasonally-flooded emergent (PEM1C), and an outer ring of temporary flooded emergent (PEM1A). Only the northern extent of this wetland was investigated due to its proximity to the AOI boundary. Lands between 30th Street and the north end of the wetland have been in agricultural production for many years.

An offsite hydrology analysis of the agricultural area using 18 historic aerial photographs is provided in Appendix D. This analysis shows that 66% of the photographs taken with normal antecedent precipitation exhibit wet signatures. These signatures include both soil wetness and crop stress signatures, supporting observations taken in the field at sampling data point (DP) 3 and DP4.

Slopes around the basin vary from a 1% to 3% grade. The basin receives runoff from the surrounding fields and a 24 inch culvert under 30th Street contributes drainage from the north. It is
likely that, prior to the construction of 30th Street, these two wetlands were physically connected. Currently, they appear to be connected hydrologically.

Data points 1 through 6 were taken in W1. DPs 1, 2, 5, and 6 are indicative of the wetland fringe while DPs 3 and 4 were taken in the farmed area south of 30th Street. The locations of these sampling points are found on the Wetland Boundary Maps in Appendix F. Data sheets along with field photographs are presented in Appendix G.

**Vegetation**

At both wetland data points DP1 and DP5, the vegetation is dominated by reed canary grass in the herb layer. Other minor components of the herb stratum included stinging nettle (*Urtica dioica*: FAC) and water smartweed (*Persicaria amphibia*: OBL). The dominant species at wetland sampling points DP1 and DP5 are hydrophytic (FACW or FAC) and meet the wetland vegetation criterion.

At DP3 (wetland) within the farmed field, no identifiable vegetation was present and the sampling area was mostly bare. This appeared to be the result of inundation which caused soy bean seedling drown-out at this data point.

**Hydrology**

While evidence of surface water, a high water table, or saturation was not observed at either DP1 or DP5, oxidized rhizospheres were observed on living roots which met the C3 (Oxidized Rhizospheres on Living Roots) primary indicator of wetland hydrology at both these wetland sampling points. Secondary indicators Geomorphic Position (D2) and a positive FAC-Neutral Test (D5) were also present.

Wetland hydrology at DP3 (wetland) in the farm field was indicated by multiple primary indicators Drift Deposits (B3), Sparsely Vegetated Concave Surface (B8), and Water-Stained Leaves (B9). Secondary hydrology indicators included Surface Soil Cracks (B6) and Stunted or Stressed Plants (D1). The previous year’s corn debris had drifted and accumulated against the standing vegetation of the wetland fringe to the south of DP3. Water-staining was present on many of the old stalks. The soil surface at DP3 was devoid of planted soy beans, indicating crop drown-out conditions and plants under stress. Re-growth of weedy vegetation was noted; however, the shoots were too small to identify. Cracked soils were seen in overflow areas near the culvert exit under 30th Street, approximately 150 feet to the north of DP3. Standing water was present at the base of the culvert.

Offsite hydrology analysis using 18 historic aerial photographs showed that 66% of the photographs taken with normal antecedent precipitation exhibited wet signatures. Therefore, secondary indicator Saturation Visible on Aerial Imagery (C9) was also met at DP3.

In meeting multiple primary and secondary indicators of wetland hydrology, the hydrology criterion is satisfied.
Section 3
Results and Discussion

Soils
Three mapped soils cover this area: Crystal Lake silt loam (1 to 3 percent slopes) at DP1, DP2, DP5, and DP6; Comstock silt loam at DP3 and DP4; and Aquolls and Histosols (ponded) within the basin itself.

The hydric soils criterion was satisfied at five of the six sample points taken in W1 which included two upland data points (DP2 and DP4). At DPs 1 through 5, the Depleted below Dark Surface (A11) was met. DP1 and DP2, on the west side of the wetland, also met Redox Dark Surface (F6). The Depleted Matrix (F3) indicator was also met at DP 5, located on the east side of the wetland.

The soil profiles at these five data points were all silt loams with very dark brown to very dark grayish brown matrix colors (10YR2/2 and 10YR3/2) and prominent redoximorphic features in strong brown colors (7.5YR4/6 and 7.5YR5/6). A depleted matrix was encountered at DP5 with a dark gray (10YR4/1) silt loam with strong brown (7.5YR4/6) redox features starting at 4 inches deep. With numerous hydric soils indicators being met, the hydric soils criterion is satisfied.

The upland data point (DP6) did not satisfy any hydric soils indicator with a dark brown (10YR3/3) silt loam and no redox features.

Wetland Boundary
The wetland boundary was based on distinct differences in vegetation, hydrology, and topography. All upland data points (DP2, DP4, and DP6) were taken in surrounding agricultural fields where soy beans had recently been planted after light discing. In transition to uplands, bean sprouts were vigorous and not stressed, and indicators of wetland hydrology were lacking. Hydric soils were present at most of the data points so this wetland criterion was not a factor in determining the boundary except on the east side of the wetland. Wetland hydrology was absent at all three upland data points.

Topography changes were more pronounced on the east side of the wetland as compared to the more subtle slopes on the west. The nearly flat field south of 30th Street exhibited many indicators of wetland hydrology and the loss of vegetation due to drown-out together determined the boundary in this area.

(b) Wetland 2 (PEMB/Type 2)
Wetland 2 (W2) is a depressional emergent wetland community located at the base of a steep hillslope on its northern and western sides and is bounded by the road fill slope of Neal Avenue on the east. Surface runoff from the surrounding hill slope flows over a 12-13% grade to this area and exits over a more gradual gradient to the south. W2 consists almost entirely of reed canary grass (*Phalaris arundinacea: FACW*) with a few isolated willow (*Salix* sp.) on the fringes. A few elm (*Ulmus americana: FACW*) and box elders (*Acer negundo: FAC*) appeared higher on the slope on the western side and a pocket of aspen (*Populus tremuloides: FAC*) and buckthorn (*Rhamnus cathartica: FAC*) was observed in the southeast corner of the area.
This area is mapped on the National Wetland Inventory map as emergent temporary flooded (PEM1A). See Appendix B for NWI mapping.

DPs 7, 8, and 9 were taken in W2. The locations of these sampling points are found on the Wetland Boundary Maps in Appendix F. Data sheets along with field photographs are presented in Appendix G.

Vegetation
Reed canary grass (FACW) was dominant within W2 and the hydrophytic vegetation criterion was satisfied at all three sampling points including the two upland data points (DP8 and DP9). A few isolated willows and a dead standing tree was observed on the wetland fringe and documented at DP7 (wetland).

Hydrology
Primary indicators of wetland hydrology present within W2 were High Water Table (A2) and Saturation (A3) observed at wetland sampling point DP7. Saturation (A3) was found at DP 8, an upland sampling point. Secondary indicators included Geomorphic Position (D2) and a positive FAC-Neutral Test (D5) for data points 7 and 8 and Stunted or Stressed Plants (D1) at DP 7 only. The numerous primary and secondary indicators satisfied the wetland hydrology criterion.

Soils
Chetek sandy loam (12 to 25 percent slopes) and Antigo silt loam (0 to 2 percent slopes) are mapped over Wetland 2. A very dark gray loam (7.5YR3/1) with distinct dark brown (7.5YR3/3) redoximorphic features met the Redox Dark Surface (F6) hydric soils criterion at DP7; however, a similar profile at DP8 did not meet hydric soils criteria due to depth and insufficient redoximorphic features. DP9 (upland) did not meet any hydric soils indicators due to high chroma soils.

Wetland Boundary
The wetland boundary in W2 was primarily determined by transitions to upland conditions in soils and hydrology field parameters along with topographic changes. Wetland vegetation crossed the boundary and was present at both upland sampling points (DP8 and DP9) but the lack of hydrology and hydric soils indicators determined the boundary over this sampling transect. In transition to upland, the boundary was primarily associated with changes in elevation of two to four feet on the north and west sides along the base of the hill slope and along the road fill slope on the east. On the southern end of the wetland, less abrupt topographic changes determined the boundary.

(c) Wetland 3 (PEMB/Type 2)
Wetland 3 (W3) is an emergent wetland community located north of Runway 22 end at the base of a narrow knoll on the east (likely related to construction of the runway), the fill slope of the connector taxiway, and a shallow swale on the west. This swale drains from northeast to southwest along a hangar access road and is drained by a culvert at the southern end. There does not appear to be a connection between W3 and the swale as a slight topographic rise between the two areas separates them.
This small basin collects surface runoff from the east and south and was relatively undisturbed at the time of field work. The area is mown frequently; however, regrowth was sufficient for identification at the time of field work. Some mower tracks were observed within the wetland, some of which were bare; others contained some iron staining. W3 does not appear on NWI mapping.

Sampling points DP10 (wetland) and DP11 (upland) were taken. The locations of these points are shown on the Wetland Boundary Maps provided in Appendix F; data sheets along with field photographs are presented in Appendix G.

Vegetation
The diverse mix of vegetation within W3 was dominated by tall buttercup (Ranunculus acris: FAC), field horsetail (Equisetum arvense: FAC), and broom sedge (Carex scoparia: FACW). Other species including selfheal (Prunella vulgaris: FAC), path rush (Juncus tenuis: FAC), Kentucky blue grass (Poa pratensis: FACU) and grass-leaf starwort (Stellaria graminea: UPL) completed the assemblage. The dominant species within W3 are hydrophytic (FAC and FACW) and meet the hydrophytic vegetation criterion.

Hydrology
Wetland hydrology was present and indicated. At data point DP10 (wetland), the soils were saturated at the surface and met primary indicator Saturation (A3). Geomorphic Position (D2), a secondary indicator of wetland hydrology, was also met. Runoff from slopes to the east and south appear to collect in this shallow basin with no apparent outlet before infiltrating into the subsoil. Primary and secondary hydrology indicators were satisfied at DP10 and wetland hydrology is present.

Soils
Antigo silt loam (2 to 6 percent slopes) is mapped underlying Wetland 3. While this series and several of its minor components are primarily mapped with silt loam profiles, one of the components (Rosholt) contains a sandy loam profile. At wetland sampling point DP10, a layer of very dark gray (5YR3/1) sandy loam with yellowish red (5YR4/6) redoximorphic features covering a dark reddish gray (5YR4/2) sand with yellowish red (5YR4/6) redoximorphic features was documented. This profile met hydric soils indicators Sandy Redox (S5) and Redox Dark Surface (F6) and therefore hydric soils are present.

Wetland Boundary
The wetland boundary was determined by a transition to a plant community dominated by upland species with minor wetland components, an absence of hydric soils indicators, and a lack of wetland hydrology indicators. A topographic transition of about 2-3 feet to uplands was also noted along the southern side due to the taxiway fill slope and due to a topographic rise on the eastern side. On the northern and western sides, vegetation changes and more minor topographic changes determined the boundary.
In uplands, the vegetation shifted to one dominated by Kentucky blue grass and grass-leaf starwort at upland sampling point DP11. Other species observed as minor components included white and red clover (Trifolium repens: FACU and Trifolium pratense: FACU), oxeye-daisy (Leucanthemum vulgare: UPL) as tall buttercup and common selfheal (both FAC) crossed the boundary. Hydric soils and wetland hydrology indicators were absent at DP11.

(d) **Wetland 4 (PEMB/Type 2)**

Wetland 4 (W4) is an emergent wetland community located north of the Runway 22 end, a flat area situated between two knolls with slopes rising six to eight feet on three sides. Surface runoff is collected at this low spot between these converging landforms. The wetland also receives drainage from the north over a more gradual gradient before exiting on the eastern side where a narrow neck appears to carry flow from this wetland to Wetland 5 (discussed below); however, at the time of field work, evidence of a wetland connection was not observed. A slight topographic rise serves to separate these wetland areas under most circumstances and hydric soils indicators were not observed in test soil pits dug in the rise.


Several areas of rutting due to mowing operations were observed at the time of field investigation although the area had not been mown recently. Two data points (DP12 and DP13) were sampled in an undisturbed area on the eastern side.

The locations of these points are shown on the Wetland Boundary Maps provided in Appendix F; data sheets along with field photographs are presented in Appendix G. The complex topography is shown on the detailed topography map in Appendix B.

**Vegetation**

The plant community at DP13 (wetland) was dominated by path rush (FAC) and American manna grass (Glyceria grandis: OBL), both hydrophytic wetland plants. Other minor components of the wetland plant assemblage were wooly-fruit sedge (Carex lasiocarpa: OBL), horsetail, reed canary grass, and broom sedge. A large area of matted vegetation was observed to the west of the data point locations. Hydrophytic vegetation dominated at DP13 and therefore meets the hydrophytic vegetation criterion.

**Hydrology**

Wetland hydrology is present and indicated at DP13 (wetland). One primary indicator of wetland hydrology was present with Saturation (A3) to a depth of 6 inches as well as secondary indicators of Geomorphic Position (D2), a positive FAC-Neutral Test (D5), and Saturation Visible on Aerial Imagery (C9). These four indicators of wetland hydrology satisfied the hydrology criterion.

**Soils**

As with Wetland 3, Antigo silt loam (2 to 6 percent slopes) is mapped underlying this wetland. A similar sandy soil profile was seen at DP13 as with DP 10 in W3. While soil disturbance was
noted here, the profile appeared to be intact. Two thin sandy layers overlaid a depleted matrix of dark gray (5YR4/1) sandy loam with yellowish red (5YR4/6) redoximorphic features starting at 6 inches deep which met field indicator Depleted Matrix (F3). The hydric soils criterion was satisfied.

**Wetland Boundary**

The wetland boundary was determined by a transition to a plant community dominated by upland species, a lack of hydric soils and wetland hydrology indicators, and changes in elevation. In uplands, the plant community shifted to one dominated by Kentucky blue grass and grass-leaf starwort as seen at upland sampling point DP12. Both white and red clover and dandelion (*Taraxacum officinale*: FACU) entered the plant community as minor components.

A topographic rise of about two feet along the east and south sides of the wetland aided in boundary determination. Along the western and northern sides, transition to upland vegetation determined the boundary. Hydric soils indicators and wetland hydrology indicators were absent at DP12.

**Wetland 5 (PEMB/Type 2)**

Wetland 5 (W5) is a shallow closed basin with a dense fringe dominated by reed canary grass located at the northeastern corner of the AOI, near the end of Runway 22. The basin is at the base of knolls on the north, west, and east sides with slopes as steep as 15%. Drainage flows to the southeast through a shrub-carr complex just outside of the AOI. Within the AOI, the wetland is comprised of emergent vegetation only.

The NWI mapping indicates this area as a temporary flooded emergent/shrub (PEM1A/PFO1A) wetland. See Appendix B for NWI mapping.

Two data points (DP14 and DP15) were sampled at the northern side of the wetland boundary. No vegetation disturbance due to management activities was noted. The locations of these points are shown on the Wetland Boundary Maps provided in Appendix F; data sheets along with field photographs are presented in Appendix G.

**Vegetation**

At DP15 (wetland), the dominant vegetation was reed canary grass with a minor component of water smartweed (*Persicaria amphibia*: OBL). Stinging nettle (*Urtica dioica*: FAC) appeared in the assemblage along the boundary. Within the AOI, vegetation was confined to the herb stratum; outside of the AOI to the east, tree and shrub components were observed consisting of box elder, willow (*Salix* sp.), and red osier dogwood. The hydrophytic vegetation criterion was satisfied at this sampling point.

**Hydrology**

Wetland hydrology was present and indicated by a High Water Table (A2) to three inches in depth, Saturation (A3) at the surface and secondary indicators of Geomorphic Position (D2) and a
positive FAC-Neutral Test (D5). These four primary and secondary indicators meet the wetland hydrology criterion at DP15.

**Soils**
The area is mapped as poorly drained Auburndale silt loam, a soil unit rated as hydric. At DP 15, a depleted matrix of dark gray (10YR4/1) silt loam with reddish-brown (5YR4/4) redox concentrations overlaid a black (7.5YR2.5/1) silt loam. Two field indicators of hydric soils were observed including Depleted Matrix (F3) and Redox Depressions (F8). In satisfying these indicators, the hydric soils criterion was met.

**Wetland Boundary**
The wetland boundary was determined by differences in vegetation, hydrology, soils, and a significant change in elevation. In transition to uplands, reed canary grass was still dominant, crossing the boundary; however, Canada thistle became a major component of the limited plant assemblage, failing the Prevalence Index at 3.2 at the upland sampling point DP14. The lack of hydric soils and wetland hydrology indicators also determined the boundary.

A sharp topographic rise of about 4-5 feet accompanied the transition to uplands around the rim of the basin within the AOI.

**Wetlands 6 and 7 (PEMB/Type 2)**
Wetlands 6 and 7 are small isolated ditch wetlands located at the base of culverts within the infield. Sampling points were not taken in these two wetlands. Photos of both wetlands are presented in Appendix G (Additional Photos). Neither of these wetlands was identified on the NWI mapping. Each wetland is discussed below.

Wetland 6 (W6), at just 389.31 square feet in size, is situated near the end of Runway 14 at the base of a fill slope for the connector taxiway. An 18-inch culvert directs drainage from the infield into this area which continues along a shallow swale which drains to the south before exiting under Manning Avenue.

Vegetation at W6 was dominated by American manna grass (*Glyceria grandis*: OBL), reed canary grass, and water smartweed. Some areas of bare soils were noted and the ditch and surrounding areas are mowed on a regular basis. Test pits visually confirmed the presence of hydric soils indicators. Wetland 6 is covered by Crystal Lake silt loam (1 to 3 percent slopes). Saturation was present within the ditch. Wetland hydrology is also confirmed by the domination by obligate vegetation.

The boundary was determined by a lack of hydric indicators in the soil, a change in vegetation and a lack of hydrology indicators. In transition to uplands, turf grasses dominated by Kentucky blue grass became dominant.

Wetland 7 (W7) is located just to the east of the runway intersection and is a small isolated ditch wetland at 555.23 square feet in size. This wetland is fed by a 30-inch culvert which drains to a
wide shallow swale flowing east. Reed canary grass dominated the hydrophytic vegetation and soils were visually assessed for hydric soils criteria. Standing water was present at the base of the culvert and much of the surface of the wetland was saturated. Soils within this wetland are mapped as Crystal Lake silt loam (1 to 3 percent slopes).

The wetland boundary was determined by a transition to upland vegetation, a lack of hydric soils indicators, and a lack of wetland hydrology. Upland vegetation was dominated by Kentucky blue grass, dandelion, and English plantain (Plantago lanceolata: FAC).

(g) **Wetland 8 (PEMB/Type 2 and PABF/Type 4)**
Wetland 8 (W8) is an isolated basin located to the east of Runway 4/22 and surrounded by farm fields. A large expanse of open water typified the interior of the wetland. The wetland fringe consists of a mixture of mature tree cover and emergent vegetation. Drainage from topographically-higher farm fields and wooded areas collects in this low spot with no apparent outlet. The boundary of W8 continues to the north outside the AOI.

This area is mapped on the NWI as temporary flooded emergent (PEM1A/Type1) and seasonally flooded emergent (PEM1C/Type 3). See Appendix B for NWI mapping. The wetland area is present in the 1938 aerial photo and appears largely undisturbed in subsequent photos (see Appendix C).

Two data points (DP16 and DP17) were sampled at the southern end of the wetland boundary. No vegetation disturbance due to management activities was noted. The locations of these points are shown on the Wetland Boundary Maps provided in Appendix F; data sheets along with field photographs are presented in Appendix G.

**Vegetation**
At wetland sampling point DP17, reed canary grass was dominant in the herb stratum while black willow (Salix nigra: OBL) and box elder (Acer negundo: FAC) were co-dominants in the tree layer. Other trees observed in the wetland included swamp white oak (Quercus bicolor: FACW), quaking aspen (Populus deltoides: FAC), American elm (Ulmus americana: FACW), and buckthorn (Rhamnus cathartica: FAC). Herbaceous cover throughout the wetland, especially on the wetland fringe, was dominated by reed canary grass. The dominant vegetation seen at the sampling point was either FAC, FACW, or OBL and met the hydrophytic vegetation criterion.

**Hydrology**
Wetland hydrology was strongly present and indicated within W8. Primary indicators were Surface Water (A1) to a depth of 2 inches, High Water Table (A2) to a depth of 8 inches, and Saturation (A3) at the soil surface. Oxidized Rhizospheres on Living Roots (C3) were also observed within the top foot of the soil profile. Secondary indicators of wetland hydrology consisted of Geomorphic Position (D2) and a positive FAC-Neutral Test (D5). These six indicators satisfied the wetland hydrology criterion.

**Soils**
Soils within the wetland are mapped as poorly drained Auburndale silt loam. The soil profile showed a deep layer of black (5YR2.5/1) loam with dark red (2.5YR3/6) redoximorphic features which satisfied the Redox Dark Surface (F6) field indicator. Due to the closed depressional landform within which the wetland is located, the Redox Depressions (F8) field indicator was also met. With these two indicators, the hydric soils criterion was satisfied.

**Wetland Boundary**

The wetland boundary was determined by a transition to upland vegetation, a lack of hydric soils indicators, and a lack of wetland hydrology. Upland sampling point (DP16) was taken in the farm field just to the south of the wetland. In the largely bare soil, upland herbaceous vegetation was dominated by Canada goldenrod (*Solidago canadensis*: FACU) and burdock (*Arctium minus*: FACU). Upland tree species noted along the boundary included northern pin oak (*Quercus ellipsoidalis*: UPL), white ash (*Fraxinus americana*: FACU), black cherry (*Prunus serotina*: FACU).

A well-defined change in elevation of about 3-4 feet accompanied the transition to uplands surrounding the wetland. Hydric soils indicators were absent in the high chroma soil profile at DP 16 (upland) and no wetland hydrology was observed or indicated.

**(h) Wetland 9 (PEMB/Type 2 and PEMC/Type 3)**

Wetland 9 (W9) is a shallow basin with a central core of open water populated with cattails and surrounded by a wide dense fringe dominated by reed canary grass. It is located north of 30th Street and east of the Runway 32 end. Drainage flows from the west via a wide grassy swale north of Runway 14/32, from turf grass areas at the end of the runway, and runoff from surrounding farm fields on the north and east sides. The wetland is drained by one 24-inch culvert under 30th Street, which forms the southern boundary of the wetland.

Topography varies little over the breadth of the wetland which is largely enclosed by the 918-foot contour. Areas in the surrounding farm fields and grassy infield areas are just a few feet higher in elevation.

The wetland area is present in the 1938 aerial photo and appears largely undisturbed by farming operations in all subsequent photos (Appendix C). At the time of 1938 aerial, 30th Street had been constructed, which appears to have cut off this wetland from the larger wetland complex south of 30th Street.

This area is mapped on the NWI as temporary flooded emergent (PEM1A/Type 2) and seasonally flooded emergent (PEM1C/Type 3). See Appendix B for NWI mapping.

Two data points (DP18 and DP19) were sampled on the west side of the wetland boundary. No vegetation disturbance due to management activities was noted. Turf grass areas west of the wetland had been mown. The locations of these points are shown on the Wetland Boundary Maps provided in Appendix F; data sheets along with field photographs are presented in Appendix G.
Vegetation
Reed canary grass and sensitive fern (*Onoclea sensibilis*: FACW) were co-dominants at wetland sampling point DP19. Water smartweed was a minor component of the plant assemblage. In open water areas, cattail (*Typha angustifolia*: OBL) dominated with isolated willow (*Salix* sp.) and box elders on the fringe. North of the sampling point locations, the boundary includes areas extending into the western drainage swale which contained spike rush (*Eleocharis* sp.) and sedges (*Carex* sp.). The dominant species within the wetland are mostly hydrophytic and meet the hydrophytic vegetation criterion.

Hydrology
Wetland hydrology was strongly present and indicated within W9. Primary indicators were Surface Water (A1) to a depth of 4 inches, High Water Table (A2) to a depth of 8 inches, and Saturation (A3) at the soil surface. Secondary indicators of wetland hydrology consisted of Geomorphic Position (D2) and a positive FAC-Neutral Test (D5). These five indicators satisfied the wetland hydrology criterion.

Soils
Soils mapping shows this as an area of ponded Aquolls and Histosols. At wetland sampling point (DP19), a soil profile of very dark gray (5YR3/1) loam with yellowish red (5YR4/6) reodoxomorphic features satisfied the Redox Dark Surface (F6) indicator. The hydric soils criterion was satisfied with this field indicator.

Wetland Boundary
The wetland boundary was determined by a transition to upland vegetation, a lack of hydric soils indicators, and a lack of wetland hydrology. At upland sampling point DP18, the vegetation shifted to one dominated by Kentucky blue grass with a diverse array of upland species as minor components: plantain (*Plantago major*: FACU), grass-leaf starwort (UPL) and common chickweed (*Stellaria media*: FACU), dandelion, red clover, and bird’s foot trefoil (*Lotus corniculata*: FACU).

This sampling point was approximately 1-2 feet higher in elevation and this topographic difference was also a determinant of the boundary. Hydric soils indicators were absent at DP18 as were wetland hydrology indicators.

C. Uplands
Upland within the AOI consisted primarily of cultivated fields in corn-soybean rotation and mown infield areas with a mixture of grasses and forbs. Dominant upland vegetation included Kentucky blue grass, grass-leaf starwort, Canada thistle, burdock, and Canada goldenrod. A variety of species were also observed as minor components of the upland plant community including ox-eye daisy, white and red clover, and plantain. Transition to upland was marked a lack of wetland hydrology and absence of hydric soils in many cases. Often, topographic breaks of 2-3 feet were associated with upland areas.
D. Functional Assessment
A functional assessment of the delineated wetlands was performed using the Minnesota Routine Assessment Method (MNRAM). The scoring for the MNRAM assessment was done after completion of the wetland delineation using soils, plant community, hydrology information, and field observations collected as part of that effort. The rankings for each of the 72 questions were entered into the MNRAM database (version 3.4 beta) to arrive at the functional assessment.

Functional assessment information for wetlands in Section 18 and 19 previously identified was provided by the Valley Branch Watershed District (VBWD). This data was combined with field observations to assist with making rankings for wetlands within the AOI. Wetland IDs were assigned as part of the assessments. The numbering scheme provided by VBWD was kept for the current assessments, using a letter modifier to indicate an update record. If a new wetland was identified, a new ID number was assigned with a sequential number. Table 3 provides the Location ID numbers assigned to each wetland.

The assessments were completed for the AOI only. Two wetlands (1 and 5) continue beyond the boundary of the AOI. Wetland 1 is a seasonally-flooded farm field that receives drainage from a culvert under 30th Street at the northern end of the boundary, which flows to the dense fringe of reed canary grass forming the perennial northern extent of the wetland. The assessment record for this wetland is considered an addition, rather than an update. Wetlands 4 and 5 correspond to one previously assessed wetland. A connection between these two wetlands was not observed at the time of field work and thus are treated as two wetlands in this assessment. In addition, the assessment for Wetland 5 included only the emergent plant community within the AOI; the Shrub component previously assessed continued beyond the AOI boundary and was not evaluated.

Three new wetlands were delineated: an isolated depressional basin and two ditch wetlands (Wetlands 3, 6, and 7, respectively). These were assigned new location ID numbers and a new assessment completed. Site Response Forms and Assessment Summary reports are provided in Appendix H.

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E. Summary
In summary, the AOI is primarily covered by silt loam and sandy loam soils, with several areas in agricultural production or in managed landscapes. Nine wetland were identified within the AOI and are
documented by 19 sampling points. The wetland boundary was determined by the observation of multiple indicators of wetland hydrology associated with wetland vegetation on soils exhibiting Depleted Below Dark Surface (A11), Depleted Matrix (F3), Redox Dark Surface (F6), and Redox Depressions (F8) in isolated depressional basins. Wetland hydrology was directly observed as Saturation (A3), High Water Table (A2), and/or Surface Water (A1) at all wetlands except Wetland 1 (farm field). The boundary determinations primarily relied on the absence of all three wetland criteria: lack of hydrophytic vegetation, wetland hydrology indicators, and hydric soils.

(1) Other waters
This AOI does not include any intermittent or perennial streams or navigable waters. No other water bodies were identified during the delineation.
4. Conclusion

A total of nine separate wetland boundaries enclosing 5.909 acres were delineated within the AOI at Lake Elmo Airport. A jurisdictional determination for these wetlands will be needed from the U.S. Corps of Engineers (USACE) as they may be considered isolated water bodies. A Section 404 wetland fill permit from the USACE will be needed for any construction activities within the jurisdictional wetland boundaries. A Section 401 water quality certification of the 404 permit will also be required by the Minnesota Pollution Control Agency, and additional permits may be required from the Local Government Unit (LGU) under the Minnesota Wetland Conservation Act. Independent review by local land use authorities may also be required. Final authority over the project rests with the above federal, state, and local agencies.
5. Certification and Limitations

The undersigned does hereby certify and state that she is an employee of Mead & Hunt, Inc., that she has been designated as being in responsible charge of the delineation of wetlands described herein; and that this delineation was performed in accordance with the USACE 1987 Wetland Delineation Manual as enhanced by the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (U.S. Army Corps of Engineers, 2011).

This wetland delineation report documents vegetation, soils, and hydrology conditions on the above-referenced parcel according to these standard accepted practices, and the wetland boundary so established is valid only for the designated area. No uses or interpretations of wetland conditions or boundaries outside of the work area are supported by this work.

The mapped wetland boundaries are valid under the environmental conditions existing at the time of delineation. The user of this information is hereby notified that changing environmental conditions may affect the future validity of the wetland boundary.

MEAD & HUNT, Inc.

Brauna Hartzell
Wetland Ecologist & GIS Analyst

The undersigned does hereby certify and state he is a Professional Wetland Scientist (PWS); that work described herein was reviewed for conformance to best accepted professional practices; and that this delineation has been performed in accordance with the USACE 1987 Wetland Delineation Manual as enhanced by the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (U.S. Army Corps of Engineers, 2011).

MEAD & HUNT, Inc.

Perry Rossa
PWS Cert. No. 2382

Date: August 2017
Section 6
References

The following data sources were examined prior to fieldwork:

- Google Earth. Historical Aerial Images, Google Inc.


- National Wetlands Inventory (with Minnesota Update) from the U.S. Fish and Wildlife Service at https://www.fws.gov/wetlands/data/mapper.html


Appendix A. Project Location and Topography Map
LAKE ELMO AIRPORT
Proposed Runway 14/32 Relocation and Associated Improvements

Area A
(116.3 acres)

Area B
(8.0 acres)

Area C
(4.7 acres)

Area D
(1.1 acres)

Legend

- Area of Interest (AOI)
- LRR Subregion: K

Project Location

T29N, R20W, S18 and S19
Baybown and West Lakeland Townships
Washington County, MN
LRR Subregion: K
USACE Regional Supplement: NC/NE
Area = 130.1 acres
Appendix B. Detailed Topographic Map, NRCS Soils Map, and Aquatic Resources Map
LAKE ELMO AIRPORT
Proposed Runway 14-32 Runway Shift

T29N, R20W, S18 and S19
City of Lake Elmo
Washington County, MN
Area of Interest = 130.1 acres
Field work conducted:
June 5 - 9, 2017

Note: Contour interval is 2 feet.

Image Source: MnGEO WMS Image Service, Washington County (2016 color 7-county)
Contour Source: Minnesota Geospatial Commons, Minnesota Elevation Mapping Project
Twin Cities Metro Region 2011
MAP LEGEND

Area of Interest (AOI)

Soils

Soil Rating Polygons
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Lines
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Points
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Water Features
- Streams and Canals

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map:  Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System:  Web Mercator (EPSG:3857)
Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area:  Washington County, Minnesota
Survey Area Data:  Version 11, Sep 19, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed:  Mar 16, 2012—Apr 26, 2012

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.
## Hydric Rating by Map Unit

<table>
<thead>
<tr>
<th>Map unit symbol</th>
<th>Map unit name</th>
<th>Rating</th>
<th>Acres in AOI</th>
<th>Percent of AOI</th>
</tr>
</thead>
<tbody>
<tr>
<td>49</td>
<td>Antigo silt loam, 0 to 2 percent slopes</td>
<td>0</td>
<td>166.4</td>
<td>17.8%</td>
</tr>
<tr>
<td>49B</td>
<td>Antigo silt loam, 2 to 6 percent slopes</td>
<td>0</td>
<td>68.2</td>
<td>7.3%</td>
</tr>
<tr>
<td>49C</td>
<td>Antigo silt loam, 6 to 15 percent slopes</td>
<td>0</td>
<td>8.9</td>
<td>1.0%</td>
</tr>
<tr>
<td>120</td>
<td>Brill silt loam</td>
<td>5</td>
<td>5.4</td>
<td>0.6%</td>
</tr>
<tr>
<td>153B</td>
<td>Santiago silt loam, 2 to 6 percent slopes</td>
<td>0</td>
<td>11.3</td>
<td>1.2%</td>
</tr>
<tr>
<td>155B</td>
<td>Chetek sandy loam, 0 to 6 percent slopes</td>
<td>0</td>
<td>39.3</td>
<td>4.2%</td>
</tr>
<tr>
<td>155C</td>
<td>Chetek sandy loam, 6 to 12 percent slopes</td>
<td>0</td>
<td>21.7</td>
<td>2.3%</td>
</tr>
<tr>
<td>155D</td>
<td>Chetek sandy loam, 12 to 25 percent slopes</td>
<td>0</td>
<td>4.2</td>
<td>0.5%</td>
</tr>
<tr>
<td>189</td>
<td>Auburndale silt loam, 0 to 2 percent slopes</td>
<td>95</td>
<td>12.5</td>
<td>1.3%</td>
</tr>
<tr>
<td>264</td>
<td>Freeon silt loam, 2 to 6 percent slopes</td>
<td>3</td>
<td>11.0</td>
<td>1.2%</td>
</tr>
<tr>
<td>266</td>
<td>Freer silt loam</td>
<td>5</td>
<td>14.2</td>
<td>1.5%</td>
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<tr>
<td>302C</td>
<td>Rosholt sandy loam, 6 to 15 percent slopes</td>
<td>0</td>
<td>6.6</td>
<td>0.7%</td>
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<tr>
<td>367B</td>
<td>Campia silt loam, 0 to 8 percent slopes</td>
<td>2</td>
<td>147.0</td>
<td>15.7%</td>
</tr>
<tr>
<td>449</td>
<td>Crystal Lake silt loam, 1 to 3 percent slopes</td>
<td>3</td>
<td>320.6</td>
<td>34.3%</td>
</tr>
<tr>
<td>452</td>
<td>Comstock silt loam</td>
<td>4</td>
<td>53.9</td>
<td>5.8%</td>
</tr>
<tr>
<td>456</td>
<td>Barronett silt loam</td>
<td>92</td>
<td>2.8</td>
<td>0.3%</td>
</tr>
<tr>
<td>507</td>
<td>Poskin silt loam</td>
<td>3</td>
<td>8.3</td>
<td>0.9%</td>
</tr>
<tr>
<td>1055</td>
<td>Aquolls and Histosols, ponded</td>
<td>100</td>
<td>31.4</td>
<td>3.4%</td>
</tr>
<tr>
<td>1847</td>
<td>Barronett silt loam, sandy substratum</td>
<td>90</td>
<td>1.7</td>
<td>0.2%</td>
</tr>
</tbody>
</table>

**Totals for Area of Interest**

935.5 100.0%
Description

This rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

The thematic map is color coded based on the composition of hydric components. The five color classes are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components.

In Web Soil Survey, the Summary by Map Unit table that is displayed below the map pane contains a column named 'Rating'. In this column the percentage of each map unit that is classified as hydric is displayed.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

References:


**Rating Options**

*Aggregation Method:* Percent Present

*Component Percent Cutoff: None Specified*

*Tie-break Rule: Lower*
Aquatic Resources Map
National Wetlands Inventory (NWI), Minnesota Public Waters, and National Hydrography Dataset

LAKE ELMO AIRPORT
Proposed Runway 14-32 Runway Shift

Legend
- Area of Interest
- Airport Property Boundary
- MN Public Waters Basins
- Intermittent Stream (NHD)

WETLAND TYPE*
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond

* Labeled with NWI classification and Circular 39 Type

Project Information
T29N, R20W, S18 and S19
City of Lake Elmo
Washington County, MN
Area of Interest = 130.1 acres
Field work conducted:
June 5 - 9, 2017

Wetland Data: National Wetlands Inventory Update for Minnesota, East-Central (2010-2011)

Mn Public Waters Data: Public Waters (PW) Basin and Watercourse Delineations, Washington County, MN Geospatial Commons

Stream Data: National Hydrography Dataset (NHD), USGS

Image Source: MnGEO WMS Image Service, Washington County (2016 color 7-county)
Appendix C. Historic Aerial Photography
Historic Aerial Imagery
LAKE ELMO AIRPORT
Proposed Runway 14-32 Runway Shift

Images are not to scale
Historic Aerial Imagery
LAKE ELMO AIRPORT
Proposed Runway 14-32 Runway Shift

Images are not to scale
Historic Aerial Imagery
LAKE ELMO AIRPORT
Proposed Runway 14-32 Runway Shift

Images are not to scale
Historic Aerial Imagery
LAKE ELMO AIRPORT
Proposed Runway 14-32 Runway Shift

Legend

Airport Property Boundary

Project Information
T29N, R20W, S18 and S19
City of Lake Elmo
Washington County, MN
Area of Interest = 130.1 acres
Field work conducted: June 5 - 9, 2017
Historic Aerial Imagery
LAKE ELMO AIRPORT
Proposed Runway 14-32 Runway Shift

Legend

Airport Property Boundary

Project Information
T29N, R20W, S18 and S19
City of Lake Elmo
Washington County, MN
Area of Interest = 130.1 acres
Field work conducted: June 5 - 9, 2017
Historic Aerial Imagery
LAKE ELMO AIRPORT
Proposed Runway 14-32 Runway Shift

Legend

<table>
<thead>
<tr>
<th>Project Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>T29N, R20W, S18 and S19</td>
</tr>
<tr>
<td>City of Lake Elmo</td>
</tr>
<tr>
<td>Washington County, MN</td>
</tr>
<tr>
<td>Area of Interest = 130.1 acres</td>
</tr>
<tr>
<td>Field work conducted: June 5 - 9, 2017</td>
</tr>
</tbody>
</table>

Image Date: 2013
Image Source: MnGEO Aerial Photography (2013 Washington)

Image Date: 2016
Image Source: MnGEO Aerial Photography (2016 color 7-county)
Appendix D. Offsite Hydrology Evaluation
### Exhibit 1

**Wetland Hydrology from Aerial Imagery – Recording Form**

**Project Name:** Lake Elmo Airport (21D)  
**Date:** 08/04/2017  
**County:** Washington

**Investigator:** Brauna Hartzell  
**Legal Description (T, R, S):** T29N, R20W, S18,19

#### Summary Table

<table>
<thead>
<tr>
<th>Date Image Taken (M-D-Y)</th>
<th>Image Source</th>
<th>Climate Condition (wet, dry, normal) ¹</th>
<th>Image Interpretation(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Area: A</td>
<td>Area:</td>
</tr>
<tr>
<td>04/15/2016</td>
<td>MnGEO</td>
<td>Normal</td>
<td>SS</td>
</tr>
<tr>
<td>09/27/2015</td>
<td>NAIP</td>
<td>Normal</td>
<td>CS</td>
</tr>
<tr>
<td>10/11/2014</td>
<td>GoogleEarth</td>
<td>Dry</td>
<td>CS</td>
</tr>
<tr>
<td>05/15/2013</td>
<td>MnGEO</td>
<td>Wet</td>
<td>SS</td>
</tr>
<tr>
<td>07/18/2013</td>
<td>NAIP</td>
<td>Wet</td>
<td>CS</td>
</tr>
<tr>
<td>09/15/2013</td>
<td>GoogleEarth</td>
<td>Dry</td>
<td>CS</td>
</tr>
<tr>
<td>09/07/2012</td>
<td>GoogleEarth</td>
<td>Normal</td>
<td>CS</td>
</tr>
<tr>
<td>09/13/2010</td>
<td>NAIP</td>
<td>Wet</td>
<td>NV</td>
</tr>
<tr>
<td>04/2010</td>
<td>MnGEO</td>
<td>Dry</td>
<td>SS</td>
</tr>
<tr>
<td>08/18/2009</td>
<td>NAIP</td>
<td>Dry</td>
<td>NV</td>
</tr>
<tr>
<td>07/08/2008</td>
<td>NAIP</td>
<td>Normal</td>
<td>NC</td>
</tr>
<tr>
<td>07/15/2006</td>
<td>NAIP</td>
<td>Dry</td>
<td>NC</td>
</tr>
<tr>
<td>04/24/2004</td>
<td>MnGEO</td>
<td>Normal</td>
<td>NV</td>
</tr>
<tr>
<td>07/18/2003</td>
<td>NAIP</td>
<td>Wet</td>
<td>DO</td>
</tr>
<tr>
<td>09/2002</td>
<td>USGS</td>
<td>Wet</td>
<td>CS</td>
</tr>
<tr>
<td>05/01/2000</td>
<td>MnGEO</td>
<td>Dry</td>
<td>NV</td>
</tr>
<tr>
<td>04/14/1997</td>
<td>MnGEO</td>
<td>Normal</td>
<td>NV</td>
</tr>
<tr>
<td>10/10/1994</td>
<td>MnDNR</td>
<td>Wet</td>
<td>NC</td>
</tr>
</tbody>
</table>

### Normal Climate Condition

<table>
<thead>
<tr>
<th>Area: A</th>
<th>Area:</th>
<th>Area:</th>
<th>Area:</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Number**  
6

**Number with wet signatures**  
4

**Percent with wet signatures**  
66%

#### KEY

- **WS** - wetland signature  
- **SS** - soil wetness signature  
- **CS** - crop stress  
- **NC** - not cropped  
- **AP** - altered pattern  
- **NV** - normal vegetative cover  
- **DO** - drowned out  
- **SW** - standing water  
- **NSS** – no soil wetness signature

- **Other labels or comments:**

- Use above key to label image interpretations. It is imperative that the reviewer read and understand the guidance associated with the use of these labels. If alternate labels are used, indicate in box above.

- If less than five (5) images taken during normal climate conditions are available, use an equal number of images taken during wet and dry climate conditions and use as many images as you have available. Describe the results using this methodology in your report.

¹ Use [MN State Climatology website](https://www.mndnr.gov/climate) to determine climate condition when image was taken.
### Wetland Determination from Aerial Imagery – Recording Form

**Project Name:** Lake Elmo Airport (21D)  
**Date:** 08/04/2017  
**County:** Washington

**Investigator:** Brauna Hartzell  
**Legal Description (T, R, S):** T29N, R20W, S18,19

Use the Decision Matrix below to complete Table 1.

<table>
<thead>
<tr>
<th>Hydric Soils present(^1)</th>
<th>Identified on NWI or other wetland map(^2)</th>
<th>Percent with wet signatures from Exhibit 1</th>
<th>Field verification required(^3)</th>
<th>Wetland?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>&gt;50%</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>30-50%</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>&lt;30%</td>
<td>Yes</td>
<td>Yes, if other hydrology indicators present</td>
</tr>
<tr>
<td>Yes</td>
<td>No</td>
<td>&gt;50%</td>
<td>No</td>
<td>Yes, if other hydrology indicators present</td>
</tr>
<tr>
<td>Yes</td>
<td>No</td>
<td>30-50%</td>
<td>Yes</td>
<td>Yes, if other hydrology indicators present</td>
</tr>
<tr>
<td>Yes</td>
<td>No</td>
<td>&lt;30%</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>No</td>
<td>Yes</td>
<td>&gt;50%</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
<td>Yes</td>
<td>30-50%</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
<td>Yes</td>
<td>&lt;30%</td>
<td>No</td>
<td>No</td>
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<tr>
<td>No</td>
<td>No</td>
<td>&gt;50%</td>
<td>Yes</td>
<td>Yes, if other hydrology indicators present</td>
</tr>
<tr>
<td>No</td>
<td>No</td>
<td>30-50%</td>
<td>Yes</td>
<td>Yes, if other hydrology indicators present</td>
</tr>
<tr>
<td>No</td>
<td>No</td>
<td>&lt;30%</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

\(^1\) The presence of hydric soils can be determined from the “Hydric Rating by Map Unit Feature” under “Land Classifications” from the Web Soil Survey. “Not Hydric” is the only category considered to not have hydric soils. Field sampling for the presence/absence of hydric soil indicators can be used in lieu of the hydric rating if appropriately documented by providing completed field data sheets.

\(^2\) At minimum, the most updated NWI data available for the area must be reviewed for this step. Any and all other local or regional wetland maps that are publically available should be reviewed.

\(^3\) Area should be reviewed in the field for the presence/absence of wetland hydrology indicators per the applicable 87 Manual Regional Supplement, including the D2 indicator (geomorphic position).

### Table 1.

<table>
<thead>
<tr>
<th>Area</th>
<th>Hydric Soils Present</th>
<th>Identified on NWI or other wetland map</th>
<th>Percent with wet signatures from Exhibit 1</th>
<th>Other hydrology indicators present(^1)</th>
<th>Wetland?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Yes (per field)</td>
<td>No</td>
<td>66%</td>
<td>Yes (per field)</td>
<td>Yes</td>
</tr>
</tbody>
</table>

\(^1\) Answer “N/A” if field verification is not required and was not conducted.
Historic Aerial Imagery
LAKE ELMO AIRPORT
Proposed Runway 14-32 Runway Shift

Project Information
T29N, R20W, S18 and S19
City of Lake Elmo
Washington County, MN
Area of Interest = 130.1 acres
Field work conducted:
June 5 - 9, 2017

Legend

Airport Property Boundary

MAP 1

Path: X:\2838700\161542.02\TECH\GIS_CAD\Maps\21D_HistoricImagery1.mxd
Project Information

T29N, R20W, S18 and S19
City of Lake Elmo
Washington County, MN
Area of Interest = 130.1 acres
Field work conducted:
June 5 - 9, 2017

Legend

Airport Property Boundary
HISTORIC AERIAL IMAGERY

LAKE ELMO AIRPORT

PROPOSED RUNWAY 14-32 RUNWAY SHIFT

PROJECT INFORMATION

T29N, R20W, S18 and S19
City of Lake Elmo
Washington County, MN
Area of Interest = 130.1 acres
Field work conducted:
June 5 - 9, 2017

MAP 5

Legend

Airport Property Boundary
Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:
- county: Washington
- township name: unnamed
- nearest community: Lake Elmo
- township number: 29N
- range number: 21W
- section number: 24

Aerial photograph or site visit date:
Friday, April 15, 2016

Score using 1981-2010 normal period

<table>
<thead>
<tr>
<th>values are in inches</th>
<th>first prior month: March 2016</th>
<th>second prior month: February 2016</th>
<th>third prior month: January 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>estimated precipitation total for this location:</td>
<td>2.22</td>
<td>0.87</td>
<td>0.44</td>
</tr>
<tr>
<td>there is a 30% chance this location will have less than:</td>
<td>1.48</td>
<td>0.51</td>
<td>0.54</td>
</tr>
<tr>
<td>there is a 30% chance this location will have more than:</td>
<td>2.13</td>
<td>0.99</td>
<td>1.24</td>
</tr>
<tr>
<td>type of month: dry normal wet</td>
<td>wet</td>
<td>normal</td>
<td>dry</td>
</tr>
<tr>
<td>monthly score</td>
<td>3 * 3 = 9</td>
<td>2 * 2 = 4</td>
<td>1 * 1 = 1</td>
</tr>
<tr>
<td>multi-month score:</td>
<td>6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet)</td>
<td>14 (Normal)</td>
<td></td>
</tr>
</tbody>
</table>

Other Resources:
- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- Evaluating Antecedent Precipitation Conditions (BWSR)
Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:
- county: Washington
- township name: Baytown
- nearest community: Lake Elmo
- township number: 29N
- range number: 20W
- section number: 19

Aerial photograph or site visit date:
Sunday, September 27, 2015

Score using 1981-2010 normal period

<table>
<thead>
<tr>
<th>values are in inches</th>
<th>first prior month: August 2015</th>
<th>second prior month: July 2015</th>
<th>third prior month: June 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>estimated precipitation total for this location:</td>
<td>3.30</td>
<td>7.79</td>
<td>5.24</td>
</tr>
<tr>
<td>there is a 30% chance this location will have less than:</td>
<td>3.32</td>
<td>2.65</td>
<td>3.68</td>
</tr>
<tr>
<td>there is a 30% chance this location will have more than:</td>
<td>5.39</td>
<td>4.73</td>
<td>5.74</td>
</tr>
<tr>
<td>type of month: dry normal wet</td>
<td>dry</td>
<td>wet</td>
<td>normal</td>
</tr>
<tr>
<td>monthly score</td>
<td>3 * 1 = 3</td>
<td>2 * 3 = 6</td>
<td>1 * 2 = 2</td>
</tr>
</tbody>
</table>

multi-month score:
- 6 to 9 (dry)
- 10 to 14 (normal)
- 15 to 18 (wet)

| 11 (Normal) |

Other Resources:
- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- Evaluating Antecedent Precipitation Conditions (BWSR)
Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:
county: Washington township number: 29N
township name: Baytown range number: 20W
nearest community: Lake Elmo section number: 19

Aerial photograph or site visit date:
Saturday, October 11, 2014

Score using 1981-2010 normal period

<table>
<thead>
<tr>
<th>values are in inches</th>
<th>first prior month: September 2014</th>
<th>second prior month: August 2014</th>
<th>third prior month: July 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>estimated precipitation total for this location:</td>
<td>2.31</td>
<td>3.65</td>
<td>2.59</td>
</tr>
<tr>
<td>there is a 30% chance this location will have less than:</td>
<td>2.45</td>
<td>3.32</td>
<td>2.65</td>
</tr>
<tr>
<td>there is a 30% chance this location will have more than:</td>
<td>4.36</td>
<td>5.39</td>
<td>4.73</td>
</tr>
<tr>
<td>type of month:</td>
<td>dry</td>
<td>normal</td>
<td>wet</td>
</tr>
<tr>
<td>monthly score</td>
<td>3 * 1 = 3</td>
<td>2 * 2 = 4</td>
<td>1 * 1 = 1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>multi-month score:</th>
<th>6 to 9 (dry)</th>
<th>10 to 14 (normal)</th>
<th>15 to 18 (wet)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>8 (Dry)</td>
</tr>
</tbody>
</table>

Other Resources:
- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- Evaluating Antecedent Precipitation Conditions (BWSR)

http://climate.umn.edu/gridded_data/precip/wetland/worksheet.asp?passXutm83=511694&passYutm83=4982095&passcounty=Washington&passcount… 1/1
Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:
- County: Washington
- Township name: Baytown
- Nearest community: Lake Elmo
- Township number: 29N
- Range number: 20W
- Section number: 19

Aerial photograph or site visit date:
Wednesday, May 15, 2013

Score using 1981-2010 normal period

<table>
<thead>
<tr>
<th>values are in inches</th>
<th>first prior month:</th>
<th>second prior month:</th>
<th>third prior month:</th>
</tr>
</thead>
<tbody>
<tr>
<td>estimated precipitation total for this location:</td>
<td>April 2013</td>
<td>March 2013</td>
<td>February 2013</td>
</tr>
<tr>
<td>- there is a 30% chance this location will have less than:</td>
<td>5.42</td>
<td>2.28</td>
<td>1.32</td>
</tr>
<tr>
<td>- there is a 30% chance this location will have more than:</td>
<td>2.06</td>
<td>1.47</td>
<td>0.50</td>
</tr>
<tr>
<td>type of month:</td>
<td>wet</td>
<td>wet</td>
<td>wet</td>
</tr>
<tr>
<td>- dry</td>
<td>normal</td>
<td>wet</td>
<td></td>
</tr>
<tr>
<td>- monthly score:</td>
<td>3 * 3 = 9</td>
<td>2 * 3 = 6</td>
<td>1 * 3 = 3</td>
</tr>
</tbody>
</table>

multi-month score:
- 6 to 9 (dry) | 10 to 14 (normal) | 15 to 18 (wet) | 18 (Wet)

Other Resources:
- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- Evaluating Antecedent Precipitation Conditions (BWSR)
Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:
county: Washington  township number: 29N
township name: Baytown  range number: 20W
nearest community: Lake Elmo  section number: 19

Aerial photograph or site visit date:
Thursday, July 18, 2013

Score using 1981-2010 normal period

<table>
<thead>
<tr>
<th>values are in inches</th>
<th>estimated precipitation total for this location:</th>
<th>first prior month: June 2013</th>
<th>second prior month: May 2013</th>
<th>third prior month: April 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 'R' following a monthly total indicates a provisional value derived from radar-based estimates.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>there is a 30% chance this location will have less than:</td>
<td>8.31</td>
<td>5.66</td>
<td>5.42</td>
<td></td>
</tr>
<tr>
<td>there is a 30% chance this location will have more than:</td>
<td>3.68</td>
<td>3.28</td>
<td>2.06</td>
<td></td>
</tr>
<tr>
<td>type of month:</td>
<td>dry normal wet</td>
<td>wet</td>
<td>wet</td>
<td></td>
</tr>
<tr>
<td>monthly score</td>
<td>3 * 3 = 9</td>
<td>2 * 3 = 6</td>
<td>1 * 3 = 3</td>
<td></td>
</tr>
<tr>
<td>multi-month score:</td>
<td>6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet)</td>
<td>18 (Wet)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Other Resources:
- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- Evaluating Antecedent Precipitation Conditions (BWSR)
Minnesota Climatology Working Group
State Climatology Office - DNR Division of Ecological and Water Resources
University of Minnesota

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Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:
- county: Washington
- township name: Baytown
- nearest community: Lake Elmo
- township number: 29N
- range number: 20W
- section number: 19

Aerial photograph or site visit date:
- Sunday, September 15, 2013

Score using 1981-2010 normal period

<table>
<thead>
<tr>
<th>values are in inches</th>
<th>estimated precipitation total for this location:</th>
<th>first prior month:</th>
<th>second prior month:</th>
<th>third prior month:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>August 2013</td>
<td>July 2013</td>
<td>June 2013</td>
</tr>
<tr>
<td></td>
<td>0.80</td>
<td>1.50</td>
<td>8.30</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.32</td>
<td>2.65</td>
<td>3.68</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5.39</td>
<td>4.73</td>
<td>5.75</td>
<td></td>
</tr>
<tr>
<td>type of month:</td>
<td>dry normal wet</td>
<td>dry</td>
<td>dry</td>
<td>wet</td>
</tr>
<tr>
<td></td>
<td>monthly score</td>
<td>3 * 1 = 3</td>
<td>2 * 1 = 2</td>
<td>1 * 3 = 3</td>
</tr>
<tr>
<td></td>
<td>multi-month score</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6 to 9 (dry)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10 to 14 (normal)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15 to 18 (wet)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8 (Dry)

Other Resources:
- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- Evaluating Antecedent Precipitation Conditions (BWSR)
Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:
- county: Washington
township name: Baytown
- nearest community: Lake Elmo
- township number: 29N
- range number: 20W
- section number: 19

Aerial photograph or site visit date:
Friday, September 07, 2012

Score using 1981-2010 normal period

<table>
<thead>
<tr>
<th>values are in inches</th>
<th>first prior month: August 2012</th>
<th>second prior month: July 2012</th>
<th>third prior month: June 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>estimated precipitation total for this location:</td>
<td>1.47</td>
<td>5.18</td>
<td>3.31</td>
</tr>
<tr>
<td>there is a 30% chance this location will have less than:</td>
<td>3.32</td>
<td>2.65</td>
<td>3.68</td>
</tr>
<tr>
<td>there is a 30% chance this location will have more than:</td>
<td>5.39</td>
<td>4.73</td>
<td>5.75</td>
</tr>
<tr>
<td>type of month:</td>
<td>dry</td>
<td>normal</td>
<td>wet</td>
</tr>
<tr>
<td>monthly score</td>
<td>3 * 1 = 3</td>
<td>2 * 3 = 6</td>
<td>1 * 1 = 1</td>
</tr>
</tbody>
</table>

Multi-month score:

- 6 to 9 (dry)
- 10 to 14 (normal)
- 15 to 18 (wet)

10 (Normal)

Other Resources:
- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- Evaluating Antecedent Precipitation Conditions (BWSR)
Precipitation data for target wetland location:
- county: Washington  
- township name: Baytown  
- nearest community: Lake Elmo
- township number: 29N  
- range number: 20W  
- section number: 19

Aerial photograph or site visit date:
Monday, September 13, 2010

Score using 1981-2010 normal period:

<table>
<thead>
<tr>
<th>Estimated precipitation total for this location:</th>
<th>first prior month: August 2010</th>
<th>second prior month: July 2010</th>
<th>third prior month: June 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5.92</td>
<td>5.26</td>
<td>5.73</td>
</tr>
<tr>
<td>There is a 30% chance this location will have less than:</td>
<td>3.33</td>
<td>2.66</td>
<td>3.69</td>
</tr>
<tr>
<td>There is a 30% chance this location will have more than:</td>
<td>5.38</td>
<td>4.74</td>
<td>5.76</td>
</tr>
<tr>
<td>Type of month: dry, normal, wet</td>
<td>wet</td>
<td>wet</td>
<td>normal</td>
</tr>
<tr>
<td>Monthly score</td>
<td>3 * 3 = 9</td>
<td>2 * 3 = 6</td>
<td>1 * 2 = 2</td>
</tr>
</tbody>
</table>

Multi-month score:

<table>
<thead>
<tr>
<th>6 to 9 (dry)</th>
<th>10 to 14 (normal)</th>
<th>15 to 18 (wet)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>17 (Wet)</td>
</tr>
</tbody>
</table>

Other Resources:

- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- Evaluating Antecedent Precipitation Conditions (BWSR)
Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:
county: Washington  township number: 29N
township name: Baytown  range number: 20W
nearest community: Lake Elmo  section number: 19

Aerial photograph or site visit date:
Thursday, April 15, 2010

Score using 1981-2010 normal period

<table>
<thead>
<tr>
<th>values are in inches</th>
<th>first prior month: March 2010</th>
<th>second prior month: February 2010</th>
<th>third prior month: January 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>estimated precipitation total for this location:</td>
<td>0.62</td>
<td>0.88</td>
<td>0.63</td>
</tr>
<tr>
<td>there is a 30% chance this location will have less than:</td>
<td>1.47</td>
<td>0.50</td>
<td>0.54</td>
</tr>
<tr>
<td>there is a 30% chance this location will have more than:</td>
<td>2.10</td>
<td>0.95</td>
<td>1.20</td>
</tr>
<tr>
<td>type of month:</td>
<td>dry</td>
<td>normal</td>
<td>normal</td>
</tr>
<tr>
<td>monthly score</td>
<td>3 * 1 = 3</td>
<td>2 * 2 = 4</td>
<td>1 * 2 = 2</td>
</tr>
<tr>
<td>multi-month score</td>
<td>6 to 9 (dry)</td>
<td>10 to 14 (normal)</td>
<td>15 to 18 (wet)</td>
</tr>
</tbody>
</table>

9 (Dry)

Other Resources:
- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- Evaluating Antecedent Precipitation Conditions (BWSR)
Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:
- county: Washington
- township number: 29N
- township name: Baytown
- range number: 20W
- nearest community: Lake Elmo
- section number: 19

Aerial photograph or site visit date:
Tuesday, August 18, 2009

Score using 1981-2010 normal period

<table>
<thead>
<tr>
<th>Monthly Score</th>
<th>First Prior Month</th>
<th>Second Prior Month</th>
<th>Third Prior Month</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>July 2009</td>
<td>June 2009</td>
<td>May 2009</td>
</tr>
<tr>
<td>estimated precipitation total for this location:</td>
<td>2.59</td>
<td>4.19</td>
<td>0.80</td>
</tr>
<tr>
<td>there is a 30% chance this location will have less than:</td>
<td>2.65</td>
<td>3.68</td>
<td>3.28</td>
</tr>
<tr>
<td>there is a 30% chance this location will have more than:</td>
<td>4.73</td>
<td>5.74</td>
<td>3.99</td>
</tr>
<tr>
<td>type of month:</td>
<td>dry normal wet</td>
<td>dry normal wet</td>
<td>dry normal wet</td>
</tr>
<tr>
<td>monthly score:</td>
<td>3 * 1 = 3</td>
<td>2 * 2 = 4</td>
<td>1 * 1 = 1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Multi-month score:</th>
<th>6 to 9 (dry)</th>
<th>10 to 14 (normal)</th>
<th>15 to 18 (wet)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>8 (Dry)</td>
</tr>
</tbody>
</table>

Other Resources:
- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- Evaluating Antecedent Precipitation Conditions (BWSR)
Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:
county: **Washington**
township number: **29N**
township name: **Baytown**
range number: **20W**
nearest community: **Lake Elmo**
section number: **19**

Aerial photograph or site visit date:
**Tuesday, July 08, 2008**

Score using 1981-2010 normal period

<table>
<thead>
<tr>
<th>values are in inches</th>
<th>first prior month:</th>
<th>second prior month:</th>
<th>third prior month:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>June 2008</strong></td>
<td><strong>May 2008</strong></td>
<td><strong>April 2008</strong></td>
</tr>
</tbody>
</table>

- estimated precipitation total for this location: 4.36 3.18 4.39
- there is a 30% chance this location will have less than: 3.68 3.28 2.06
- there is a 30% chance this location will have more than: 5.74 3.99 3.19

<table>
<thead>
<tr>
<th>type of month:</th>
<th>dry</th>
<th>normal</th>
<th>wet</th>
</tr>
</thead>
<tbody>
<tr>
<td>monthly score</td>
<td>3 * 2 = 6</td>
<td>2 * 1 = 2</td>
<td>1 * 3 = 3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>multi-month score:</th>
<th>6 to 9 (dry)</th>
<th>10 to 14 (normal)</th>
<th>15 to 18 (wet)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>11 (Normal)</td>
</tr>
</tbody>
</table>

**Other Resources:**
- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- *Evaluating Antecedent Precipitation Conditions* (BWSR)
Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:
- county: Washington
- township number: 29N
- township name: Baytown
- range number: 20W
- nearest community: Lake Elmo
- section number: 19

Aerial photograph or site visit date:
Saturday, July 15, 2006

Score using 1981-2010 normal period

<table>
<thead>
<tr>
<th>Estimated precipitation total for this location:</th>
<th>first prior month: June 2006</th>
<th>second prior month: May 2006</th>
<th>third prior month: April 2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.26</td>
<td>3.20</td>
<td>3.55</td>
<td></td>
</tr>
<tr>
<td>there is a 30% chance this location will have less than:</td>
<td>3.68</td>
<td>3.28</td>
<td>2.06</td>
</tr>
<tr>
<td>there is a 30% chance this location will have more than:</td>
<td>5.74</td>
<td>3.99</td>
<td>3.19</td>
</tr>
<tr>
<td>type of month: dry normal wet</td>
<td>dry</td>
<td>dry</td>
<td>wet</td>
</tr>
<tr>
<td>monthly score</td>
<td>3 * 1 = 3</td>
<td>2 * 1 = 2</td>
<td>1 * 3 = 3</td>
</tr>
<tr>
<td>multi-month score:</td>
<td>6 to 9 (dry)</td>
<td>10 to 14 (normal)</td>
<td>15 to 18 (wet)</td>
</tr>
</tbody>
</table>

multi-month score: 8 (Dry)

Other Resources:
- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- Evaluating Antecedent Precipitation Conditions (BWSR)
Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:
- county: Washington
- township number: 29N
- township name: Baytown
- range number: 20W
- nearest community: Lake Elmo
- section number: 19

Aerial photograph or site visit date: Saturday, April 24, 2004

Score using 1981-2010 normal period

<table>
<thead>
<tr>
<th>values are in inches</th>
<th>first prior month: March 2004</th>
<th>second prior month: February 2004</th>
<th>third prior month: January 2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>estimated precipitation total for this location:</td>
<td>2.07</td>
<td>1.59</td>
<td>0.48</td>
</tr>
<tr>
<td>there is a 30% chance this location will have less than:</td>
<td>1.47</td>
<td>0.50</td>
<td>0.54</td>
</tr>
<tr>
<td>there is a 30% chance this location will have more than:</td>
<td>2.10</td>
<td>0.95</td>
<td>1.20</td>
</tr>
<tr>
<td>type of month:</td>
<td>dry</td>
<td>normal</td>
<td>wet</td>
</tr>
<tr>
<td>monthly score</td>
<td>3 * 2 = 6</td>
<td>2 * 3 = 6</td>
<td>1 * 1 = 1</td>
</tr>
</tbody>
</table>

multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet) 13 (Normal)

Other Resources:
- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- Evaluating Antecedent Precipitation Conditions (BWSR)
Precipitation data for target wetland location:
- county: **Washington**
- township number: **29N**
- township name: **Baytown**
- range number: **20W**
- nearest community: **Lake Elmo**
- section number: **19**

Aerial photograph or site visit date:
**Friday, July 18, 2003**

Score using 1981-2010 normal period

<table>
<thead>
<tr>
<th>values are in inches</th>
<th>first prior month:</th>
<th>second prior month:</th>
<th>third prior month:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>June 2003</strong></td>
<td><strong>May 2003</strong></td>
<td><strong>April 2003</strong></td>
</tr>
<tr>
<td>estimated precipitation total for this location:</td>
<td>5.80</td>
<td>7.20</td>
<td>2.04</td>
</tr>
<tr>
<td>there is a 30% chance this location will have less than:</td>
<td>3.68</td>
<td>3.28</td>
<td>2.06</td>
</tr>
<tr>
<td>there is a 30% chance this location will have more than:</td>
<td>5.74</td>
<td>3.99</td>
<td>3.19</td>
</tr>
<tr>
<td>type of month:</td>
<td>dry</td>
<td>normal</td>
<td>wet</td>
</tr>
<tr>
<td>monthly score</td>
<td>3 * 3 = 9</td>
<td>2 * 3 = 6</td>
<td>1 * 1 = 1</td>
</tr>
</tbody>
</table>

Other Resources:
- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- Evaluating Antecedent Precipitation Conditions (BWSR)
**Precipitation Worksheet Using Gridded Database**

Precipitation data for target wetland location:
- county: Washington
- township number: 29N
- township name: Baytown
- range number: 20W
- nearest community: Lake Elmo
- section number: 19

Aerial photograph or site visit date:
Sunday, September 15, 2002

Score using 1981-2010 normal period

<table>
<thead>
<tr>
<th>estimated precipitation total for this location:</th>
<th>6.03</th>
<th>5.71</th>
<th>8.98</th>
</tr>
</thead>
<tbody>
<tr>
<td>there is a 30% chance this location will have less than:</td>
<td>3.32</td>
<td>2.65</td>
<td>3.68</td>
</tr>
<tr>
<td>there is a 30% chance this location will have more than:</td>
<td>5.39</td>
<td>4.73</td>
<td>5.74</td>
</tr>
<tr>
<td>type of month:</td>
<td>dry</td>
<td>normal</td>
<td>wet</td>
</tr>
<tr>
<td>monthly score</td>
<td>3 * 3 = 9</td>
<td>2 * 3 = 6</td>
<td>1 * 3 = 3</td>
</tr>
</tbody>
</table>

multi-month score: 6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet) 18 (Wet)

**Other Resources:**
- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- *Evaluating Antecedent Precipitation Conditions* (BWSR)
Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:
- county: Washington
- township number: 29N
- township name: Baytown
- range number: 20W
- nearest community: Lake Elmo
- section number: 19

Aerial photograph or site visit date:
Tuesday, May 02, 2000

Score using 1981-2010 normal period

<table>
<thead>
<tr>
<th>values are in inches</th>
<th>first prior month: April 2000</th>
<th>second prior month: March 2000</th>
<th>third prior month: February 2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>estimated precipitation total for this location:</td>
<td>1.48</td>
<td>1.24</td>
<td>1.27</td>
</tr>
<tr>
<td>there is a 30% chance this location will have less than:</td>
<td>2.06</td>
<td>1.47</td>
<td>0.50</td>
</tr>
<tr>
<td>there is a 30% chance this location will have more than:</td>
<td>3.19</td>
<td>2.10</td>
<td>0.95</td>
</tr>
<tr>
<td>type of month: dry normal wet</td>
<td>dry</td>
<td>dry</td>
<td>wet</td>
</tr>
<tr>
<td>monthly score</td>
<td>3 * 1 = 3</td>
<td>2 * 1 = 2</td>
<td>1 * 3 = 3</td>
</tr>
<tr>
<td>multi-month score:</td>
<td>6 to 9 (dry)</td>
<td>10 to 14 (normal)</td>
<td>15 to 18 (wet)</td>
</tr>
</tbody>
</table>

Other Resources:
- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- Evaluating Antecedent Precipitation Conditions (BWSR)
Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:
- county: Washington
- township number: 29N
- township name: Baytown
- range number: 20W
- nearest community: Lake Elmo
- section number: 19

Aerial photograph or site visit date:
Monday, April 14, 1997

Score using 1981-2010 normal period

<table>
<thead>
<tr>
<th>values are in inches</th>
<th>first prior month: March 1997</th>
<th>second prior month: February 1997</th>
<th>third prior month: January 1997</th>
</tr>
</thead>
<tbody>
<tr>
<td>estimated precipitation total for this location:</td>
<td>1.48</td>
<td>0.19</td>
<td>1.76</td>
</tr>
<tr>
<td>there is a 30% chance this location will have less than:</td>
<td>1.47</td>
<td>0.50</td>
<td>0.54</td>
</tr>
<tr>
<td>there is a 30% chance this location will have more than:</td>
<td>2.10</td>
<td>0.95</td>
<td>1.20</td>
</tr>
<tr>
<td>type of month: dry normal wet</td>
<td>normal</td>
<td>dry</td>
<td>wet</td>
</tr>
<tr>
<td>monthly score</td>
<td>3 * 2 = 6</td>
<td>2 * 1 = 2</td>
<td>1 * 3 = 3</td>
</tr>
<tr>
<td>multi-month score:</td>
<td>6 to 9 (dry) 10 to 14 (normal) 15 to 18 (wet)</td>
<td>11 (Normal)</td>
<td></td>
</tr>
</tbody>
</table>

Other Resources:
- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- Evaluating Antecedent Precipitation Conditions (BWSR)
Precipitation Worksheet Using Gridded Database

Precipitation data for target wetland location:
county: Washington  township number: 29N
township name: Baytown  range number: 20W
nearest community: Lake Elmo  section number: 19

Aerial photograph or site visit date:
Monday, October 10, 1994

Score using 1981-2010 normal period

<table>
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<th>values are in inches</th>
<th>estimated precipitation total for this location:</th>
<th>first prior month: September 1994</th>
<th>second prior month: August 1994</th>
<th>third prior month: July 1994</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>A 'R' following a monthly total indicates a provisional value derived from radar-based estimates.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>there is a 30% chance this location will have less than:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>there is a 30% chance this location will have more than:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>type of month: dry  normal  wet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>monthly score</td>
<td>3 * 3 = 9</td>
<td>2 * 2 = 4</td>
<td>1 * 3 = 3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>multi-month score:</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>6 to 9 (dry)</td>
<td>10 to 14 (normal)</td>
<td>15 to 18 (wet)</td>
<td>16 (Wet)</td>
</tr>
</tbody>
</table>

Other Resources:
- retrieve daily precipitation data
- view radar-based precipitation estimates
- view weekly precipitation maps
- Evaluating Antecedent Precipitation Conditions (BWSR)
Appendix E. WETS Analysis and Climatic Data
## Precipitation Worksheet Using Gridded Database

**Precipitation data for target wetland location:**
- **county:** Washington
- **township number:** 29N
- **township name:** Baytown
- **range number:** 20W
- **nearest community:** Lake Elmo
- **section number:** 18

**Aerial photograph or site visit date:**
*Monday, June 05, 2017*

### Score using 1981-2010 normal period

<table>
<thead>
<tr>
<th></th>
<th>first prior month: May 2017</th>
<th>second prior month: April 2017</th>
<th>third prior month: March 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>estimated precipitation total for this location:</em></td>
<td>5.51R</td>
<td>3.55</td>
<td>0.88</td>
</tr>
<tr>
<td><em>there is a 30% chance this location will have less than:</em></td>
<td>3.25</td>
<td>2.09</td>
<td>1.45</td>
</tr>
<tr>
<td><em>there is a 30% chance this location will have more than:</em></td>
<td>4.05</td>
<td>3.19</td>
<td>2.09</td>
</tr>
<tr>
<td><em>type of month:</em></td>
<td>dry</td>
<td>normal</td>
<td>wet</td>
</tr>
<tr>
<td><em>monthly score</em></td>
<td>3 * 3 = 9</td>
<td>2 * 3 = 6</td>
<td>1 * 1 = 1</td>
</tr>
</tbody>
</table>

### Multi-month score:
- 6 to 9 (dry)
- 10 to 14 (normal)
- 15 to 18 (wet)

### Multi-month score: 16 (Wet)

### Other Resources:
- Retrieve daily precipitation data
- View radar-based precipitation estimates
- View weekly precipitation maps
- *Evaluating Antecedent Precipitation Conditions* (BWSR)
### WETS Analysis Worksheet

**Project Name:** Lake Elmo Airport (21D) Runway 14/32 Relocation  
**Period Of Interest:** March - May  
**Station:** MINNEAPOLIS/ST PAUL AP, MN  
**County:** Washington, MN

#### Long-term rainfall records (from WETS table)

<table>
<thead>
<tr>
<th>1st month prior:</th>
<th>2nd month prior:</th>
<th>3rd month prior:</th>
<th>30% chance &lt; Normal &gt; 30% chance &gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>May</td>
<td>April</td>
<td>March</td>
<td>May</td>
</tr>
<tr>
<td>2.26</td>
<td>1.51</td>
<td>1.23</td>
<td>3.23</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3.04</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.18</td>
</tr>
</tbody>
</table>

**Sum =** 7.56

#### Site Determination*  

<table>
<thead>
<tr>
<th>Site Rainfall (in)</th>
<th>Condition (Dry/Normal*/Wet)</th>
<th>Condition** Value</th>
<th>Month Weight</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.03</td>
<td>Wet</td>
<td>3</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>3.94</td>
<td>Wet</td>
<td>3</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>0.83</td>
<td>Dry</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

**Sum*** = 16

* Normal precipitation with 30% to 70% probability of occurrence  

**Condition value:**  
- Dry = 1  
- Normal = 2  
- Wet = 3  

**If sum is:**  
- 6 to 9 then period has been drier than normal  
- 10 to 14 then period has been normal  
- 15 to 18 then period has been wetter than normal

**Precipitation data source:**  
http://www.ncdc.noaa.gov/cdo-web/datatools

**Reference:**  
### WETS Table

**WETS Station: MINNEAPOLIS/ ST PAUL AP, MN**

Requested years: 1971 - 2010

<table>
<thead>
<tr>
<th>Month</th>
<th>Avg Max Temp</th>
<th>Avg Min Temp</th>
<th>Avg Mean Temp</th>
<th>Avg Precip</th>
<th>30% chance precip less than</th>
<th>30% chance precip more than</th>
<th>Avg number days precip 0.10 or more</th>
<th>Avg Snowfall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>22.3</td>
<td>5.6</td>
<td>14.0</td>
<td>0.92</td>
<td>0.51</td>
<td>1.12</td>
<td>3</td>
<td>11.8</td>
</tr>
<tr>
<td>Feb</td>
<td>28.0</td>
<td>11.6</td>
<td>19.8</td>
<td>0.79</td>
<td>0.50</td>
<td>0.95</td>
<td>3</td>
<td>8.5</td>
</tr>
<tr>
<td>Mar</td>
<td>40.5</td>
<td>23.7</td>
<td>32.1</td>
<td>1.82</td>
<td>1.23</td>
<td>2.18</td>
<td>5</td>
<td>10.5</td>
</tr>
<tr>
<td>Apr</td>
<td>57.4</td>
<td>36.9</td>
<td>47.2</td>
<td>2.51</td>
<td>1.51</td>
<td>3.04</td>
<td>6</td>
<td>3.0</td>
</tr>
<tr>
<td>May</td>
<td>69.6</td>
<td>48.6</td>
<td>59.1</td>
<td>3.23</td>
<td>2.26</td>
<td>3.83</td>
<td>7</td>
<td>0.0</td>
</tr>
<tr>
<td>Jun</td>
<td>78.9</td>
<td>58.4</td>
<td>68.6</td>
<td>4.34</td>
<td>2.87</td>
<td>5.20</td>
<td>8</td>
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</tr>
<tr>
<td>Jul</td>
<td>83.6</td>
<td>63.8</td>
<td>73.7</td>
<td>3.72</td>
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<td>4.51</td>
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<td>1.89</td>
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<td>1.18</td>
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<td>0.6</td>
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<td>Nov</td>
<td>41.1</td>
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<td>0.80</td>
<td>2.10</td>
<td>4</td>
<td>0.5</td>
</tr>
<tr>
<td>Dec</td>
<td>26.7</td>
<td>11.8</td>
<td>19.3</td>
<td>1.06</td>
<td>0.61</td>
<td>1.28</td>
<td>3</td>
<td>11.7</td>
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<td>Annual</td>
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<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Average</td>
<td>54.9</td>
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<td>-</td>
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<td>Total</td>
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<td>-</td>
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### GROWING SEASON DATES

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<th>Probability</th>
<th>50 percent *</th>
<th>70 percent *</th>
</tr>
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<tbody>
<tr>
<td>24 F or higher</td>
<td>4/5 to 11/4</td>
<td>4/1 to 11/9</td>
</tr>
<tr>
<td>28 F or higher</td>
<td>4/13 to 1913</td>
<td>4/8 to 119</td>
</tr>
<tr>
<td>32 F or higher</td>
<td>4/28 to 189</td>
<td>19/10/199</td>
</tr>
<tr>
<td>40</td>
<td>4/24 to 171</td>
<td>10/12/201</td>
</tr>
</tbody>
</table>

* Percent chance of the growing season occurring between the Beginning and Ending dates.

### STATS TABLE - total precipitation (inches)

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<tr>
<th>Yr</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Annl</th>
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<tbody>
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<td>1938</td>
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<tr>
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Notes: Data missing in any month have an "M" flag. A "T" indicates a trace of precipitation.

Data missing for all days in a month or year is blank.

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Summary: 0.83 | 4.7

The "*" flags in Preliminary indicate the data have not completed processing and quality control and may not be identical to the original observation. Empty, or blank, cells indicate that a data observation was not reported.

**Ground Cover:** 1=Grass; 2=Fallow; 3=Bare Ground; 4=Brome grass; 5=Sod; 6=Straw mulch; 7=Grass muck; 8=Bare muck; 0=Unknown

*s* This data value failed one of NCDC’s quality control tests.

"T" values in the Precipitation category above indicate a TRACE value was recorded.

"A" values in the Precipitation Flag or the Snow Flag column indicate a multiday total, accumulated since last measurement, is being used.

Data value inconsistency may be present due to rounding calculations during the conversion process from SI metric units to standard imperial units.
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Summary: 3.94

The '*' flags in Preliminary indicate the data have not completed processing and quality control and may not be identical to the original observation. Empty, or blank, cells indicate that a data observation was not reported.

*Ground Cover: 1=Grass; 2=Fallow Ground; 3=Bare Ground; 4=Brome grass; 5=Sod; 6=Straw mulch; 7=Grass muck; 8=Bare muck; 0=Unknown

"s" This data value failed one of NCDC's quality control tests.

"T" values in the Precipitation category above indicate a TRACE value was recorded.

"A" values in the Precipitation Flag or the Snow Flag column indicate a multiday total, accumulated since last measurement, is being used.

Data value inconsistency may be present due to rounding calculations during the conversion process from SI metric units to standard imperial units.
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The ** flags in Preliminary indicate the data have not completed processing and quality control and may not be identical to the original observation. Empty, or blank, cells indicate that a data observation was not reported.

"a" Ground Cover: 1=Grass; 2=Fallow; 3=Bare Ground; 4=Brome grass; 5=Sod; 6=Straw mulch; 7=Grass muck; 8=Bare muck; 0=Unknown

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Data value inconsistency may be present due to rounding calculations during the conversion process from SI metric units to standard imperial units.
Appendix F. Wetland Boundary Maps
### Project Information

**T29N, R20W, S18 and S19**  
City of Lake Elmo  
Washington County, MN  

Area of Interest = 130.1 acres  
Field work conducted:  
June 5 - 9, 2017  

Image Source: MnGEO WMS Image Service, Washington County (2016 color 7-county)
Wetland Boundary Map
LAKE ELMO AIRPORT
Proposed Runway 14-32 Runway Shift

Legend
- Photo Location
- Data Point Location
- Wetland Boundary
- Wetland within AOI
- Wetland outside AOI
- Culvert End Location
- Flow Direction
- Ditch/Swale Flow
- Area of Interest
- Airport Property Boundary

Project Information
T29N, R20W, S18 and S19
City of Lake Elmo
Washington County, MN
Area of Interest = 130.1 acres
Field work conducted:
June 5 - 9, 2017

Image Source: MnGEO WMS Image Service, Washington County (2016 color 7-county)
Contour Source: Minnesota Geospatial Commons, Minnesota Elevation Mapping Project Twin Cities Metro Region 2011

Map 1 of 6
Lake Elmo Airport
Proposed Runway 14-32 Runway Shift

Project Information
T29N, R20W, S18 and S19
City of Lake Elmo
Washington County, MN
Area of interest = 130.1 acres
Field work conducted:
June 5 - 9, 2017

Image Source: MnGEO WMS Image Service, Washington County (2016 color 7-county)
Contour Source:
Minnesota Geospatial Commons, Minnesota Elevation Mapping Project Twin Cities Metro Region 2011
Wetland Boundary Map

LAKE ELMO AIRPORT

Proposed Runway 14-32 Runway Shift

Project Information

T29N, R20W, S18 and S19
City of Lake Elmo
Washington County, MN
Area of Interest = 130.1 acres
Field work conducted:
June 5 - 9, 2017

Image Source: MnGEO WMS Image Service, Washington County (2016 color 7-county)
Contour Source: Minnesota Geospatial Commons, Minnesota Elevation Mapping Project Twin Cities Metro Region 2011
Wetland Boundary Map
LAKE ELMO AIRPORT
Proposed Runway 14-32 Runway Shift

Project Information
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Washington County, MN
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- Wetland Boundary
- Wetland within AOI
- Wetland outside AOI
- Culvert End Location
- Flow Direction
- Ditch/Swale Flow
- Area of Interest
- Airport Property Boundary

Elevation contour interval is 2 feet

Map 5 of 6
Project Information
T29N, R20W, S18 and S19
City of Lake Elmo
Washington County, MN
Area of interest = 130.1 acres
Field work conducted:
June 5 - 9, 2017

Image Source: MnGEO WMS Image Service, Washington County (2016 color 7-county)
Contour Source: Minnesota Geospatial Commons, Minnesota Elevation Mapping Project Twin Cities Metro Region 2011

Legend
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- Wetland Boundary
- Wetland within AOI
- Wetland outside AOI
- Culvert End Location
- Flow Direction
- Ditch/Swale Flow
- Area of Interest
- Airport Property Boundary

Elevation contour interval is 2 feet
Appendix G. Data Sheets with Field Photographs
Project/Site: Lake Elmo airport (21D) Runway 14/32 Relocation  
City/County: Washington  
Sampling Date: 6/5/2017

Applicant/Owner: Metropolitan Airports Commission  
State: Minnesota  
Sample Point: DP1

Investigator(s): Brauna Hartzell and Kim Shannon, Mead & Hunt, Inc.

Project/Site: Lake Elmo airport (21D) Runway 14/32 Relocation  
City/County: Washington 
Sampling Date: 6/5/2017

Applicant/Owner: Metropolitan Airports Commission  
State: Minnesota  
Sample Point: DP1

Investigator(s): Brauna Hartzell and Kim Shannon, Mead & Hunt, Inc.

Landform (hillslope, terrace, etc.): Depression  
Local relief (concave, convex, none): Concave  
Slope (%): <1%

Subregion (LRR or MLRA): K/153  
Lat: 44.9916° N  
Long: 92.8528° W  
Datum: WGS 84

Soil Map Unit Name: Crystal Lake silt loam, 1 to 3 percent slopes  
NWI classification: PEM

Are climatic hydrologic conditions on the site typical for this time of year? Yes  
Are Vegetation, Soil, or Hydrology significantly disturbed? Yes  
Are "Normal Circumstances" present? Yes  
Are Vegetation, Soil, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☒ No ☐
Hydric Soil Present? Yes ☒ No ☐
Wetland Hydrology Present? Yes ☒ No ☐

Remarks: (Explain alternative procedures here or in a separate report.) A WETS analysis of the antecedent precipitation indicates the hydrologic conditions on the site were wetter than normal range at the time of investigation. Vegetation dominated by invasive species.

VEGETATION - Use scientific names of plants

50/20 Thresholds  
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<tr>
<th>Woody Vine Stratum (Plot size: ______)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
<th>20%</th>
<th>50%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>____</td>
<td></td>
<td></td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>2.</td>
<td>____</td>
<td></td>
<td></td>
<td>50</td>
<td>100</td>
</tr>
</tbody>
</table>

Hydrophytic Vegetation Indicators:
☒ Rapid Test for Hydrophytic Vegetation
☒ Dominance Test is >50%
☒ Prevalence Index is <3.0
☒ Morphological Adaptations’ (Provide supporting data in Remarks or on a separate sheet)
☒ Problematic Hydrophytic Vegetation’ (Explain)

Definitions of Vegetation Strata:
Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?
Yes ☒ No ☐
### SOIL

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Matrix</th>
<th>Redox Features</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-11</td>
<td>10YR 2/2</td>
<td>2.5YR 4/6</td>
<td>C PL Silt loam PL = oxidized rhizospheres</td>
</tr>
<tr>
<td>11-18</td>
<td>10YR 4/1</td>
<td>7.5YR 4/6</td>
<td>C PL Silt loam</td>
</tr>
</tbody>
</table>

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. Location: PL=Pore Lining, M=Matrix.*

**Hydric Soil Indicators:**
- Histosol (A1)  
- Histic Epipedon (A2)  
- Black Histic (A3)  
- Hydrogen Sulfide (A4)  
- Stratified Layers (A5)  
- Depleted Below Dark Surface (A11)  
- Thick Dark Surface (A12)  
- Sandy Mucky Mineral (S1)  
- Sandy Gleyed Matrix (S4)  
- Sandy Redox (S5)  
- Stripped Matrix (S6)  
- Dark Surface (S7)  
- Polyvalue Below Surface (S8)  
- Loamy Mucky Mineral (F1)  
- Depleted Matrix (F3)  
- Redox Surface (F6)  
- Depleted Dark Surface (F7)  
- Loamy Gleyed Matrix (F2)  
- Thin Dark Surface (F9)  
- Polyvalue Below Surface (S8)  
- Thin Dark Surface (S9)  
- Iron-Manganese Masses (F12)  
- Piedmont Floodplain Soils (F19)  
- Mesic Spodic (TA6)  
- Red Parent Material (F21)  
- Very Shallow Dark Surface (TF12)  
- Other (Explain in Remarks)

**Restrictive Layer (if observed):**

**Hydric Soil Present?** Yes ☑ No ☐

**Remarks:** Hydric soils are present. Meets hydric soils criteria Depleted Below Dark Surface (A11) and Redox Dark Surface (F6).

### HYDROLOGY

**Wetland Hydrology Indicators:**
- Surface Water (A1)  
- High Water Table (A2)  
- Saturation (A3)  
- Water Marks (B1)  
- Sediment Deposits (B2)  
- Drift Deposits (B3)  
- Algal Mat or Crust (B4)  
- Iron Deposits (B5)  
- Inundation Visible on Aerial Imagery(B7)  
- Sparsely Vegetated Concave Surface (B8)  
- Water-Stained Leaves (B9)  
- Aquatic Fauna (B13)  
- Marl Deposits (B15)  
- Hydrogen Sulfide Odor (C1)  
- Oxidized Rhizospheres on Living Roots (C3)  
- Presence of Reduced Iron (C4)  
- Recent Iron Reduction in Tilled Soils (C6)  
- Thin Muck Surface (C7)  
- Other (Explain in Remarks)

**Secondary Indicators (minimum of two required):**
- Surface Soil Cracks (B6)  
- Drainage Patterns (B10)  
- Moss Trim Lines (B16)  
- Dry-Season Water Table (C2)  
- Crayfish Burrows (C8)  
- Saturation Visible on Aerial Imagery (C9)  
- Stunted or Stressed Plants (D1)  
- Geomorphic Position (D2)  
- Shallow Aquitard (D3)  
- FAC-Neutral Test (D5)  
- Microtopographic Relief (D4)

**Field Observations:**

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Present?</th>
<th>Depth (inches):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface Water Present</td>
<td>Yes ☑ No ☐</td>
<td>______</td>
</tr>
<tr>
<td>Water Table Present</td>
<td>Yes ☑ No ☐</td>
<td>______</td>
</tr>
<tr>
<td>Saturation Present</td>
<td>Yes ☑ No ☐</td>
<td>______</td>
</tr>
</tbody>
</table>

**Indicators of Wetland Hydrology Present?** Yes ☑ No ☐

**Remarks:** Wetland hydrology is present. Data point in a concave surface within wetland fringe vegetation of a shallow marsh.
Data Point 1

Photo 1. View to the east.

Photo 2. General site, view to the east.
**WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region**

Project/Site: Lake Elmo airport (21D) Runway 14/32 Relocation  
City/County: Washington  
Sampling Date: 6/5/2017  
Applicant/Owner: Metropolitan Airports Commission  
State: Minnesota  
Sample Point: DP2

**Investigator(s):** Brauna Hartzell and Kim Shannon, Mead & Hunt, Inc.

**Landform (hillslope, terrace, etc.):** footslope  
Local relief (concave, convex, none): concave  
Slope (%): <1%

**Subregion (LRR or MLRA):** K/153  
Lat: 44.9917° N  
Long: 92.8529° W  
Datum: WGS 84

**Soil Map Unit Name:** Crystal Lake silt loam, 1 to 3 percent slopes

**Are climatic hydrologic conditions on the site typical for this time of year?** Yes □  No □ (If no, explain in Remarks.)

**Are Vegetation, Soil, or Hydrology significantly disturbed?** □

**Are "Normal Circumstances" present?** Yes □  No □

**Are Vegetation, Soil, or Hydrology naturally problematic?** (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.**

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present?</th>
<th>Yes □  No □</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydric Soil Present?</td>
<td>Yes □  No □</td>
</tr>
<tr>
<td>Wetland Hydrology Present?</td>
<td>Yes □  No □</td>
</tr>
</tbody>
</table>

**Is the Sampled Area within a Wetland?** Yes □  No □

**Hydrophytic Vegetation Indicators:**
- **Rapid Test for Hydrophytic Vegetation**
- **Dominance Test is >50%**
- **Prevalence Index is <3.0**
- **Morphological Adaptations’ (Provide supporting data in Remarks or on a separate sheet)**
- **Problematic Hydrophytic Vegetation’ (Explain)**

**Definitions of Vegetation Strata:**
- **Tree** – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
- **Sapling/shrub** – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
- **Herb** – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
- **Woody vine** – All woody vines greater than 3.28 ft in height.

**50/20 Thresholds**
- **Tree Stratum**
- **Sapling/Shrub Stratum**
- **Herb Stratum**
- **Woody Vine Stratum**

**Dominance Test worksheet:**
- Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
- Total Number of Dominant Species Across All Strata: 1 (B)
- Percent of Dominant Species That Are OBI, FACW, or FAC: 0 (A/B)

**Prevalence Index worksheet:**
- Total % Cover of OBL species x 1 =
- Total % Cover of FACW species x 2 =
- Total % Cover of FAC species x 3 =
- Total % Cover of FACU species x 4 = 20
- Total % Cover of UPL species x 5 =

**Column Totals:** 5 (A) 20 (B)

**Prevalence Index = B/A = 4.0**

**Hydrophytic Vegetation Present?**
- Yes □  No □
### SOIL

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Color (moist)</th>
<th>%</th>
<th>Color (moist)</th>
<th>%</th>
<th>Type</th>
<th>Loc</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4</td>
<td>10YR 3/2</td>
<td>99</td>
<td>7.5YR 4/6</td>
<td>1</td>
<td>C</td>
<td>M</td>
<td>Silt loam</td>
<td></td>
</tr>
<tr>
<td>4-10</td>
<td>10YR 3/2</td>
<td>90</td>
<td>7.5YR 4/6</td>
<td>10</td>
<td>C</td>
<td>M</td>
<td>Silt loam</td>
<td></td>
</tr>
<tr>
<td>11-16</td>
<td>10YR 5/2</td>
<td>94</td>
<td>7.5YR 4/6</td>
<td>6</td>
<td>C</td>
<td>M</td>
<td>Silt loam</td>
<td></td>
</tr>
<tr>
<td>16-20</td>
<td>10YR 4/4</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Silt loam</td>
<td></td>
</tr>
</tbody>
</table>

1. **Type:** C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.
2. **Location:** PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)

### Indicators for Problematic Hydric

- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)
- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR R, L)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

### Hydric Soil Present?

- Yes ☑️
- No ☐

### HYDROLOGY

**Wetland Hydrology Indicators:**

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)

### Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)
- Microtopographic Relief (D4)

### Field Observations:

- Surface Water Present? Yes ☑️ No ☐ Depth (inches): _____
- Water Table Present? Yes ☑️ No ☐ Depth (inches): _____
- Saturation Present? Yes ☑️ No ☐ Depth (inches): _____

### Remarks:

Wetland hydrology is neither present nor indicated. Some collection of corn cobs and stalks adjacent to wetland vegetation but random nature indicates not a result of water flow, perhaps more a result of wind.

**Photo:**
Data Point 2

Photo 3. View to the east.

Photo 4. Wetland 1, view to the north.
WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Lake Elmo airport (21D) Runway 14/32 Relocation
City/County: Washington
Applicant/Owner: Metropolitan Airports Commission
State: Minnesota
Investigator(s): Brauna Hartzell and Kim Shannon, Mead & Hunt, Inc.
Section, Township, Range: Section 19, T29N, R20W

Vegetation

Are climatic hydrologic conditions on the site typical for this time of year? Yes No

Soil Map Unit Name: Comstock silt loam
Subregion (LRR or MLRA): K/153
Landform (hillslope, terrace, etc.): depression
Local relief (concave, convex, none): concave
Slope (%): <1%

Subregion (LRR or MLRA): K/153
Lat: 44.9922° N
Long: 92.8525° W
Datum: WGS 84
Wetland Hydrology Present? Yes No
Hydric Soil Present? Yes No
Hydrophytic Vegetation Present? Yes No

Are Vegetation ________ Soil ________ or Hydrology ________ significantly disturbed? Are “Normal Circumstances” present? Yes No

Are Vegetation ________ Soil ________ or Hydrology ________ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydric Soil Present?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Wetland Hydrology Present?</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

Is the Sampled Area within a Wetland? Yes No

Remarks: (Explain alternative procedures here or in a separate report.) A WETS analysis of the antecedent precipitation indicates the hydrologic conditions on the site were wetter than normal range at the time of investigation. Absence of vegetation due to inundation/ponding and long-term cultivation. Farm field recently planted to soy beans.

VEGETATION - Use scientific names of plants

<table>
<thead>
<tr>
<th>Tree Stratum (Plot size: ____ )</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sapling/Shrub Stratum (Plot size: ____ )</th>
<th>= Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Herb Stratum (Plot size: 5ft)</th>
<th>= Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Woody Vine Stratum (Plot size: ____ )</th>
<th>= Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>50/20 Thresholds</th>
<th>20%</th>
<th>50%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tree Stratum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sapling/Shrub Stratum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Herb Stratum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Woody Vine Stratum</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dominance Test worksheet:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Dominant Species That Are OBL, FACW, or FAC: ____ (A)</td>
</tr>
<tr>
<td>Total Number of Dominant Species Across All Strata: ____ (B)</td>
</tr>
<tr>
<td>Percent of Dominant Species That Are OBI, FACW, or FAC: ____ (A/B)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prevalence Index worksheet:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total % Cover of OBL x 5 = ____ (A)</td>
</tr>
<tr>
<td>Total % Cover of FACW x 2 = ____ (B)</td>
</tr>
<tr>
<td>Total % Cover of FAC x 3 = ____ (C)</td>
</tr>
<tr>
<td>Total % Cover of OBL x 4 = ____ (D)</td>
</tr>
<tr>
<td>Total % Cover of FACW x 5 = ____ (E)</td>
</tr>
<tr>
<td>Column Totals: ____ (A/B)</td>
</tr>
<tr>
<td>Prevalence Index = B/A = ____</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Indicators:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rapid Test for Hydrophytic Vegetation</td>
</tr>
<tr>
<td>Dominance Test is &gt;50%</td>
</tr>
<tr>
<td>Prevalence Index is &lt;3.01</td>
</tr>
<tr>
<td>Morphological Adaptations’ (Provide supporting data in Remarks or on a separate sheet)</td>
</tr>
<tr>
<td>Problematic Hydrophytic Vegetation’ (Explain)</td>
</tr>
</tbody>
</table>

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:
Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes No
**SOIL**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Color (moist)</th>
<th>%</th>
<th>Color (moist)</th>
<th>%</th>
<th>Type1</th>
<th>Loc2</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>10YR 3/2</td>
<td>96</td>
<td>7.5YR 5/6</td>
<td>4</td>
<td>C</td>
<td>M</td>
<td>Silt loam</td>
<td></td>
</tr>
<tr>
<td>10-16</td>
<td>10YR 5/2</td>
<td>65</td>
<td>7.5YR 5/6</td>
<td>34</td>
<td>C</td>
<td>M</td>
<td>Silt loam</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7.5YR 2.5/1</td>
<td>1</td>
<td></td>
<td></td>
<td>C</td>
<td>PL</td>
<td>Silt loam</td>
<td></td>
</tr>
<tr>
<td>16-18</td>
<td>10YR 4/4</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Silt loam</td>
<td></td>
</tr>
<tr>
<td>10YR 5/8</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Silt loam</td>
<td></td>
</tr>
</tbody>
</table>

1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

2Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**

|                | Stripped Matrix (S6) | Dark Surface (S7) (LRR R, MLRA 149B) | Polyvalue Below Surface (S8) (LRR R, MLRA 149B) | Thin Dark Surface (S9) (LRR R, MLRA 149B) | Loamy Mucky Mineral (F1) (LRR K, L) | Thin Dark Surface (S9) (LRR K, L) | Iron-Manganese Masses (F12) (LRR K, L, R) | Piedmont Floodplain Soils (F19) (MLRA 149B) | Mesic Spodic (TA6) (MLRA 144A, 145, 149B) | Red Parent Material (F21) | Very Shallow Dark Surface (TF12) | Other (Explain in Remarks) |
|----------------|----------------------|--------------------------------------|-----------------------------------------------|------------------------------------------|--------------------------------------|------------------------------------------|-----------------------------------------------|---------------------------------------------------------------------------|-------------------------------------------------------------------------|------------------------------------------------------------------------|-----------------------------------------------------------------------|

**Hydric Soil Present?** Yes ☒ No ☐

**Hydric Soil Present?** Yes ☒ No ☐

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one is required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)
- Microtopographic Relief (D4)

**Indicators of Wetland Hydrology Present?** Yes ☒ No ☐

**Field Observations:**

- Surface Water Present? Yes ☒ No ☒ Depth (inches): ______
- Water Table Present? Yes ☒ No ☒ Depth (inches): ______
- Saturation Present? Yes ☒ No ☒ Depth (inches): ______

Describe Recorded Data (stream gauge, monitoring, well, aerial photos, previous inspections), if available:

**Remarks:** Wetland hydrology is indicated. Dry, cracked soil surface; old corn stalks water stained; drifting corn debris pushed against wetland fringe vegetation; planted soy beans dead or stressed within boundary; soil sparsely vegetated; wet signatures on historical aerial photography in 60% of images.

Photo:
Data Points 3 and 4

[Image: Photo 5. View to the southeast.]

[Image: Photo 6. Drift deposits near Data Point 3. View to the east.]
Photo 7. Bare and cracked soils near culvert outlet under 30th Street. View to the east.

Photo 8. Wetland 1, view to the south. View taken within wetland boundary.
WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Lake Elmo Airport (21D) Runway 14/32 Relocation
City/County: Washington
State: Minnesota
State: Washington
State: Minnesota
State: Minnesota
State: Minnesota
State: Minnesota

Applicant/Owner: Metropolitan Airports Commission
Sample Point: DP4

Investigator(s): Brauna Hartzell and Kim Shannon, Mead & Hunt, Inc.

Are climatic hydrologic conditions on the site typical for this time of year? Yes

Are Vegetation ___, Soil ___, or Hydric Soil ___ significantly disturbed? Are "Normal Circumstances" present? Yes __ No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

Hydric Soil Present? Yes ___ No ___

Wetland Hydrology Present? Yes ___ No ___

If yes, optional Wetland Side ID: __________

Are Vegetation ___, Soil ___, or Hydric Soil ___ significantly disturbed? (If no, explain in Remarks.)

Remarks: (Explain alternative procedures here or in a separate report.) A WETS analysis of the antecedent precipitation indicates the hydrologic conditions on the site were wetter than normal range at the time of investigation. Vegetation disturbed due to long-term cultivation; farm field planted to soybeans.

Hydropytic Vegetation Present? Yes ___ No ___

Is the Sampled Area within a Wetland? Yes ___ No ___

If yes, optional Wetland Side ID: __________

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydric Soil Present? Yes ___ No ___

Wetland Hydrology Present? Yes ___ No ___

Tree Stratum (Plot size: _____)

<table>
<thead>
<tr>
<th>Plot</th>
<th>Absolute Cover</th>
<th>Dominant Species</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
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<td>2.</td>
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<td>5.</td>
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</tbody>
</table>

Sapling/Shrub Stratum (Plot size: _____)

<table>
<thead>
<tr>
<th>Plot</th>
<th>Absolute Cover</th>
<th>Dominant Species</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
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<td>2.</td>
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<td>5.</td>
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<td></td>
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</tbody>
</table>

Herb Stratum (Plot size: 5ft)

<table>
<thead>
<tr>
<th>Plot</th>
<th>Species</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Glyceria max</td>
<td>UPL</td>
</tr>
<tr>
<td>2.</td>
<td>Persicaria amphibia</td>
<td>OBL</td>
</tr>
<tr>
<td>3.</td>
<td>Ambrosia trifida</td>
<td>FAC</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Plot</th>
<th>Absolute Cover</th>
<th>Dominant Species</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2.</td>
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<td>3.</td>
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<td>5.</td>
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</tr>
</tbody>
</table>

Woody Vine Stratum (Plot size: _____)

<table>
<thead>
<tr>
<th>Plot</th>
<th>Absolute Cover</th>
<th>Dominant Species</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Remarks: (Include photo numbers here or on a separate sheet.) Farm field; no stressed vegetation; no cracking soil; no drift lines; soy beans present. About 30 feet separates data point from paired wetland data point (DP 3) with very slight elevation change between; Fails Prevalence Index at 3.89.
### Soil Sampling Point:

**DP4**

### Profile Description:
(Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Color (moist)</th>
<th>%</th>
<th>Color (moist)</th>
<th>%</th>
<th>Type¹</th>
<th>Loc²</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>10YR 3/2</td>
<td>96</td>
<td>7.5YR 4/6</td>
<td>4</td>
<td>C</td>
<td>M</td>
<td>Silt loam</td>
<td></td>
</tr>
<tr>
<td>10-16</td>
<td>10YR 5/2</td>
<td>90</td>
<td>7.5YR 4/6</td>
<td>4</td>
<td>C</td>
<td>M</td>
<td>Silt loam</td>
<td></td>
</tr>
<tr>
<td>16-18</td>
<td>10YR 4/4</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Silt loam</td>
<td></td>
</tr>
</tbody>
</table>

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:
- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)

### Hydric Soil Present?
- Yes ☑
- No ☐

### Hydric Soil Present?

#### Hydric Soil Indicators:
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)
- Polypile Below Surface (S8) (LRR R, MLRA 149 B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Depleted Matrix (F3)
- Redox Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

#### Indicators for Problematic Hydric
- 2 cm Muck - (A10) (LRR K, L, MLRA 149B)
- 5 cm Peat or Mucky Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polypile Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F16) (MLRA 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

### Restrictive Layer (if observed):

#### Type: ______

#### Depth (inches): ______

### Remarks:
Hydric soils are present. Meets hydric soils criterion Depleted Below Dark Surface (A11).

## HYDROLOGY

### Wetland Hydrology Indicators:

#### Primary Indicators (minimum of one is required; check all that apply):
- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Indundation Visible on Aerial Imagery(B7)
- Sparsely Vegetated Concave Surface (B8)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- Marl Deposits (B15)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

#### Secondary Indicators (minimum of two required):
- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)
- Microtopographic Relief (D4)

#### Field Observations:
- Surface Water Present? Yes ☑
- Water Table Present? Yes ☑
- Saturation Present? Yes ☑

#### Indicators of Wetland Hydrology Present?
- Yes ☑
- No ☐

#### Depth (inches):
- Surface (includes capillary fringe)
- Water Table
- Saturation

#### Remarks:
Wetland hydrology is neither present nor indicated.

### Describe Recorded Data (stream gauge, monitoring, well, aerial photos, previous inspections), if available:

### Photo:
Photo 5. View to the southeast.
See additional photos on Data Point 3.
WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Lake Elmo airport (21D) Runway 14/32 Relocation  City/County: Washington  Sampling Date: 6/5/2017
 Applicant/Owner: Metropolitan Airports Commission  State: Minnesota  Sample Point: DP5
 Investigator(s): Brauna Hartzell and Kim Shannon, Mead & Hunt, Inc.  Section, Township, Range: Section 19, T29N, R20W

Landform (hillslope, terrace, etc.): depression  Local relief (concave, convex, none): concave  Slope (%): 1%
 Subregion (LRR or MLRA): K/153  Lat: 44.9906° N  Long: 92.8499° W  Datum: WGS 84
 Soil Map Unit Name: Aquolls and Histosols, ponded  NWI classification: PEM

Are climatic hydrologic conditions on the site typical for this time of year? Yes □  No □ (If no, explain in Remarks.)
 Are Vegetation □ , Soil □ , or Hydrology □ significantly disturbed? Are "Normal Circumstances" present? Yes □  No □
 Are Vegetation □ , Soil □ , or Hydrology □ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present?</th>
<th>Yes □  No □</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydric Soil Present?</td>
<td>Yes □  No □</td>
</tr>
<tr>
<td>Wetland Hydrology Present?</td>
<td>Yes □  No □</td>
</tr>
</tbody>
</table>

Is the Sampled Area within a Wetland?  Yes □  No □
 If yes, optional Wetland Side ID: 1

Remarks: (Explain alternative procedures here or in a separate report.) A WETS analysis of the antecedent precipitation indicates the hydrologic conditions on the site were wetter than normal range at the time of investigation. Vegetation is dominated by invasive species.

VEGETATION - Use scientific names of plants

<table>
<thead>
<tr>
<th>Tree Stratum (Plot size: _____)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
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<td>5.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Sapling/Shrub Stratum (Plot size: _____)</th>
<th>= Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
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<td>2.</td>
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<td>3.</td>
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<td>4.</td>
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<tr>
<td>5.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Herb Stratum (Plot size: 5ft)</th>
<th>= Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Phalaris arundinacea</td>
<td>95 X FACW</td>
</tr>
<tr>
<td>2. Persicaria amphibia</td>
<td>2 OBL</td>
</tr>
<tr>
<td>3. Cirsium arvense</td>
<td>1 FACU</td>
</tr>
<tr>
<td>4. Urtica dioica</td>
<td>2 FAC</td>
</tr>
<tr>
<td>5.</td>
<td></td>
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<tr>
<td>6.</td>
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<tr>
<td>7.</td>
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<td>8.</td>
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<td>9.</td>
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<td>10.</td>
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<tr>
<td>11.</td>
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<tr>
<td>12.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Woody Vine Stratum (Plot size: _____)</th>
<th>= Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
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<tr>
<td>2.</td>
<td></td>
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</tbody>
</table>

50/20 Thresholds  20%  50%
 Tree Stratum   ______  ______
 Sapling/Shrub Stratum  20  50
 Herb Stratum   ______  ______
 Woody Vine Stratum ______

**Dominance Test worksheet:**
Number of Dominant Species
That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBI, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**
Total % Cover of Multiply by:
OBL species 2 x 1 = 2
FACW species 95 x 2 = 190
FAC species 2 x 3 = 6
FACU species 1 x 4 = 4
UPL species ______ x 5 = ______
Column Totals: 100 (A) 202 (B)
Prevalence Index = B/A = 2.02

**Hydrophytic Vegetation Indicators:**
□ Rapid Test for Hydrophytic Vegetation
□ Dominance Test is >50%
□ Prevalence Index is ≤3.0¹
□ Morphological Adaptations’ (Provide supporting data in Remarks or on a separate sheet)
□ Problematic Hydrophytic Vegetation’ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:
Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?  Yes □  No □

Remarks: (Include photo numbers here or on a separate sheet.) Hydrophytic vegetation is present. Data Point in fringe vegetation of shallow marsh; also Typha angustifolia present 15 ft to west. About 40 feet separates this data point and its paired upland point (DP 6) and is about 3 feet lower in elevation.
### Profile Description:

(Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Color (moist)</th>
<th>%</th>
<th>Color (moist)</th>
<th>%</th>
<th>Type</th>
<th>Loc</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4</td>
<td>10YR 3/2</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Silt loam</td>
<td></td>
</tr>
<tr>
<td>4-12</td>
<td>10YR 4/1</td>
<td>95</td>
<td>7.5YR 4/6</td>
<td>5</td>
<td>C</td>
<td>PL</td>
<td>Silt loam</td>
<td>PL = oxidized rhizospheres</td>
</tr>
<tr>
<td>12-16</td>
<td>10YR 5/1</td>
<td>70</td>
<td>5YR 4/6</td>
<td>30</td>
<td>C</td>
<td>M</td>
<td>Silt loam</td>
<td></td>
</tr>
</tbody>
</table>

1. Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.
2. Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators:**
- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)

**Hydrical Soil Present?** Yes ☑ No ☐

**Remarks:** Hydric soils are present. Meets hydric soils criteria Depleted Below Dark Surface (A11) and Depleted Matrix (F3)

### Hydrology

**Wetland Hydrology Indicators:**

- Primary Indicators (minimum of one is required; check all that apply)
  - Surface Water (A1)
  - High Water Table (A2)
  - Saturation (A3)
  - Water Marks (B1)
  - Sediment Deposits (B2)
  - Drift Deposits (B3)
  - Algal Mat or Crust (B4)
  - Iron Deposits (B5)
  - Inundation Visible on Aerial Imagery(B7)
  - Sparsely Vegetated Concave Surface (B8)
- Secondary Indicators (minimum of two required)
  - Water-Stained Leaves (B9)
  - Aquatic Fauna (B13)
  - Marl Deposits (B15)
  - Hydrogen Sulfide Odor (C1)
  - Oxidized Rhizospheres on Living Roots (C3)
  - Presence of Reduced Iron (C4)
  - Recent Iron Reduction in Tilled Soils (C6)
  - Thin Muck Surface (C7)
  - Other (Explain in Remarks)
  - Surface Soil Cracks (B6)
  - Drainage Patterns (B10)
  - Moss Trim Lines (B16)
  - Dry-Season Water Table (C2)
  - Crayfish Burrows (C8)
  - Saturation Visible on Aerial Imagery (C9)
  - Stunted or Stressed Plants (D1)
  - Geomorphic Position (D2)
  - Shallow Aquitard (D3)
  - FAC-Neutral Test (D5)
  - Microtopographic Relief (D4)

**Field Observations:**

- Surface Water Present? Yes ☑ No ☐ Depth (inches): ______
- Water Table Present? Yes ☑ No ☐ Depth (inches): ______
- Saturation Present? Yes ☑ No ☐ Depth (inches): ______

**Indicators of Wetland Hydrology Present?** Yes ☑ No ☐

**Remarks:** Wetland hydrology is indicated. Data point in wetland fringe of depressional shallow marsh.

**Photo:**
Photo 9. View to the west.
**WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region**

Project/Site: Lake Elmo Airport (21D) Runway 14/32 Relocation  
City/County: Washington  
Sampling Date: 6/5/2017

Applicant/Owner: Metropolitan Airports Commission  
State: Minnesota  
Sample Point: DP6

Investigator(s): Brauna Hartzell and Kim Shannon, Mead & Hunt, Inc.  
Section, Township, Range: Section 19, T29N, R20W

---

**HYDROPHYTIC VEGETATION - USE SCIENTIFIC NAMES OF PLANTS**

<table>
<thead>
<tr>
<th>Tree Stratum (Plot size: _____)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
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<td>2.</td>
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<td>4.</td>
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<td>5.</td>
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<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sapling/Shrub Stratum (Plot size: _____)</th>
<th>Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
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<td>3.</td>
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<td>4.</td>
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<tr>
<td>5.</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Herb Stratum (Plot size: 5ft)</th>
<th>Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <em>Glycine max</em></td>
<td>8 x UPL</td>
</tr>
<tr>
<td>2. <em>Acer negundo</em></td>
<td>2 x FACW</td>
</tr>
<tr>
<td>3.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Woody Vine Stratum (Plot size: _____)</th>
<th>Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
</tr>
</tbody>
</table>

Remarks: Hydrophytic vegetation is not present. Also immature milkweed (*Asclepias syriaca*) is present just outside of sampling area. About 40 feet separates this data point and its paired wetland point (DP 5); data point 6 is about 3 feet higher in elevation.

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**SUMMARY OF FINDINGS - ATTACH SITE MAP SHOWING SAMPLING POINT LOCATIONS, TRANSECTS, IMPORTANT FEATURES, ETC.**

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present?</th>
<th>Yes ☐ No ☒</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydric Soil Present?</td>
<td>Yes ☐ No ☒</td>
</tr>
<tr>
<td>Wetland Hydrology Present?</td>
<td>Yes ☐ No ☒</td>
</tr>
</tbody>
</table>

Is the Sampled Area within a Wetland?  
Yes ☐ ☒ No ☒

If yes, optional Wetland Side ID: __________

Remarks: (Explain alternative procedures here or in a separate report.) A WETS analysis of the antecedent precipitation indicates the hydrologic conditions on the site were wetter than normal range at the time of investigation. Vegetation disturbed due to long-term cultivation. Farm field planted to soybeans.

---

**50/20 THRESHOLDS**

<table>
<thead>
<tr>
<th>Tree Stratum</th>
<th>20%</th>
<th>50%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sapling/Shrub Stratum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Herb Stratum</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Woody Vine Stratum</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**DOMINANCE TEST WORKSHEET:**

<table>
<thead>
<tr>
<th>Number of Dominant Species That Are OBL, FACW, or FAC:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (A)</td>
</tr>
<tr>
<td>Total Number of Dominant Species Across All Strata:</td>
</tr>
<tr>
<td>2 (B)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Percent of Dominant Species That Are OBL, FACW, or FAC:</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 (A/B)</td>
</tr>
</tbody>
</table>

**PREVALENCE INDEX WORKSHEET:**

<table>
<thead>
<tr>
<th>OBL species</th>
<th>FACW species</th>
<th>FAC species</th>
<th>UPL species</th>
</tr>
</thead>
<tbody>
<tr>
<td>x 1 =</td>
<td>x 2 =</td>
<td>x 3 =</td>
<td>x 5 =</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td></td>
<td>40</td>
</tr>
<tr>
<td>Column Totals: 10 (A)</td>
<td>44 (B)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Prevalence Index = B/A | 4.4 |

**HYDROPHYTIC VEGETATION INDICATORS:**

- Rapid Test for Hydrophytic Vegetation  
- Dominance Test is >50%
- Preservation Index is ≥3.01
- Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation* (Explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**DEFINITIONS OF VEGETATION STRATA:**

- Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  
- Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.  
- Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  
- Woody vines – All woody vines greater than 3.28 ft in height.
SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Color (moist)</th>
<th>%</th>
<th>Type</th>
<th>Loc</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-16</td>
<td>10YR 3/3</td>
<td>100</td>
<td></td>
<td></td>
<td>Silt loam</td>
<td></td>
</tr>
</tbody>
</table>

1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.  
2Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)

Indicators of Problematic Hydric
- 2 cm Muck - (A10) (LRR K, L, MLRA 149B)
- Coast Prairie Redox (A16) (LRR K, L, R)
- 5 cm Peat or Mucky Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

Restrictive Layer (if observed):
- Hydric Soil Present? Yes ☑ No ☐
- Type: ______
- Depth (inches): ______

Remarks: Hydric soils are not present. Does not meet hydric soils criteria.

HYDROLOGY

Wetland Hydrology Indicators:
- Primary Indicators (minimum of one is required; check all that apply)
  - Surface Water (A1)
  - High Water Table (A2)
  - Saturation (A3)
  - Water Marks (B1)
  - Sediment Deposits (B2)
  - Drift Deposits (B3)
  - Algal Mat or Crust (B4)
  - Iron Deposits (B5)
  - Inundation Visible on Aerial Imagery(B7)
  - Sparsely Vegetated Concave Surface (B8)
- Secondary Indicators (minimum of two required)
  - Water-Stained Leaves (B9)
  - Aquatic Fauna (B13)
  - Marl Deposits (B15)
  - Hydrogen Sulfide Odor (C1)
  - Oxidized Rhizospheres on Living Roots (C3)
  - Presence of Reduced Iron (C4)
  - Thin Muck Surface (C7)
  - Other (Explain in Remarks)

Field Observations:
- Surface Water Present? Yes ☑ No ☐ Depth (inches): ______
- Water Table Present? Yes ☑ No ☐ Depth (inches): ______
- Saturation Present? Yes ☑ No ☐ Depth (inches): ______

Indicators of Wetland Hydrology Present?
- Yes ☑ No ☐

Describe Recorded Data (stream gauge, monitoring, well, aerial photos, previous inspections), if available:

Remarks: Wetland hydrology is neither present nor indicated.

Photo:
Photo 10. Soils at data point 6.
WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Lake Elmo airport (21D) Runway 14/32 Relocation
City/County: Washington
Sampling Date: 6/6/2017

Applicant/Owner: Metropolitan Airports Commission
State: Minnesota
Sample Point: DP7

Investigator(s): Brauna Hartzell and Kim Shannon, Mead & Hunt, Inc.
Section, Township, Range: Section 19, T29N, R20W

Landform (hillslope, terrace, etc.): basin/depression
Local relief (concave, convex, none): concave
Slope (%): <1%

Subregion (LRR or MLRA): K/153
Lat: 44.9895° N
Long: 92.8433° W
Datum: WGS 84

Soil Map Unit Name: Chetek sandy loam, 12 to 25 percent slopes
NWI classification: PEMB

Remarks: (Include photo numbers here or on a separate sheet.) A WETS analysis of the antecedent precipitation indicates the hydrologic conditions on the site were wetter than normal range at the time of investigation. Vegetation is dominated by invasive species.

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present?</th>
<th>Yes ☑</th>
<th>No ☐</th>
<th>Is the Sampled Area within a Wetland?</th>
<th>Yes ☑</th>
<th>No ☐</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydric Soil Present?</td>
<td>Yes ☑</td>
<td>No ☐</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wetland Hydrology Present?</td>
<td>Yes ☑</td>
<td>No ☐</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If yes, optional Wetland Side ID: 2

Remarks: (Explain alternative procedures here or in a separate report.)

VEGETATION - Use scientific names of plants

<table>
<thead>
<tr>
<th>Tree Stratum (Plot size: _____)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sapling/Shrub Stratum (Plot size: _____)</th>
<th>= Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Herb Stratum (Plot size: 5ft)</th>
<th>= Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <em>Phalaris arundinacea</em></td>
<td>100</td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Woody Vine Stratum (Plot size: _____)</th>
<th>= Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
</tbody>
</table>

50/20 Thresholds: 20% 50%

Tree Stratum
Sapling/Shrub Stratum
Herb Stratum 20 50
Woody Vine Stratum

Dominance Test worksheet:
Number of Dominant Species
That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBI, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:
Total % Cover of OBL Species Multiply by:
OBL species x 1 =
FACW species 100 x 2 = 200
FAC species x 3 =
FACU species x 4 =
UPL species x 5 =
Column Totals: 100 (A) 200 (B)
Prevalence Index = B/A = 2.0

Hydrophytic Vegetation Indicators:
☑ Rapid Test for Hydrophytic Vegetation
☒ Dominance Test is >50%
☑ Prevalence Index is <3.01
☒ Morphological Adaptations’ (Provide supporting data in Remarks or on a separate sheet)
☐ Problematic Hydrophytic Vegetation’ (Explain)

1Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:
Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?
Yes ☑ No ☐

Remarks: (Include photo numbers here or on a separate sheet.) Hydrophytic vegetation is present. Data point located in shallow basin, dominated by reed canary grass. Saturation at surface at a number of test pits. Dead standing tree 15ft away; some stressed Salix sp. at edge of wetland. Data point located about 25 feet from paired upland data point and about 1 foot lower in elevation.
SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Color (moist)</th>
<th>%</th>
<th>Color (moist)</th>
<th>%</th>
<th>Type1</th>
<th>Loc2</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-6</td>
<td>7.5YR 3/1</td>
<td>100</td>
<td>7.5YR 3/1</td>
<td>98</td>
<td>C</td>
<td>M</td>
<td>Loam</td>
<td></td>
</tr>
<tr>
<td>6-16</td>
<td>7.5YR 3/1</td>
<td>98</td>
<td>7.5YR 3/3</td>
<td>2</td>
<td>C</td>
<td>M</td>
<td>Loam</td>
<td></td>
</tr>
<tr>
<td>16-22</td>
<td>10YR 4/3</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Loam</td>
<td>With small gravel present</td>
</tr>
</tbody>
</table>

1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.  2Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)

Indicators for Problematic Hydric

- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)
- Polyvalue Below Surface (S8) (LRR R, MLRA 149 B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- 2 cm Muck - (A10) (LRR K, L, MLRA 149B)
- 5 cm Peat or Mucky Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Other (Explain in Remarks)

Hydric Soil Present? Yes ☒ No □

Hydrology

Primary Indicators (minimum of one is required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)

Secondary Indicators (minimum of two required)

- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- Marl Deposits (B15)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)
- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)
- Microtopographic Relief (D4)

Field Observations:

Surface Water Present? Yes ☒ No No Depth (inches): 10

Water Table Present? Yes ☒ No No Depth (inches): 2

Saturation Present? Yes ☒ No No Depth (inches): ______

Indicators of Wetland Hydrology Present? Yes ☒ No No

Indicators of Wetland Hydrology Present? Yes ☒ No No

Describe Recorded Data (stream gauge, monitoring, well, aerial photos, previous inspections), if available:

Remarks: Wetland hydrology is present and indicated. Dead standing tree about 15ft away indicates vegetative stress. Data point located in shallow depressional basin.

Photo:
Data Point 7

Photo 11. View to the south.

Photo 12. Data Points 7, 8 and 9. View to the south.
Photo 13. View to the south.
WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Lake Elmo airport (21D) Runway 14/32 Relocation  City/County: Washington  Sampling Date: 6/6/2017
Applicant/Owner: Metropolitan Airports Commission  State: Minnesota  Sample Point: DP8
Investigator(s): Brauna Hartzell and Kim Shannon, Mead & Hunt, Inc.  Section, Township, Range: Section 19, T29N, R20W

Hydrophytic Vegetation Present?  Yes ☐  No ☒
Hydric Soil Present?  Yes ☐  No ☒
Wetland Hydrology Present?  Yes ☐  No ☒

If yes, optional Wetland Side ID:

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Indicators:
☐ Rapid Test for Hydrophytic Vegetation
☐ Dominance Test is >50%
☐ Prevalence Index is <3.0
☐ Morphological Adaptations’ (Provide supporting data in Remarks or on a separate sheet)
☐ Problematic Hydrophytic Vegetation’ (Explain)

Definitions of Vegetation Strata:
Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Indicators:
☐ Rapid Test for Hydrophytic Vegetation
☐ Dominance Test is >50%
☐ Prevalence Index is <3.0
☐ Morphological Adaptations’ (Provide supporting data in Remarks or on a separate sheet)
☐ Problematic Hydrophytic Vegetation’ (Explain)

#define of Vegetation Strata:
Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?  Yes ☐  No ☒

Remarks: (Include photo numbers here or on a separate sheet.) Hydrophytic vegetation is present, dominated by reed canary grass cover; about 25-30 feet from paired wetland data point (DP7) but slightly higher, about 1 ft higher in elevation.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot size: _____)  Absolute % Cover  Dominant Species?  Indicator Status
1.  
2.  
3.  
4.  
5.  

Sapling/Shrub Stratum (Plot size: _____)  = Total Cover
1.  
2.  
3.  
4.  
5.  

Herb Stratum (Plot size: 5ft)  = Total Cover
1.  Phalaris arundinacea  100  X  FACW  50/20 Thresholds  20%  50%  Tree Stratum  Sapling/Shrub Stratum  Herb Stratum  Woody Vine Stratum  20  50  50

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBI, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:
Total % Cover of Multiply by:
OBL species 1 x 1 = ______
FACW species 100 x 2 = 200
FAC species ______ x 3 = ______
FACU species ______ x 4 = ______
UPL species ______ x 5 = ______
Column Totals: 100 (A) 200 (B)
Prevalence Index = B/A = 2.0

Hydrophytic Vegetation Indicators:
☐ Rapid Test for Hydrophytic Vegetation
☐ Dominance Test is >50%
☐ Prevalence Index is <3.0
☐ Morphological Adaptations’ (Provide supporting data in Remarks or on a separate sheet)
☐ Problematic Hydrophytic Vegetation’ (Explain)
### Profile Description:
(Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Color (moist)</th>
<th>%</th>
<th>Color (moist)</th>
<th>%</th>
<th>Type</th>
<th>Loc</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>7.5YR 3/1</td>
<td>100</td>
<td>7.5YR 3/1</td>
<td>1</td>
<td></td>
<td></td>
<td>loam</td>
<td></td>
</tr>
<tr>
<td>10-20</td>
<td>7.5YR 3/1</td>
<td>99</td>
<td>7.5YR 3/3</td>
<td>1</td>
<td></td>
<td></td>
<td>loam</td>
<td></td>
</tr>
</tbody>
</table>

**SOIL**

**Sampling Point:** DP8

1. **Type:** C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.
2. **Location:** PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:
- **Histosol (A1)**
- **Histic Epipedon (A2)**
- **Black Histic (A3)**
- **Hydrogen Sulfide (A4)**
- **Stratified Layers (A5)**
- **Depleted Below Dark Surface (A11)**
- **Thick Dark Surface (A12)**
- **Sandy Mucky Mineral (S1)**
- **Sandy Gleyed Matrix (S4)**
- **Sandy Redox (S5)**

**Indicators for Problematic Hydric**
- **2 cm Muck - (A10) (LRR K, MLRA 149B)**
- **5 cm Peat or Mucky Peat (S3) (LRR K, L, R)**
- **Dark Surface (S7) (LRR K, L)**
- **Polyvalue Below Surface (S8) (LRR K, L)**
- **Thin Dark Surface (S9) (LRR K, L)**
- **Iron-Manganese Masses (F12) (LRR K, L, R)**
- **Piedmont Floodplain Soils (F19) (MLRA 149B)**
- **Mesic Spodic (TA6) (MLRA 144A, 145, 149B)**
- **Red Parent Material (F21)**
- **Very Shallow Dark Surface (TF12)**
- **Other (Explain in Remarks)**

### Restrictive Layer (if observed):

**Hydric Soil Present?** Yes ☑️ No ☐

### Remarks:
Does not meet hydric soils criteria

**HYDROLOGY**

### Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)
- **Surface Water (A1)**
- **High Water Table (A2)**
- **Saturation (A3)**
- **Water Marks (B1)**
- **Sediment Deposits (B2)**
- **Drift Deposits (B3)**
- **Algal Mat or Crust (B4)**
- **Iron Deposits (B5)**
- **Inundation Visible on Aerial Imagery (B7)**
- **Sparsely Vegetated Concave Surface (B8)**

Secondary Indicators (minimum of two required)
- **Surface Soil Cracks (B6)**
- **Drainage Patterns (B10)**
- **Moss Trim Lines (B16)**
- **Dry-Season Water Table (C2)**
- **Crayfish Burrows (C8)**
- **Saturation Visible on Aerial Imagery (C9)**
- **Stunted or Stressed Plants (D1)**
- **Geomorphic Position (D2)**
- **Shallow Aquitard (D3)**
- **FAC-Neutral Test (D5)**
- **Microtopographic Relief (D4)**

### Field Observations:

- **Surface Water Present?** Yes ☑️ No ☐
- **Water Table Present?** Yes ☑️ No ☐
- **Saturation Present?** Yes ☑️ No ☐
  (includes capillary fringe)

Indicators of Wetland Hydrology Present?

**Yes ☑️ No ☐**

**Remarks:** Wetland hydrology is present. Soil saturated to 8 inches in depth but no water table present.

**Photo:** See photos on data sheet for data point 7 (wetland).
**WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region**

Project/Site: Lake Elmo airport (21D) Runway 14/32 Relocation  
City/County: Washington  
Sampling Date: 6/6/2017

Applicant/Owner: Metropolitan Airports Commission  
State: Minnesota  
Sample Point: DP9

Investigator(s): Brauna Hartzell and Kim Shannon, Mead & Hunt, Inc.  
Section, Township, Range: Section 19, T29N, R20W

Landform (hillslope, terrace, etc.): basin slope  
Local relief (concave, convex, none): convex  
Slope (%): 3%

Subregion (LRR or MLRA): K/153  
Lat: 44.9897° N  
Long: 92.8435° W  
Datum: WGS 84

Soil Map Unit Name: Chetek sandy loam, 12 to 25 percent slopes  
NWI classification:

Are climatic hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐

Are Vegetation, Soil, or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation, Soil, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS**

- Attach site map showing sampling point locations, transects, important features, etc.

**Hydrophytic Vegetation Present?**  ☒  No ☐

**Is the Sampled Area within a Wetland?**  Yes ☒  No ☐

If yes, optional Wetland Side ID: ______________

Remarks: (Explain alternative procedures here or in a separate report.) A WETS analysis of the antecedent precipitation indicates the hydrologic conditions on the site were wetter than normal range at the time of investigation. Vegetation dominated by invasive species.

**VEGETATION**

- **Use scientific names of plants**

<table>
<thead>
<tr>
<th>Stratum</th>
<th>Plot Size</th>
<th>% Cover</th>
<th>Dominant Species</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tree Stratum (Plot Size: _____)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>1.</td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sapling/Shrub Stratum (Plot Size: _____)</th>
<th>= Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
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<td>2.</td>
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<td>3.</td>
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<td>4.</td>
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<tr>
<td>5.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Herb Stratum (Plot Size: 5ft)</th>
<th>= Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Phalaris arundinacea</td>
<td>98 X FACW</td>
</tr>
<tr>
<td>2. Bromus inermis</td>
<td>1 UPL</td>
</tr>
<tr>
<td>3. Poa pratensis</td>
<td>1 FACU</td>
</tr>
<tr>
<td>4.</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Woody Vine Stratum (Plot Size: _____)</th>
<th>= Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
</tbody>
</table>

| Hydrophytic Vegetation Present? | ☒  No ☐ |

Remarks: (Include photo numbers here or on a separate sheet.) Hydrophytic vegetation is present. DP9 is about 3 feet higher than upland data point (DP8) and about 15 ft away. Topographic break between data points 8 and 9.

**50/20 Thresholds**

- **Tree Stratum**
- **Sapling/Shrub Stratum**
- **Herb Stratum**
- **Woody Vine Stratum**

<table>
<thead>
<tr>
<th>Stratum</th>
<th>20%</th>
<th>50%</th>
</tr>
</thead>
<tbody>
<tr>
<td>50/20 Thresholds</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Dominance Test worksheet:**

- Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
- Total Number of Dominant Species Across All Strata: 1 (B)
- Percent of Dominant Species That Are OBI, FACW, or FAC: 100 (A/B)

<table>
<thead>
<tr>
<th>Stratum</th>
<th>= Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>Herb Stratum (Plot Size: 5ft)</td>
<td></td>
</tr>
<tr>
<td>1. Phalaris arundinacea</td>
<td>98 X FACW</td>
</tr>
<tr>
<td>2. Bromus inermis</td>
<td>1 UPL</td>
</tr>
<tr>
<td>3. Poa pratensis</td>
<td>1 FACU</td>
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<tr>
<td>4.</td>
<td></td>
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<tr>
<td>5.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Woody Vine Stratum (Plot Size: _____)</th>
<th>= Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
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<tr>
<td>2.</td>
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</tbody>
</table>

**Prevalence Index worksheet:**

- Total % Cover of: Multiply by:
  - OBL species x 1 =
  - FACW species 98 x 2 = 196
  - FAC species x 3 =
  - FACU species 1 x 4 = 4
  - UPL species 1 x 5 = 5
- Column Totals: 100 (A) 205 (B)
- Prevalence Index = B/A = 2.05

**Hydrophytic Vegetation Indicators:**

- Rapid Test for Hydrophytic Vegetation
- Dominance Test is >50%
- Prevalence Index is <3.0
- Morphological Adaptations' (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation'

1 Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**

- **Tree** – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
- **Sapling/shrub** – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
- **Herb** – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
- **Woody vines** – All woody vines greater than 3.28 ft in height.

**Is the Hydrophytic Vegetation Present?**  ☒  No ☐
SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Color (moist)</th>
<th>%</th>
<th>Color (moist)</th>
<th>%</th>
<th>Type1</th>
<th>Loc²</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-16</td>
<td>10YR 3/4</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>loam</td>
<td></td>
</tr>
</tbody>
</table>

1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.  ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)

Indicators for Problematic Hydric
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)
- Polyvalue Below Surface (S8) (LRR R, MLRA 149 B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

1Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):
Type: __________
Depth (inches): _________

Remarks: Hydric soils are not present. Does not meet hydric soils criteria.

HYDROLOGY

Wetland Hydrology Indicators:
Primary Indicators (minimum of one is required; check all that apply)
- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery(B7)
- Sparsely Vegetated Concave Surface (B8)

Secondary Indicators (minimum of two required)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- Marl Deposits (B15)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Field Observations:
Surface Water Present? Yes ☐ No ☑ Depth (inches): _________
Water Table Present? Yes ☐ No ☑ Depth (inches): _________
Saturation Present? Yes ☐ No ☑ Depth (inches): _________
(includes capillary fringe)

Indicators of
Wetland Hydrology Present?
Yes ☐ No ☑

Describe Recorded Data (stream gauge, monitoring, well, aerial photos, previous inspections), if available:

Remarks: Wetland hydrology is not present.

Photo: See photos on data sheet for data point 7 (wetland).
WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Lake Elmo airport (21D) Runway 14/32 Relocation  City/County: Washington  Sampling Date: 6/7/2017
Applicant/Owner: Metropolitan Airports Commission  State: Minnesota  Sample Point: DP10
Investigator(s): Brauna Hartzell and Kim Shannon, Mead & Hunt, Inc.  Section, Township, Range: Section 18, T29N, R20W

Landform (hillslope, terrace, etc.): basin  Local relief (concave, convex, none): concave  Slope (%): <1%
Subregion (LRR or MLRA): K/153  Lat: 45.00164° N  Long: 92.85113° W  Datum: WGS 84
Soil Map Unit Name: Antigo silt loam, 2 to 6 percent slopes  NWI classification: PEMB

Are climatic hydrologic conditions on the site typical for this time of year?  Yes □  No □

Soil Map Unit Name: Antigo silt loam, 2 to 6 percent slopes  NWI classification: PEMB

Are Vegetation □, Soil □, or Hydrology □ significantly disturbed?  Are "Normal Circumstances" present?  Yes □  No □
Are Vegetation □, Soil □, or Hydrology □ naturally problematic?  (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present?</th>
<th>Yes □  No □</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydric Soil Present?</td>
<td>Yes □  No □</td>
</tr>
<tr>
<td>Wetland Hydrology Present?</td>
<td>Yes □  No □</td>
</tr>
</tbody>
</table>

Remarks: (Explain alternative procedures here or in a separate report.) A WETS analysis of the antecedent precipitation indicates the hydrologic conditions on the site were wetter than normal range at the time of investigation.

VEGETATION - Use scientific names of plants

<table>
<thead>
<tr>
<th>Tree Stratum (Plot size: _____)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Sapling/Shrub Stratum (Plot size: _____)</th>
<th>= Total Cover</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
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<td>4.</td>
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<tr>
<td>5.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Herb Stratum (Plot size: 5ft)</th>
<th>= Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <em>Ranunculus acris</em></td>
<td>35 X FACW</td>
</tr>
<tr>
<td>2. <em>Equisetum arvense</em></td>
<td>60 X FAC</td>
</tr>
<tr>
<td>3. <em>Carex scoparia</em></td>
<td>30 X FACW</td>
</tr>
<tr>
<td>4. <em>Prunella vulgaris</em></td>
<td>5 FAC</td>
</tr>
<tr>
<td>5. <em>Juncus tenuis</em></td>
<td>3 FAC</td>
</tr>
<tr>
<td>6. <em>Poa pratensis</em></td>
<td>2 FACU</td>
</tr>
<tr>
<td>7. <em>Stellaria graminea</em></td>
<td>1 UPL</td>
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<tr>
<td>8.</td>
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<td>9.</td>
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<td>11.</td>
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<td>12.</td>
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</table>

<table>
<thead>
<tr>
<th>Woody Vine Stratum (Plot size: _____)</th>
<th>= Total Cover</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
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<tr>
<td>2.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>50/20 Thresholds</th>
<th>20%</th>
<th>50%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tree Stratum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sapling/Shrub Stratum</td>
<td>27</td>
<td>68</td>
</tr>
<tr>
<td>Herb Stratum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Woody Vine Stratum</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Dominance Test worksheet:
Number of Dominant Species
That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBI, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:
Total % Cover of OBL, FACW, or FAC: 136 (A)
Prevalence Index = B/A = 2.80

Hydrophytic Vegetation Indicators:
□ Rapid Test for Hydrophytic Vegetation  □ Dominance Test is >50%
□ Prevalence Index is <3.0  □ Morphological Adaptations’ (Provide supporting data in Remarks or on a separate sheet)
□ Problematic Hydrophytic Vegetation’ (Explain)

Definitions of Vegetation Strata:
Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?  Yes □  No □
### Profile Description:
(Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Color (moist)</th>
<th>%</th>
<th>Color (moist)</th>
<th>%</th>
<th>Type</th>
<th>Loc</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4</td>
<td>5YR 3/1</td>
<td>97</td>
<td>5YR 4/6</td>
<td>3</td>
<td>C</td>
<td>PL</td>
<td>Sandy loam</td>
<td></td>
</tr>
<tr>
<td>4-16</td>
<td>5YR 4/2</td>
<td>96</td>
<td>5YR 4/6</td>
<td>4</td>
<td>C</td>
<td>M</td>
<td>Sand</td>
<td></td>
</tr>
</tbody>
</table>

1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

### Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)

- Stripped Matrix (S6)
- Dark Surface (S7)
- Polyvalue Below Surface (S8)
- Loamy Mucky Mineral (F1)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Redox Dark Surface (F7)
- Redox Depressions (F8)

**Indicators for Problematic Hydric Soils**

- 2 cm Muck - (A10) (LRR K, MLRA 149B)
- 5 cm Peat or Mucky Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

**Restrictive Layer (if observed):**

<table>
<thead>
<tr>
<th>Type</th>
<th>Depth (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydric Soil Present?</td>
<td>Yes ☒ No ☐</td>
</tr>
</tbody>
</table>

Remarks: Hydric soils are present. Meets hydric soils criteria Sandy Redox (S5) and Redox Dark Surface (F6)

### HYDROLOGY

#### Wetland Hydrology Indicators:

- Primary Indicators (minimum of one is required; check all that apply)
  - Surface Water (A1)
  - High Water Table (A2)
  - Saturation (A3)
  - Water Marks (B1)
  - Sediment Deposits (B2)
  - Drift Deposits (B3)
  - Algal Mat or Crust (B4)
  - Iron Deposits (B5)
  - Inundation Visible on Aerial Imagery (B7)
  - Sparsely Vegetated Concave Surface (B8)

- Secondary Indicators (minimum of two required)
  - Water-Stained Leaves (B9)
  - Aquatic Fauna (B13)
  - Marl Deposits (B15)
  - Hydrogen Sulfide Odor (C1)
  - Oxidized Rhizospheres on Living Roots (C3)
  - Presence of Reduced Iron (C4)
  - Recent Iron Reduction in Tilled Soils (C6)
  - Thin Muck Surface (C7)
  - Other (Explain in Remarks)
  - Surface Soil Cracks (B6)
  - Drainage Patterns (B10)
  - Moss Trim Lines (B16)
  - Dry-Season Water Table (C2)
  - crayfish Burrows (C8)
  - Saturation Visible on Aerial Imagery (C9)
  - Stunted or Stressed Plants (D1)
  - Geomorphic Position (D2)
  - Shallow Aquitard (D3)
  - FAC-Neutral Test (D5)
  - Microtopographic Relief (D4)

**Field Observations:**

| Surface Water Present? | Yes ☐ No ☒ Depth (inches): _____ |
| Water Table Present?   | Yes ☐ No ☒ Depth (inches): _____ |
| Saturation Present?    | Yes ☒ No ☐ Depth (inches): 0 |

**Indicators of Wetland Hydrology Present?**

Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring, well, aerial photos, previous inspections), if available:

Remarks: Wetland hydrology is present and indicated. Data point located in depressional area at base of slope.

Photo:
Data Points 10 and 11

Photo 14. View to the west.

Photo 15. Wetland 3, view to the north.
**WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region**

Project/Site: Lake Elmo airport (21D) Runway 14/32 Relocation  
City/County: Washington  
Sampling Date: 6/7/2017  
Applicant/Owner: Metropolitan Airports Commission  
State: Minnesota  
Sample Point: DP11  
Investigator(s): Brauna Hartzell and Kim Shannon, Mead & Hunt, Inc.  
Section, Township, Range: Section 18, T29N, R20W

**SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.**

| Hydrophytic Vegetation Present? | Yes ☐ No ☐ | Is the Sampled Area within a Wetland? | Yes ☐ No ☐ |
| Hydric Soil Present? | Yes ☐ No ☐ |
| Wetland Hydrology Present? | Yes ☐ No ☐ |

Remarks: (Explain alternative procedures here or in a separate report.) A WETS analysis of the antecedent precipitation indicates the hydrologic conditions on the site were wetter than normal range at the time of investigation. Vegetation is mown and managed periodically.

**VEGETATION - Use scientific names of plants**

<table>
<thead>
<tr>
<th>Tree Stratum (Plot size: ______)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Sapling/Shrub Stratum (Plot size: ______)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
</tr>
<tr>
<td>3.</td>
</tr>
<tr>
<td>4.</td>
</tr>
<tr>
<td>5.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Herb Stratum (Plot size: 5ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Poa pratensis</td>
</tr>
<tr>
<td>2. Stellaria graminea</td>
</tr>
<tr>
<td>3. Trifolium repens</td>
</tr>
<tr>
<td>4. Ranunculus acris</td>
</tr>
<tr>
<td>5. Leucanthemum vulgare</td>
</tr>
<tr>
<td>6. Prunella vulgaris</td>
</tr>
<tr>
<td>7. Trifolium pratense</td>
</tr>
<tr>
<td>8. Plantago lanceolata</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Woody Vine Stratum (Plot size: ______)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
</tr>
</tbody>
</table>

50/20 Thresholds  
20%  
50%  
Tree Stratum  
Sapling/Shrub Stratum  
Herb Stratum  
Woody Vine Stratum  

**Dominance Test worksheet:**  
Number of Dominant Species  
That Are OBL, FACW, or FAC: 0 (A)  
Total Number of Dominant Species Across All Strata: 2 (B)  
Percent of Dominant Species That Are OBI, FACW, or FAC: 0 (A/B)

**Prevalence Index worksheet:**  
Total % Cover of OBL species  
Multiply by:  
OBL species x 1 =  
FACW species x 2 =  
FAC species x 3 = 45  
FACU species x 4 = 308  
UPL species x 5 = 165  
Column Totals: 125 (A) 518 (B)  
Prevalence Index = B/A = 4.14

**Hydrophytic Vegetation Indicators:**  
[ ] Rapid Test for Hydrophytic Vegetation  
[ ] Dominance Test is >50%  
[ ] Prevalence Index < 3.0  
[ ] Morphological Adaptations' (Provide supporting data in Remarks or on a separate sheet)  
[ ] Problematic Hydrophytic Vegetation' (Explain)

1Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Vegetation Strata:**  
Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  
Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.  
Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  
Woody vines – All woody vines greater than 3.28 ft in height.

**Hydrophytic Vegetation Present?**  
Yes ☐ No ☐
SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Color (moist)</th>
<th>%</th>
<th>Color (moist)</th>
<th>%</th>
<th>Type</th>
<th>Loc</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4</td>
<td>SYR 2.5/2</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-6</td>
<td>SYR 2.5/2</td>
<td>94</td>
<td>SYR 4/4</td>
<td>5</td>
<td>C</td>
<td>M</td>
<td>Sandy loam</td>
<td>Small pebbles present</td>
</tr>
<tr>
<td></td>
<td>10YR 2/1</td>
<td>1</td>
<td>M</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-16</td>
<td>10YR 4/4</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>sand</td>
<td></td>
</tr>
</tbody>
</table>

1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.
2Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)

Indicators for Problematic Hydric Soils

- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)
- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Thin Dark Surface (S9) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

1Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

- Type: ______
- Depth (inches): ______

Remarks: Hydric soils are not present. Does not meet hydric soils criteria.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparingly Vegetated Concave Surface (B8)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- Marl Deposits (B15)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Moss Trimmings (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)
- Microtopographic Relief (D4)

Field Observations:

- Surface Water Present? Yes [] No [x]
- Water Table Present? Yes [] No [x]
- Saturation Present? Yes [] No [x]

Depth (inches): ______

Indicators of Wetland Hydrology Present?

- Yes [x] No [x]

Describe Recorded Data (stream gauge, monitoring, well, aerial photos, previous inspections), if available:

Remarks: Wetland hydrology is neither present nor indicated. Appears to be an isolated basin receiving upslope runoff from south and east. Culvert to the west does not appear to connect.

Photo:
Photo 14. View to the west.
### VEGETATION - Use scientific names of plants

<table>
<thead>
<tr>
<th>Tree Stratum (Plot size: ___)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sapling/Shrub Stratum (Plot size: ___)</th>
<th>= Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Herb Stratum (Plot size: 5ft)</th>
<th>= Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Poa pratensis</td>
<td>45 x FACU</td>
</tr>
<tr>
<td>2. Stellaria graminea</td>
<td>35 x UPL</td>
</tr>
<tr>
<td>3. Trifolium repens</td>
<td>10 x FACU</td>
</tr>
<tr>
<td>4. Taraxacum officinale</td>
<td>5 x FACU</td>
</tr>
<tr>
<td>5. Trifolium pratense</td>
<td>5 x FACU</td>
</tr>
<tr>
<td>6. Glechoma hederacea</td>
<td>2 x FACU</td>
</tr>
<tr>
<td>7. Equisetum arvense</td>
<td>1 x FACU</td>
</tr>
<tr>
<td>8.</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Woody Vine Stratum (Plot size: ___)</th>
<th>= Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
</tbody>
</table>

#### 50/20 Thresholds
- Tree Stratum: 20% 50%
- Sapling/Shrub Stratum
- Herb Stratum: 21% 52%
- Woody Vine Stratum

#### Dominance Test worksheet:
- Number of Dominant Species
- Total Number of Dominant Species Across All Strata: 2 (B)
- Percent of Dominant Species That Are OBI, FACW, or FAC: 0 (A/B)

#### Prevalence Index worksheet:
- Total % Cover of OBL, FACW, or FAC
- Multiplying by: 1 = 1
- OBL species: 67
- FACW species: 35
- FAC species: 1
- UPL species: 3
- Column Totals: 103 (A)
- Prevalence Index = 546 (B)

### Hydrophytic Vegetation Indicators:
- Rapid Test for Hydrophytic Vegetation
- Dominance Test is <50%
- Prevalence Index is <3.0
- Morphological Adaptations” (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation” (Explain)

### Definitions of Vegetation Strata:
- Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
- Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
- Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
- Woody vines – All woody vines greater than 3.28 ft in height.
SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Color (moist)</th>
<th>%</th>
<th>Color (moist)</th>
<th>%</th>
<th>Type</th>
<th>Loc</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-3</td>
<td>5YR 4/2</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sandy loam</td>
<td></td>
</tr>
<tr>
<td>3-12</td>
<td>5YR 4/4</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sandy loam</td>
<td></td>
</tr>
</tbody>
</table>

Hydric Soil Indicators:
- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)

1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. 2Location: PL=Pore Lining, M=Matrix.

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Remarks: Hydric soils are not present. Does not meet hydric soils criteria. Soils very hard and dry; dug to refusal.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)
- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)

Secondary Indicators (minimum of two required)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- Marl Deposits (B15)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Field Observations:
- Surface Water Present? Yes □ No X
- Water Table Present? Yes □ No X
- Saturation Present? Yes □ No X

Describe Recorded Data (stream gauge, monitoring, well, aerial photos, previous inspections), if available:

Remarks: Wetland hydrology is not present nor indicated. Ground very hard and dry.
Data points 12 and 13

Photo 16. View to the north.
**WETLAND DETERMINATION DATA FORM — Northcentral and Northeast Region**

**Project/Site:** Lake Elmo airport (21D) Runway 14/32 Relocation  
**City/County:** Washington  
**Applicant/Owner:** Metropolitan Airports Commission  
**State:** Minnesota  
**Section, Township, Range:** Section 18, T29N, R20W  
**Investigator(s):** Brauna Hartzell and Kim Shannon, Mead & Hunt, Inc.  
**Sample Point:** DP13  
**Sampling Date:** 6/7/2017

---

**VEGETATION - Use scientific names of plants**

<table>
<thead>
<tr>
<th>Tree Stratum (Plot size: _____)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
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<td>2.</td>
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<td>3.</td>
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<tr>
<td>4.</td>
<td></td>
<td></td>
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<tr>
<td>5.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sapling/Shrub Stratum (Plot size: _____)</th>
<th>Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
</tr>
</tbody>
</table>

**Herb Stratum (Plot size: 5ft) | Total Cover |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>Juncus tenuis</strong></td>
<td>40 X FAC</td>
</tr>
<tr>
<td>2. <strong>Glyceria grandis</strong></td>
<td>25 X OBL</td>
</tr>
<tr>
<td>3. <strong>Carex lasiocarpa</strong></td>
<td>10 OBL</td>
</tr>
<tr>
<td>4. <strong>Rumex crispus</strong></td>
<td>2 FAC</td>
</tr>
<tr>
<td>5. <strong>Equisetum arvense</strong></td>
<td>3 FAC</td>
</tr>
<tr>
<td>6. <strong>Phalaris arundinacea</strong></td>
<td>3 FACW</td>
</tr>
<tr>
<td>7. <strong>Trifolium repens</strong></td>
<td>1 FACU</td>
</tr>
<tr>
<td>8. <strong>Carex scoparia</strong></td>
<td>1 FACW</td>
</tr>
<tr>
<td>9.</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td></td>
</tr>
</tbody>
</table>

**Woody Vine Stratum (Plot size: _____) | Total Cover |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
</tbody>
</table>

**Remarks:** Large area of matted vegetation due to inundation and some mowing on west side. Low area situated between two hills; probably remnant surface before runway construction/grading. Cattails (Typha sp.) present just outside 5ft sample area.

---

**SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.**

<table>
<thead>
<tr>
<th>Vegetation</th>
<th>Present?</th>
<th>Investigator(s)</th>
<th>Applicant/Owner</th>
<th>Landform (hillslope, terrace, etc.):</th>
<th>Basin Local relief (concave, convex, none):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydric Soil</td>
<td>Yes ☑ No ☐</td>
<td>Brauna Hartzell and Kim Shannon, Mead &amp; Hunt, Inc.</td>
<td>Metropolitan Airports Commission</td>
<td>Basin Local relief (concave, convex, none):</td>
<td>Basin Local relief (concave, convex, none):</td>
</tr>
</tbody>
</table>

**50/20 Thresholds**

- **Tree Stratum:** 50%  
- **Sapling/Shrub Stratum:** 20%  
- **Herb Stratum:** 17%  
- **Woody Vine Stratum:** 42%

**Dominance Test worksheet:**

- **Number of Dominant Species:** 2 (A)  
- **Total Number of Dominant Species Across All Strata:** 2 (B)  
- **Percent of Dominant Species:** 100 (A/B)

**Prevalence Index worksheet:**

- **Total % Cover of OBL, FACW, or FAC:** 85 (A)  
- **Prevalence Index:** 0.142 (B)

**Hydrophytic Vegetation Indicators:**

- **Rapid Test for Hydrophytic Vegetation:** Yes ☑ No ☐  
- **Prevalence Index < 3.0:** Yes ☑ No ☐  
- **Morphological Adaptations** (Provide supporting data in Remarks or on a separate sheet): Yes ☑ No ☐  
- **Problematic Hydrophytic Vegetation** (Explain): Yes ☑ No ☐

**Definitions of Vegetation Strata:**
- **Tree** — Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.  
- **Sapling/shrub** — Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.  
- **Herb** — All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.  
- **Woody vines** — All woody vines greater than 3.28 ft in height.

**Hydrophytic Vegetation Present?** Yes ☑ No ☐
SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Color (moist)</th>
<th>%</th>
<th>Color (moist)</th>
<th>%</th>
<th>Type1</th>
<th>Loc2</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2</td>
<td>5YR 3/2</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sand</td>
<td>With organic material</td>
</tr>
<tr>
<td>2-6</td>
<td>5YR 4/4</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sand</td>
<td></td>
</tr>
<tr>
<td>6-12</td>
<td>5YR 4/1</td>
<td>97</td>
<td>5YR 4/6</td>
<td>3</td>
<td></td>
<td></td>
<td>Sandy loam</td>
<td></td>
</tr>
<tr>
<td>12-18</td>
<td>5YR 3/1</td>
<td>90</td>
<td>5YR 5/6</td>
<td>10</td>
<td></td>
<td></td>
<td>Sandy loam</td>
<td></td>
</tr>
</tbody>
</table>

1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. 2Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)

Indicators for Problematic Hydric Soils:

- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)
- Polyvalue Below Surface (S8) (LRR R, MLRA 149 B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Redox Depressions (F8)
- Thin Muck Surface (C7)
- Red Parent Material (F21)

Hydric Soil Present? Yes ☑ No ☐

Restrictive Layer (if observed):

Type: ______

Depth (inches): ______

Remarks: Hydric soils are present. Meets hydric soil criterion Depleted Matrix (F3). Despite nearby soil profile disturbance from rutting, profile appears intact here.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Inundation Visible on Aerial Imagery(B7)
- Sparsely Vegetated Concave Surface (B8)

Secondary Indicators (minimum of two required)

- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- Marl Deposits (B15)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Indicators of Wetland Hydrology Present?

Yes ☑ No ☐

Field Observations:

Surface Water Present? Yes ☑ No ☒ Depth (inches): ______

Water Table Present? Yes ☑ No ☒ Depth (inches): ______

Saturation Present? Yes ☐ No ☑ Depth (inches): 6 (includes capillary fringe)

Describe Recorded Data (stream gauge, monitoring, well, aerial photos, previous inspections), if available:

Remarks: Wetland hydrology is present and indicated. Data point in low area situated between knolls. An aerial photo review indicated saturation was visible on a number of photos. See report for discussion.

Photo:
Data points 12 and 13

Photo 16. View to the north.

Photo 17. Soil disturbance north of data point locations.
WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Lake Elmo airport (21D) Runway 14/32 Relocation
City/County: Washington
Sampling Date: 6/7/2017
Applicant/Owner: Metropolitan Airports Commission
State: Minnesota
Sample Point: DP14
Investigator(s): Brauna Hartzell and Kim Shannon, Mead & Hunt, Inc.

Section, Township, Range: Section 18, T29N, R20W

Landform (hillslope, terrace, etc.): bench
Local relief (concave, convex, none): none
Subregion (LRR or MLRA): K/153
Soil Map Unit Name: Auburndale silt loam

Are climatic hydrologic conditions on the site typical for this time of year? Yes □ No □ (If no, explain in Remarks.)
Are Vegetation, Soil, or Hydrology significantly disturbed? □ Are “Normal Circumstances” present? Yes □ No □
Are Vegetation, Soil, or Hydrology naturally problematic? □ (If needed, explain any answers in Remarks.)

Hydrophytic Vegetation Present? Yes □ No □
Hydric Soil Present? Yes □ No □
Wetland Hydrology Present? Yes □ No □

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present? Yes □ No □</th>
<th>Is the Sampled Area within a Wetland? Yes □ No □</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydric Soil Present? Yes □ No □</td>
<td></td>
</tr>
<tr>
<td>Wetland Hydrology Present? Yes □ No □</td>
<td></td>
</tr>
</tbody>
</table>

Remarks: (Explain alternative procedures here or in a separate report.) A WETS analysis of the antecedent precipitation indicates the hydrologic conditions on the site were wetter than normal range at the time of investigation. Vegetation dominated by invasive species.

VEGETATION - Use scientific names of plants

Tree Stratum (Plot size: _____) Absolute % Cover Dominant Species? Indicator Status
1. 
2. 
3. 
4. 
5. 

Sapling/Shrub Stratum (Plot size: _____) = Total Cover
1. 
2. 
3. 
4. 
5. 

Herb Stratum (Plot size: 5ft) = Total Cover
1. Phalaris arundinacea 40 X FACW
2. Cirsium arvense 60 X FACU
3. 
4. 
5. 
6. 
7. 
8. 
9. 
10. 
11. 
12. 

Woody Vine Stratum (Plot size: _____) = Total Cover
1. 
2. 

50/20 Thresholds

<table>
<thead>
<tr>
<th>Tree Stratum</th>
<th>20%</th>
<th>50%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sapling/Shrub Stratum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Herb Stratum</td>
<td>20</td>
<td>50</td>
</tr>
<tr>
<td>Woody Vine Stratum</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBI, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:
Total % Cover of OBL species x 1 =
FACW species 40 x 2 = 80
FAC species _____ x 3 =
FACU species 60 x 4 = 240
UPL species _____ x 5 =
Column Totals: 100 (A) 320 (B)
Prevalence Index = B/A = 3.2

Hydrophytic Vegetation Indicators:
Rapid Test for Hydrophytic Vegetation
Dominance Test is >50%
Prevalence Index is <3.0
Morphological Adaptations’ (Provide supporting data in Remarks or on a separate sheet)
Problematic Hydrophytic Vegetation’ (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:
Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes □ □ No □
Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Color (moist)</th>
<th>%</th>
<th>Color (moist)</th>
<th>%</th>
<th>Type</th>
<th>Loc</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-16</td>
<td>5YR 3/2</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16-32</td>
<td>5YR 4/4</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1Type: \(C=\) Concentration, \(D=\) Depletion, \(RM=\) Reduced Matrix, \(CS=\) Covered or Coated Sand Grains.  
2Location: \(PL=\) Pore Lining, \(M=\) Matrix.

Hydric Soil Indicators:
- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)

Indicators for Problematic Hydric
- 2 cm Muck - (A10) (LRR K, L, MLRA 149B)
- 5 cm Peat or Mucky Peat - (S3) (LRR K, L, R)
- Dark Surface - (S7) (LRR K, L)
- Polyvalue Below Surface - (S8) (LRR K, L)
- Polyvalue Below Surface - (S8) (LRR K, L)
- Thin Dark Surface - (S9) (LRR K, L)
- Iron-Manganese Masses - (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

Restrictive Layer (if observed):
Type: ______
Depth (inches): ______

Remarks: Hydric soils are not present. Does not meet hydric soils criteria.

Hydric Soil Present? Yes No

Wetland Hydrology Indicators:
- Primary Indicators (minimum of one is required; check all that apply)
  - Surface Water (A1)
  - High Water Table (A2)
  - Saturation (A3)
  - Water Marks (B1)
  - Sediment Deposits (B2)
  - Drift Deposits (B3)
  - Algal Mat or Crust (B4)
  - Iron Deposits (B5)
  - Inundation Visible on Aerial Imagery(B7)
  - Sparsely Vegetated Concave Surface (B8)

- Secondary Indicators (minimum of two required)
  - Water-Stained Leaves (B9)
  - Aquatic Fauna (B13)
  - Marl Deposits (B15)
  - Hydrogen Sulfide Odor (C1)
  - Oxidized Rhizospheres on Living Roots (C3)
  - Presence of Reduced Iron (C4)
  - Recent Iron Reduction in Tilled Soils (C6)
  - Thin Muck Surface (C7)
  - Other (Explain in Remarks)
  - Surface Soil Cracks (B6)
  - Drainage Patterns (B10)
  - Moss Trim Lines (B16)
  - Dry-Season Water Table (C2)
  - Crayfish Burrows (C8)
  - Saturation Visible on Aerial Imagery (C9)
  - Stunted or Stressed Plants (D1)
  - Geomorphic Position (D2)
  - Shallow Aquitard (D3)
  - FAC-Neutral Test (D5)
  - Microtopographic Relief (D4)

Field Observations:
- Surface Water Present? Yes No Depth (inches): ______
- Water Table Present? Yes No Depth (inches): ______
- Saturation Present? Yes No Depth (inches): ______

Indicators of Wetland Hydrology Present?
- Yes No

Describe Recorded Data (stream gauge, monitoring, well, aerial photos, previous inspections), if available:

Remarks: Wetland hydrology is neither present nor indicated.

Photo:
Data points 14 and 15

Photo 18. View to the south.
WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Lake Elmo airport (21D) Runway 14/32 Relocation  City/County: Washington  Sampling Date: 6/7/2017
Applicant/Owner: Metropolitan Airports Commission  State: Minnesota  Sample Point: DP15
Investigator(s): Brauna Hartzell and Kim Shannon, Mead & Hunt, Inc.  Section, Township, Range: Section 18, T29N, R20W

Landform (hillslope, terrace, etc.): basin  Local relief (concave, convex, none): concave  Slope (%): <1%
Subregion (LRR or MLRA): K/153  Lat: 45.00175° N  Long: 92.849016° W  Datum: WGS 84
Soil Map Unit Name: Auburndale silt loam

Are climatic hydrologic conditions on the site typical for this time of year? Yes
Soil Map Unit Name:
Subregion (LRR or MLRA):
Landform (hillslope, terrace, etc.):
Investigator(s):
Applicant/Owner:
Project/Site:

Remarks:

Hydric Soil Present? Yes ☒ No ☐
Are Vegetation ☒, Soil ☐, or Hydrology ☐ significantly disturbed?
Are "Normal Circumstances" present? Yes ☒ No ☐
Are Vegetation ☒, Soil ☐, or Hydrology ☐ naturally problematic?

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☒ No ☐  Is the Sampled Area within a Wetland? Yes ☒ No ☐
Hydric Soil Present? Yes ☒ No ☐
Yes ☒ No ☐

Wetland Hydrology Present? Yes ☒ No ☐  If yes, optional Wetland Side ID: 5

Remarks: (Explain alternative procedures here or in a separate report.) A WETS analysis of the antecedent precipitation indicates the hydrologic conditions on the site were wetter than normal range at the time of investigation. Vegetation dominated by invasive species.

VEGETATION - Use scientific names of plants

<table>
<thead>
<tr>
<th>Tree Stratum (Plot size: _____)</th>
<th>Absolute % Cover</th>
<th>Dominant Species</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sapling/Shrub Stratum (Plot size: _____)</th>
<th>Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Herb Stratum (Plot size: 5ft)</th>
<th>Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Phalaris arundinacea</td>
<td>85</td>
</tr>
<tr>
<td>2. Persicaria amphibia</td>
<td>5</td>
</tr>
<tr>
<td>3.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Woody Vine Stratum (Plot size: _____)</th>
<th>Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
</tbody>
</table>

Remarks: (Include photo numbers here or on a separate sheet.) Hydrophytic vegetation is present. Dead, matted Persicaria stalks from previous year inhibiting Reed canary grass growth. Data point located in closed depressional basin about 4-5 feet lower than paired upland point (DP 14) and about 20 feet to the south.

50/20 Thresholds

<table>
<thead>
<tr>
<th>Tree Stratum</th>
<th>20%</th>
<th>50%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

| Sapling/Shrub Stratum | 18 |
|                       | 45 |

<table>
<thead>
<tr>
<th>Herb Stratum</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total % Cover Multiply by:</td>
<td></td>
</tr>
<tr>
<td>OBL species</td>
<td>5 x 1 = 5</td>
</tr>
<tr>
<td>FACW species</td>
<td>85 x 2 = 170</td>
</tr>
<tr>
<td>FAC species</td>
<td>3 x 3 =</td>
</tr>
<tr>
<td>FACU species</td>
<td>4 x 4 =</td>
</tr>
<tr>
<td>UPL species</td>
<td>5 x 5 =</td>
</tr>
<tr>
<td>Column Totals:</td>
<td>90 (A) 175 (B)</td>
</tr>
<tr>
<td>Prevalence Index = B/A = 1.94</td>
<td></td>
</tr>
</tbody>
</table>

Hydrophytic Vegetation Indicators:
☒ Rapid Test for Hydrophytic Vegetation
☒ Dominance Test is >50%
☒ Prevalence Index is <3.0
☒ Morphological Adaptations' (Provide supporting data in Remarks or on a separate sheet)
☒ Problematic Hydrophytic Vegetation' (Explain)

Definitions of Vegetation Strata:
Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ☒ No ☐
SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Matrix</th>
<th>Color (moist)</th>
<th>%</th>
<th>Redox Features</th>
<th>%</th>
<th>Type1</th>
<th>Loc2</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4</td>
<td>10YR 4/1</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Silt loam</td>
<td></td>
</tr>
<tr>
<td>4-8</td>
<td>10YR 4/1</td>
<td>90</td>
<td>10</td>
<td>C</td>
<td>M</td>
<td>Silt loam</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8-12</td>
<td>7.5YR 2.5/1</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Silt loam</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12-16</td>
<td>10YR 4/1</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Silt loam</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. 2Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:
- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)

Indicators for Problematic Hydric
- 2 cm Muck - (A10) (LRR K, MLRA 149B)
- 5 cm Peat or Mucky Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (T46) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)
- Other (Explain in Remarks)

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Remarks: Hydric soils are present. Meets hydric soil criteria Depleted Matrix (F3) and Redox Depressions (F8).

HYDROLOGY

Wetland Hydrology Indicators:
- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery(B7)
- Sparsely Vegetated Concave Surface (B8)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- Marl Deposits (B15)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)
- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)
- Microtopographic Relief (D4)

Field Observations:
- Surface Water Present? Yes No Depth (inches): _____
- Water Table Present? Yes No Depth (inches): 3
- Saturation Present? Yes No Depth (inches): 0

Indicators of Wetland Hydrology Present?
Yes No

Describe Recorded Data (stream gauge, monitoring, well, aerial photos, previous inspections), if available:

Remarks: Wetland hydrology is present and indicated.

Photo:
Data points 14 and 15

Photo 18. View to the south.
**Vegetation** - Use scientific names of plants

<table>
<thead>
<tr>
<th>Tree Stratum (Plot size: ______)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>= Total Cover</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sapling/Shrub Stratum (Plot size: ______)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
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<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>= Total Cover</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Herb Stratum (Plot size: 5ft)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Solidago canadensis</td>
<td>5</td>
<td>x</td>
<td>FACU</td>
</tr>
<tr>
<td>2. Arctium minus</td>
<td>4</td>
<td>x</td>
<td>FACU</td>
</tr>
<tr>
<td>3. Ambrosia trifida</td>
<td>3</td>
<td></td>
<td>FACU</td>
</tr>
<tr>
<td>4. Asclepias syrica</td>
<td>3</td>
<td></td>
<td>FACU</td>
</tr>
<tr>
<td>5. Glycine max</td>
<td>3</td>
<td></td>
<td>UPL</td>
</tr>
<tr>
<td>6. Chenopodium album</td>
<td>1</td>
<td></td>
<td>FACU</td>
</tr>
<tr>
<td>7.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>= Total Cover</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Woody Vine Stratum (Plot size: ______)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>= Total Cover</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**50/20 Thresholds**
- Tree Stratum: 20%
- Sapling/Shrub Stratum: 40%
- Herb Stratum: 10%
- Woody Vine Stratum: 50%

**Dominance Test worksheet:**
- Number of Dominant Species: 0 (A)
- Total Number of Dominant Species Across All Strata: 2 (B)
- Percent of Dominant Species That Are OBI, FACW, or FAC: 0 (A/B)

**Prevalence Index worksheet:**
- Total % Cover of OBL species: = 1
- Total % Cover of FACW species: = 2
- Total % Cover of FAC species: = 3
- Total % Cover of UPL species: = 4
- Column Totals: 19 (A) 76 (B)
- Prevalence Index = B/A = 4.0

**Hydrophytic Vegetation Indicators:**
- Rapid Test for Hydrophytic Vegetation
- Dominance Test is >50%
- Prevalence Index is <3.0
- Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation (Explain)

**Definitions of Vegetation Strata:**
- Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
- Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
- Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
- Woody vines – All woody vines greater than 3.28 ft in height.

**Hydrophytic Vegetation Present?**
- Yes [ ] No [ ]
### SOIL

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Color (moist)</th>
<th>%</th>
<th>Color (moist)</th>
<th>%</th>
<th>Type</th>
<th>Loc</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-16</td>
<td>5YR 3/3</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sandy loam</td>
<td></td>
</tr>
</tbody>
</table>

1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.  
2Location: PL=Pore Lining, M=Matrix.

#### Hydric Soil Indicators:

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Histosol (A1)</td>
<td>Stripped Matrix (S6)</td>
</tr>
<tr>
<td>Histosic Epipedon (A2)</td>
<td>Dark Surface (S7) (LRR R, MLRA 149B)</td>
</tr>
<tr>
<td>Black Histic (A3)</td>
<td>Polyvalue Below Surface (S8) (LRR R, MLRA 149 B)</td>
</tr>
<tr>
<td>Hydrogen Sulfide (A4)</td>
<td>Thin Dark Surface (S9) (LRR R, MLRA 149B)</td>
</tr>
<tr>
<td>Stratified Layers (A5)</td>
<td>Loamy Mucky Mineral (F1) (LRR K, L)</td>
</tr>
<tr>
<td>Depleted Below Dark Surface (A11)</td>
<td>Loamy Gleyed Matrix (F2)</td>
</tr>
<tr>
<td>Thick Dark Surface (A12)</td>
<td>Depleted Matrix (F3)</td>
</tr>
<tr>
<td>Sandy Mucky Mineral (S1)</td>
<td>Redox Dark Surface (F6)</td>
</tr>
<tr>
<td>Sandy Gleyed Matrix (S4)</td>
<td>Depleted Dark Surface (F7)</td>
</tr>
<tr>
<td>Sandy Redox (S5)</td>
<td>Redox Depressions (F8)</td>
</tr>
</tbody>
</table>

1Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

### HYDROLOGY

#### Wetland Hydrology Indicators:

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface Water (A1)</td>
<td>Water-Stained Leaves (B9)</td>
</tr>
<tr>
<td>High Water Table (A2)</td>
<td>Aquatic Fauna (B13)</td>
</tr>
<tr>
<td>Saturation (A3)</td>
<td>Marl Deposits (B15)</td>
</tr>
<tr>
<td>Water Marks (B1)</td>
<td>Hydrogen Sulfide Odor (C1)</td>
</tr>
<tr>
<td>Sediment Deposits (B2)</td>
<td>Oxidized Rhizospheres on Living Roots (C3)</td>
</tr>
<tr>
<td>Drift Deposits (B3)</td>
<td>Presence of Reduced Iron (C4)</td>
</tr>
<tr>
<td>Algal Mat or Crust (B4)</td>
<td>Recent Iron Reduction in Tilled Soils (C6)</td>
</tr>
<tr>
<td>Iron Deposits (B5)</td>
<td>Thin Muck Surface (C7)</td>
</tr>
<tr>
<td>Inundation Visible on Aerial Imagery(B7)</td>
<td>Other (Explain in Remarks)</td>
</tr>
<tr>
<td>Sparsely Vegetated Concave Surface (B8)</td>
<td></td>
</tr>
</tbody>
</table>

#### Field Observations:

- **Surface Water Present?** Yes ☑ No ☐ Depth (inches): __________
- **Water Table Present?** Yes ☑ No ☐ Depth (inches): __________
- **Saturation Present?** Yes ☑ No ☐ Depth (inches): __________

Describe Recorded Data (stream gauge, monitoring, well, aerial photos, previous inspections), if available:

Remarks: Wetland hydrology is neither present nor indicated.

Photo:
Data point 16

Photo 22. View to the north.
WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Lake Elmo airport (21D) Runway 14/32 Relocation City/County: Washington Sampling Date: 6/8/2017
Applicant/Owner: Metropolitan Airports Commission State: Minnesota Sample Point: DP17
Investigator(s): Brauna Hartzell and Kim Shannon, Mead & Hunt, Inc. Section, Township, Range: Section 18, T29N, R20W

Are climatic hydrologic conditions on the site typical for this time of year? Yes No

Soil Map Unit Name: Auburndale silt loam Subregion (LRR or MLRA): K/153
Landform (hillslope, terrace, etc.): basin Local relief (concave, convex, none): concave

Are Vegetation, Soil, or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No

Are Vegetation, Soil, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydric Soil Present?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Wetland Hydrology Present?</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

Is the Sampled Area within a Wetland? Yes No
If yes, optional Wetland Side ID: 8

Remarks: (Explain alternative procedures here or in a separate report.) A WETS analysis of the antecedent precipitation indicates the hydrologic conditions on the site were wetter than normal range at the time of investigation. Vegetation (herb stratum) dominated by invasive species.

VEGETATION - Use scientific names of plants

<table>
<thead>
<tr>
<th>Tree Stratum (Plot size: 30ft)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Salix nigra</td>
<td>20</td>
<td>X</td>
<td>OBL</td>
</tr>
<tr>
<td>2. Acer negundo</td>
<td>35</td>
<td>X</td>
<td>FAC</td>
</tr>
<tr>
<td>3. Rhamnus cathartica</td>
<td>5</td>
<td></td>
<td>FAC</td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>60</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sapling/Shrub Stratum (Plot size: ___)</th>
<th>= Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Herb Stratum (Plot size: 5ft)</th>
<th>= Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Phalaris arundinacea</td>
<td>98 X FACW</td>
</tr>
<tr>
<td>2. Urtica dioica</td>
<td>2 FAC</td>
</tr>
<tr>
<td>3.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>100 = Total Cover</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Woody Vine Stratum (Plot size: ___)</th>
<th>= Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
</tbody>
</table>

50/20 Thresholds 20% 50%
| Tree Stratum | 12 30 |
| Sapling/Shrub Stratum | 20 50 |
| Herbs Stratum | 20 50 |
| Woody Vines Stratum | 10 |

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBI, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:
Total % Cover of Multiply by:
| OBL species | 20 x 1 = 20 |
| FACW species | 98 x 2 = 196 |
| FAC species | 42 x 3 = 126 |
| FACU species | x 4 = ______ |
| UPL species | x 5 = ______ |

Column Totals: 160 (A) 342 (B)
Prevalence Index = B/A = 2.14

Hydrophytic Vegetation Indicators:
- Rapid Test for Hydrophytic Vegetation
- Dominance Test is >50%
- Prevalence Index is <3.01
- Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation (Explain)

1Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:
Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes No

Remarks: (Include photo numbers here or on a separate sheet.) Hydrophytic vegetation is present. Data point at edge of closed depressional pond. Reed canary grass rings entire pond. Topo break at edge. Thirty feet separates the paired data points with DP 17 (wetland) 4ft lower. Also present, swamp white oak, Ulmus americana and Populus tremuloides in wetlands; topo breaks and understory changes to upland; burdock and honeysuckle present.
SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches) | Color (moist) | Color (moist) | Type | Loc | Texture | Remarks
--- | --- | --- | --- | --- | --- | ---
0-18 | SYR 2.5/2 | 2.5YR 3/6 | C | PL | Loam | PL = oxidized rhizospheres

1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. 2Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)

Indicators for Problematic Hydric

- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)
- Polypressure Below Surface (S8) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Depleted Matrix (F3)
- Red Oxidized Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)

1Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: 
Depth (inches):

Hydric Soil Present? Yes ☑ No 

Remarks: Hydric soils are present. Meets hydric soils criteria Redox Dark Surface (F6) and Redox Depressions (F8)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Sparsely Vegetated Concave Surface (B8)

Secondary Indicators (minimum of two required)

- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- Marl Deposits (B15)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)
- FAC-Neutral Test (D5)
- Microtopographic Relief (D4)

Field Observations:

Surface Water Present? Yes ☑ No 
Water Table Present? Yes ☑ No 
Saturation Present? Yes ☑ No 

Indicators of Wetland Hydrology Present? Yes ☑ No 

Describe Recorded Data (stream gauge, monitoring, well, aerial photos, previous inspections), if available:

Remarks: Wetland hydrology is present and indicated; surface water 3 ft to the north. Data point at edge of closed depressional pond. Historic aerial imagery shows this area to be consistently inundated.

Photo:
Data Point 17

Photo 23. Soil pit.

Photo 24. Wetland 8, view to the north.
WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Lake Elmo airport (21D) Runway 14/32 Relocation  City/County: Washington  Sampling Date: 6/8/2017
Applicant/Owner: Metropolitan Airports Commission  State: Minnesota  Sample Point: DP18
Investigator(s): Brauna Hartzell and Kim Shannon, Mead & Hunt, Inc.  Section, Township, Range: Section 18, T29N, R20W

Vegetation

Are climatic hydrologic conditions on the site typical for this time of year?  Yes  No

Soil Map Unit Name: Antigo silt loam, 2 to 6 percent slopes  Subregion (LRR or MLRA): K/153
Local relief (concave, convex, none): none  Landform (hillslope, terrace, etc.): hillslope

Are Vegetation  , Soil  , or Hydrology  significantly disturbed?  Yes  No

Are Vegetation  , Soil  , or Hydrology  naturally problematic?  Yes  No

Hydrophytic Vegetation Indicators:
- Rapid Test for Hydrophytic Vegetation
- Dominance Test is >50%
- Prevalence Index is <3.0

Remarks: (Explain alternative procedures here or in a separate report.) A WETS analysis of the antecedent precipitation indicates the hydrologic conditions on the site were wetter than normal range at the time of investigation. In an area mowed infrequently but data point at edge of unmown.

VEGETATION - Use scientific names of plants

<table>
<thead>
<tr>
<th>Tree Stratum (Plot size: ______)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sapling/Shrub Stratum (Plot size: ______)</th>
<th>Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Herb Stratum (Plot size: 5ft)</th>
<th>Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Poa pratensis</td>
<td>70  X FACU</td>
</tr>
<tr>
<td>2. Plantago major</td>
<td>20  FACU</td>
</tr>
<tr>
<td>3. Stellaria graminea</td>
<td>2   UPL</td>
</tr>
<tr>
<td>4. Stellaria media</td>
<td>2   FACU</td>
</tr>
<tr>
<td>5. Taraxacum officinale</td>
<td>7   FACU</td>
</tr>
<tr>
<td>6. Trifolium pretense</td>
<td>3   FACU</td>
</tr>
<tr>
<td>7. Persicaria amphibian</td>
<td>2   OBL</td>
</tr>
<tr>
<td>8. Lotus corniculatus</td>
<td>2   FACU</td>
</tr>
<tr>
<td>9.</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Woody Vine Stratum (Plot size: ______)</th>
<th>Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
</tbody>
</table>

50/20 Thresholds

<table>
<thead>
<tr>
<th>Tree Stratum</th>
<th>20%</th>
<th>50%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sapling/Shrub Stratum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Herb Stratum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Woody Vine Stratum</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBI, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of OBL species: 2 x 1 = 2
FACW species: x 2 =
FAC species: x 3 =
FACU species: x 4 = 416
UPL species: x 5 = 10
Column Totals: 108 (A) 428 (B)
Prevalence Index = B/A = 3.96

Hydrophytic Vegetation Present?  Yes  No

Definitions of Vegetation Strata:
- Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
- Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
- Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
- Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present?  Yes  No

Remarks: (Include photo numbers here or on a separate sheet.) Hydrophytic vegetation not present. Persicaria amphibia appears to be spreading rhizomatically. DP18 is separated from its paired wetland data point (DP 19) by about 30 ft and is about 1-2 feet higher in elevation.
### Profile Description:
(Describe the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Matrix</th>
<th>Color (moist)</th>
<th>%</th>
<th>Color (moist)</th>
<th>%</th>
<th>Type</th>
<th>Loc</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-8</td>
<td></td>
<td>5YR 4/2</td>
<td>99</td>
<td>5YR 4/4</td>
<td>1</td>
<td>C</td>
<td>M</td>
<td>loam</td>
<td></td>
</tr>
<tr>
<td>8-16</td>
<td></td>
<td>5YR 5/6</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Loamy sand</td>
<td></td>
</tr>
</tbody>
</table>

1 Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.  
2 Location: PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:
- Histosol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)

### Restrictive Layer (if observed):
- Type: ______
- Depth (inches): ______

### Remarks:
(Explain in Remarks)

### Hydric Soil Present?
- Yes [ ]
- No [ ]

### Hydrology

#### Wetland Hydrology Indicators:
- Primary Indicators (minimum of one is required; check all that apply)
  - Surface Water (A1)
  - High Water Table (A2)
  - Saturation (A3)
  - Water Marks (B1)
  - Sediment Deposits (B2)
  - Drift Deposits (B3)
  - Algal Mat or Crust (B4)
  - Iron Deposits (B5)
  - Inundation Visible on Aerial Imagery (B7)
  - Sparsely Vegetated Concave Surface (B8)

- Secondary Indicators (minimum of two required)
  - Water-Stained Leaves (B9)
  - Aquatic Fauna (B13)
  - Marl Deposits (B15)
  - Hydrogen Sulfide Odor (C1)
  - Oxidized Rhizospheres on Living Roots (C3)
  - Presence of Reduced Iron (C4)
  - Recent Iron Reduction in Tilled Soils (C6)
  - Thin Muck Surface (C7)
  - Other (Explain in Remarks)
  - Surface Soil Cracks (B6)
  - Drainage Patterns (B10)
  - Moss Trim Lines (B16)
  - Dry-Season Water Table (C2)
  - Crayfish Burrows (C8)
  - Saturation Visible on Aerial Imagery (C9)
  - Stunted or Stressed Plants (D1)
  - Geomorphic Position (D2)
  - Shallow Aquitard (D3)
  - FAC-Neutral Test (D5)
  - Microtopographic Relief (D4)

#### Field Observations:

- Surface Water Present? Yes [ ] No [x]
- Water Table Present? Yes [ ] No [x]
- Saturation Present? Yes [ ] No [x]
- (includes capillary fringe)
- Depth (inches): ______

#### Remarks:
(Explain in Remarks)

- Wetland hydrology is not present nor indicated.

### Photo:
Data points 18 and 19

Photo 25. View to the east.
WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Lake Elmo airport (21D) Runway 14/32 Relocation  City/County: Washington  Sampling Date: 6/8/2017
Applicant/Owner: Metropolitan Airports Commission  State: Minnesota  Sample Point: DP19
Investigator(s): Brauna Hartzell and Kim Shannon, Mead & Hunt, Inc.  Section, Township, Range: Section 18, T29N, R20W

Landform (hillslope, terrace, etc.): basin  Local relief (concave, convex, none): concave  Slope (%): <1%
Subregion (LRR or MLRA): K/153  Lat: 44.99334° N  Long: 92.8522° W  Datum: WGS 84
Soil Map Unit Name: Aquolls and Histosols, ponded  NWI classification: PEMB

Are climatic hydrologic conditions on the site typical for this time of year?  Yes  No
Are Vegetation __, Soil __, or Hydrology __ significantly disturbed?  Are "Normal Circumstances" present?  Yes  No
Are Vegetation __, Soil __, or Hydrology __ naturally problematic?  (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present?</th>
<th>Is the Sampled Area within a Wetland?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Hydric Soil Present?  Yes  No
Are wetland hydrology present?  Yes  No

50/20 Thresholds

<table>
<thead>
<tr>
<th>Tree Stratum (Plot size: _____)</th>
<th>Absolute % Cover</th>
<th>Dominant Species?</th>
<th>Indicator Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>50/20 Thresholds</th>
<th>20%</th>
<th>50%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tree Stratum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sapling/Shrub Stratum</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>Herb Stratum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Woody Vine Stratum</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Dominance Test worksheet:

<table>
<thead>
<tr>
<th>Number of Dominant Species</th>
<th>Total Number of Dominant Species Across All Strata</th>
<th>Percent of Dominant Species That Are OBI, FACW, or FAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>2</td>
<td>100 (A/B)</td>
</tr>
</tbody>
</table>

Prevalence Index worksheet:

<table>
<thead>
<tr>
<th>Total % Cover of</th>
<th>Multiply by:</th>
</tr>
</thead>
<tbody>
<tr>
<td>OBL species</td>
<td>10 x 1 = 10</td>
</tr>
<tr>
<td>FACW species</td>
<td>105 x 2 = 210</td>
</tr>
<tr>
<td>FAC species</td>
<td>___ x 3 = ___</td>
</tr>
<tr>
<td>FACU species</td>
<td>___ x 4 = ___</td>
</tr>
<tr>
<td>UPL species</td>
<td>___ x 5 = ___</td>
</tr>
<tr>
<td>Column Totals</td>
<td>116 (A) - 234 (B)</td>
</tr>
<tr>
<td>Prevalence Index</td>
<td>= B/A = 2.02</td>
</tr>
</tbody>
</table>

Hydrophytic Vegetation Indicators:

- Rapid Test for Hydrophytic Vegetation
- Dominance Test is >50%
- Prevalence Index is <3.01
- Morphological Adaptations' (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation' (Explain)

1Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

- Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
- Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
- Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
- Woody vines – All woody vines greater than 3.28 ft in height.

<table>
<thead>
<tr>
<th>Woody Vine Stratum (Plot size: _____)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>116 = Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Remarks: (Include photo numbers here or on a separate sheet.) Hydrophytic vegetation is present. About 30 feet separates DP19 from paired upland data point (DP18); about 1-2 feet lower in elevation. Data point located within depressional basin. Large stand of cattails to east in standing water. Standing water nearly completely covered by Typha sp.
SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Color (moist)</th>
<th>%</th>
<th>Color (moist)</th>
<th>%</th>
<th>Type</th>
<th>Loc</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-16</td>
<td>5YR 3/1</td>
<td>92</td>
<td>5YR 4/6</td>
<td>8</td>
<td>C</td>
<td>M, PL</td>
<td>loam</td>
<td></td>
</tr>
</tbody>
</table>

**Typology**: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.  **Location**: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators**:
- Stripped Matrix (S6)
- Dark Surface (S7) (LRR R, MLRA 149B)
- Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
- Loamy Mucky Mineral (F1) (LRR K, L)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Redox Depressions (F8)

**Indicators for Problematic Hydric**
- 2 cm Muck - (A10) (LRR K, L, MLRA 149B)
- 5 cm Peat or Mucky Peat (S3) (LRR K, L, R)
- Dark Surface (S7) (LRR K, L)
- Polyvalue Below Surface (S8) (LRR K, L)
- Thin Dark Surface (S9) (LRR K, L)
- Iron-Manganese Masses (F12) (LRR K, L, R)
- Piedmont Floodplain Soils (F19) (MLRA 149B)
- Mesic Spodic (T6) (MLRA 144A, 145, 149B)
- Red Parent Material (F21)
- Very Shallow Dark Surface (TF12)

**Restrictive Layer (if observed)**:
- Hydric Soil Present? Yes ☑ No ☐
- Depth (inches): __________

**Remarks**: Hydric soils are present. Meets hydric soils criteria Redox Dark Surface (F6). Also, meets NYCHS criteria 3 (long-duration flooding or saturation) as below.

**HYDROLOGY**

**Wetland Hydrology Indicators**:
- _Surface Water (A1)
- _High Water Table (A2)
- _Saturation (A3)
- _Water Marks (B1)
- _Sediment Deposits (B2)
- _Drift Deposits (B3)
- _Algal Mat or Crust (B4)
- _Iron Deposits (B5)
- _Inundation Visible on Aerial Imagery(B7)
- _Sparsely Vegetated Concave Surface (B8)

**Secondary Indicators** (minimum of two required)
- _Surface Soil Cracks (B6)
- _Drainage Patterns (B10)
- _Moss Trim Lines (B16)
- _Dry-Season Water Table (C2)
- _Crayfish Burrows (C8)
- _Saturation Visible on Aerial Imagery (C9)
- _Stunted or Stressed Plants (D1)
- _Geomorphic Position (D2)
- _Shallow Aquitard (D3)
- _FAC-Neutral Test (D5)
- _Microtopographic Relief (D4)

**Field Observations**:
- Surface Water Present? Yes ☑ No ☐ Depth (inches): 4
- Water Table Present? Yes ☑ No ☐ Depth (inches): 8
- Saturation Present? Yes ☑ No ☐ Depth (inches): 0

**Indicators of Wetland Hydrology Present?**
- Yes ☑ No ☐

**Remarks**: Wetland hydrology is present and indicated. Standing water 6-8 feet to east. Data point located in closed depressional basin. Historic aerial imagery shows this area to be consistently inundated. Also, area experiences long-duration flooding or saturation.

Photo:
Data points 18 and 19

Photo 25. View to the east.

Photo 26. Wetland 9 from the west side, view to the east.
Photo 27. Wetland 9 from east side, view to the west.

Photo 28. Wetland 9 from the south, view to the north.
Additional Photos


Photo 20. Wetland 6. At Culvert, view to the west.
Appendix H. MNRAM Functional Assessment Forms
## Wetland Functional Assessment Summary
### 21D - Lake Elmo Airport

<table>
<thead>
<tr>
<th>Wetland Name</th>
<th>WS</th>
<th>SA</th>
<th>Location</th>
<th>Hydrogeomorphology</th>
<th>Maint. of Hydrologic Regime</th>
<th>Flood/ Stormwater/ Attenuation</th>
<th>Downstream Water Quality</th>
<th>Maint. of Wetland Water Quality</th>
<th>Shoreline Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland 1</td>
<td>37</td>
<td>6</td>
<td>82-029-20-19-007-B</td>
<td>Depressional/Flow-through (apparent inlet and outlet), Depressional/Flow-through (apparent inlet and outlet)</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Wetland 2</td>
<td>37</td>
<td>6</td>
<td>82-029-20-19-005-B</td>
<td>Depressional/Isolated (no discernable inlets or outlets)</td>
<td>High</td>
<td>High</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Wetland 3</td>
<td>37</td>
<td>6</td>
<td>82-029-20-18-011-A</td>
<td>Depressional/Isolated (no discernable inlets or outlets)</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Wetland 4</td>
<td>37</td>
<td>6</td>
<td>82-029-20-18-008-B</td>
<td>Depressional/Isolated (no discernable inlets or outlets)</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Wetland 5</td>
<td>37</td>
<td>6</td>
<td>82-029-20-18-008-C</td>
<td>Depressional/Isolated (no discernable inlets or outlets)</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Wetland 6</td>
<td>37</td>
<td>6</td>
<td>82-029-20-18-012-A</td>
<td>Depressional/Flow-through (apparent inlet and outlet), Depressional/Flow-through (apparent inlet and outlet)</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Wetland 7</td>
<td>37</td>
<td>6</td>
<td>82-029-20-18-013-A</td>
<td>Depressional/Flow-through (apparent inlet and outlet), Depressional/Flow-through (apparent inlet and outlet)</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Wetland 8</td>
<td>37</td>
<td>6</td>
<td>82-029-20-18-003-B</td>
<td>Depressional/Isolated (no discernable inlets or outlets)</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>Moderate</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Wetland 9</td>
<td>37</td>
<td>6</td>
<td>82-029-20-18-002-B</td>
<td>Depressional/Flow-through (apparent inlet and outlet), Depressional/Flow-through (apparent inlet and outlet)</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>
# Wetland Functional Assessment Summary
## 21D - Lake Elmo Airport

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland 1</td>
<td>82-029-20-19-007-B</td>
<td>Moderate</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
<td>Low</td>
<td>Combination Discharge, Recharge</td>
<td>Not Applicable</td>
<td>Moderate</td>
<td>Exceptional</td>
</tr>
<tr>
<td>Wetland 2</td>
<td>82-029-20-19-005-B</td>
<td>Moderate</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
<td>Combination Discharge, Recharge</td>
<td>Not Applicable</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td>Wetland 3</td>
<td>82-029-20-18-011-A</td>
<td>Moderate</td>
<td>Not Applicable</td>
<td>Low</td>
<td>Not Applicable</td>
<td>Combination Discharge, Recharge</td>
<td>Not Applicable</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td>Wetland 4</td>
<td>82-029-20-18-008-B</td>
<td>Moderate</td>
<td>Not Applicable</td>
<td>Moderate</td>
<td>Not Applicable</td>
<td>Combination Discharge, Recharge</td>
<td>Not Applicable</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td>Wetland 5</td>
<td>82-029-20-18-008-C</td>
<td>Moderate</td>
<td>Low</td>
<td>Low</td>
<td>Not Applicable</td>
<td>Combination Discharge, Recharge</td>
<td>Not Applicable</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td>Wetland 6</td>
<td>82-029-20-18-012-A</td>
<td>Moderate</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
<td>Combination Discharge, Recharge</td>
<td>Not Applicable</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td>Wetland 7</td>
<td>82-029-20-18-013-A</td>
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<td>Not Applicable</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
<td>Combination Discharge, Recharge</td>
<td>Not Applicable</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td>Wetland 8</td>
<td>82-029-20-18-003-B</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Not Applicable</td>
<td>Combination Discharge, Recharge</td>
<td>Not Applicable</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td>Wetland 9</td>
<td>82-029-20-18-002-B</td>
<td>Low</td>
<td>Moderate</td>
<td>Low</td>
<td>Not Applicable</td>
<td>Discharge</td>
<td>Not Applicable</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
</tbody>
</table>
MnRAM: Site Response Record
For Wetland: Wetland 1
Location: 82-029-20-19-007-B

21D - Lake Elmo Airport

Plant Community: Seasonally Flooded Ba
Cowardin Classification: Circular 39: PEM1A Type 1

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>26-A</td>
<td>Gentle</td>
<td>60%</td>
</tr>
<tr>
<td>26-B</td>
<td>Moderate</td>
<td>40%</td>
</tr>
<tr>
<td>26-C</td>
<td>Steep</td>
<td>0%</td>
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</tbody>
</table>

**Groundwater-specific questions**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>58</td>
<td>Wetland soils Discharge</td>
</tr>
<tr>
<td>59</td>
<td>Subwatershed land use Discharge</td>
</tr>
<tr>
<td>60</td>
<td>Wetland size/soil group Discharge</td>
</tr>
<tr>
<td>61</td>
<td>Wetland hydroperiod Discharge</td>
</tr>
<tr>
<td>62</td>
<td>Inlet/Outlet configuration Discharge</td>
</tr>
<tr>
<td>63</td>
<td>Upland topo relief Discharge</td>
</tr>
</tbody>
</table>

**Additional information**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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<tbody>
<tr>
<td>64</td>
<td>Restoration potential No</td>
</tr>
<tr>
<td>65</td>
<td>LO affected by restoration</td>
</tr>
<tr>
<td>66</td>
<td>Existing size 0.187</td>
</tr>
<tr>
<td>67</td>
<td>Restorable size 0</td>
</tr>
<tr>
<td>68</td>
<td>Potential new wetland 0</td>
</tr>
</tbody>
</table>

**Watershed** St. Croix (Stillwater)

WS# 37 Service Area: 6

For functional ratings, please run the Summary tab report.
This report printed on: 10/26/2017
### Wetland Functional Assessment Summary

<table>
<thead>
<tr>
<th>Wetland Name</th>
<th>Hydrogeomorphology</th>
<th>Maintenance of Hydrologic Regime</th>
<th>Flood/Stormwater Attenuation</th>
<th>Downstream Water Quality</th>
<th>Maintenance of Wetland Water Quality</th>
<th>Shoreline Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland 1</td>
<td>Depressional/Flow-through (apparent inlet and outlet)</td>
<td>0.52</td>
<td>0.46</td>
<td>0.45</td>
<td>0.37</td>
<td>0.00</td>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland 1</td>
<td>0.39</td>
<td>0.00</td>
<td>0.00</td>
<td>0.52</td>
<td>0.10</td>
<td>0.00</td>
<td>0.10</td>
<td>0.37</td>
</tr>
</tbody>
</table>

- **Moderate**
- **Not Applicable**
- **Low**

### Wetland Community Summary

<table>
<thead>
<tr>
<th>Wetland Name</th>
<th>Location</th>
<th>Vegetative Diversity/Integrity</th>
<th>Community</th>
<th>Cowardin Classification</th>
<th>Circular Plant 39</th>
<th>Wetland Proportion</th>
<th>Individual Community Rating</th>
<th>Highest Wetland Rating</th>
<th>Average Wetland Rating</th>
<th>Weighted Average Wetland Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland 1</td>
<td>82-029-20-19-007-B</td>
<td>20</td>
<td>0.1</td>
<td>0.10</td>
<td>0.10</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
</tbody>
</table>

- **Denotes incomplete calculation data.**
Plant Community: Fresh (Wet) Meadow
Cowardin Classification: Circle 39: PEM1B Type 2

Hydrogeomorphology/topography:
7 Depressional/Isolated
8-1 Maximum water depth 0 inches
8-2 % inundated 0%
9 Immediate drainage—local WS 7.3 acres
10 Estimated size/existing site: (see #66)

11-Upland Soil Chetek sandy loam, 12 to 25 percent slopes
11-Wetland Soil Antigo silt loam, 0 to 2 percent slopes

12 Outlet for flood control A
13 Outlet for hydro regime A
14 Dominant upland land use B
15 Wetland soil condition A
16 Vegetation (% cover) 100%
17 Emerg. veg. flood resistance B
18 Sediment delivery B
19 Upland soils (soil group) B
20 Stormwater runoff C
21 Subwatershed wetland density A
22 Channels/sheet flow B
23 Adjacent buffer width 30 feet

Adjacent area management
24-A Full 90%
24-B Manicured 0%
24-C Bare 10%

Adjacent area diversity/structure
25-A Native 0%
25-B Mixed 90%
25-C Sparse 10%

Adjacent area slope

26-A Gentle 35%
26-B Moderate 60%
26-C Steep 5%

27 Downstream sens./WQ protect. B
28 Nutrient loading B

29 Shoreline wetland? No

Shoreline Wetland
30 Wetland in-water width 0 feet
31 Emerg. veg. % cover 0%
32 Wetland in-water width
33 Erosion potential of site
34 Upslope veg./bank protection No
35 Rare wildlife? No
36 Scare/Rare/S1/S2 community NA
37 Vegetative cover NA
38 Veg. community interspersion B
39 Wetland detritus B
40 Interspersion on landscape B
41 Wildlife barriers B

Amphibian-breeding potential
42 Hydroperiod adequacy Inadequate
43 Fish presence A
44 Overwintering habitat
45 Wildlife species (list)
46 Fish habitat quality NA
47 Fish species (list)
48 Unique/rare opportunity No
49 Wetland visibility
50 Proximity to population Yes
51 Public ownership A
52 Public access C
53 Human influence on wetland B
54 Human influence on viewseshd C
55 Spatial buffer B
56 Recreational activity potential C
57 Commercial crop–hydro impact NA

Groundwater-specific questions
58 Wetland soils Discharge
59 Subwatershed land use Discharge
60 Wetland size/soil group Discharge
61 Wetland hydroperiod Discharge
62 Inlet/Outlet configuration Discharge
63 Upland topo relief Discharge

Additional information
64 Restoration potential No
65 LO affected by restoration
66 Existing size 0.117
67 Restorable size
68 Potential new wetland 0
69 Average width of pot. buffer 0 feet
70 Potential wetland type 0
71 Stormwater sensitivity B
72 Additional treatment needs A

Watershed St. Croix (Stillwater)
WS# 37 Service Area: 6

For functional ratings, please run the Summary tab report.
This report printed on: 10/26/2017
### Wetland Functional Assessment Summary

<table>
<thead>
<tr>
<th>Wetland Name</th>
<th>Hydrogeomorphology</th>
<th>Maintenance of Hydrologic Regime</th>
<th>Flood/Stormwater Attenuation</th>
<th>Downstream Water Quality</th>
<th>Maintenance of Wetland Water Quality</th>
<th>Shoreline Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland 2</td>
<td>Depressional/Isolated (no discernable inlets or outlets)</td>
<td>0.88 High</td>
<td>0.69 High</td>
<td>0.58 Moderate</td>
<td>0.48 Moderate</td>
<td>0.00 Not Applicable</td>
</tr>
</tbody>
</table>

### Additional Information

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland 2</td>
<td>0.52 Moderate</td>
<td>0.00 Not Applicable</td>
<td>0.00 Not Applicable</td>
<td>0.47 Moderate</td>
<td>0.00 Not Applicable</td>
<td>0.00 Not Applicable</td>
<td>0.10 Moderate</td>
<td>0.48 Moderate</td>
</tr>
</tbody>
</table>

### Wetland Community Summary

<table>
<thead>
<tr>
<th>Wetland Name</th>
<th>Location</th>
<th>Community</th>
<th>Vegetative Diversity/Integrity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland 2</td>
<td>82-029-20-19-005-B</td>
<td>Cowardin Classification/Type 2</td>
<td>Cowardin Classification 39 Community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PEM1B</td>
<td>Fresh (Wet) Meadow</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100</td>
<td>0.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.10</td>
<td>0.10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Weighted Average Wetland Rating</td>
<td>0.10</td>
</tr>
</tbody>
</table>

- **Weighted Average Wetland Rating**: 0.10
- **Average Wetland Rating**: 0.10
- **Highest Wetland Rating**: 0.10
- **Individual Community Rating**: 0.10
- **Wetland Proportion**: 100
- **Community**: PEM1B
- **Type 2**: Fresh (Wet) Meadow

**Denotes incomplete calculation data.**
### MnRAM: Site Response Record

**For Wetland: Wetland 3**  
**Location:** 82-029-20-18-011-A  
**21D - Lake Elmo Airport**

#### Plant Community: Fresh (Wet) Meadow
- Cowardin Classification: Circular 39: Type 2
- PEMB:  

#### Hydrogeomorphology / Topography:
- Depression/Isolated
- Immediate drainage—local WS: 102 acres
- Estimated size/existing site: (see #66)

<p>| | | | | |</p>
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td></td>
<td>Depressional/Isolated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8-1</td>
<td>Maximum water depth</td>
<td>0 inches</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8-2</td>
<td>% inundated</td>
<td>0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Immediate drainage—local WS</td>
<td>102 acres</td>
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<td></td>
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<tr>
<td>10</td>
<td>Estimated size/existing site:</td>
<td>(see #66)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Upland Soil
- Antigo silt loam, 2 to 6 percent slopes

#### Wetland Soil
- Antigo silt loam, 2 to 6 percent slopes

#### Additional Information
- Outlet for flood control: A
- Outlet for hydro regime: A
- Dominant upland land use: B
- Wetland soil condition: B
- Vegetation (% cover): 95%
- Emerg. veg. flood resistance: C
- Sediment delivery: B
- Upland soils (soil group): B
- Stormwater runoff: B
- Subwatershed wetland density: A
- Channels/sheet flow: B

#### Adjacent Buffer Width
- 25 feet

#### Adjacent Area Management
- Full: 50%
- Manicured: 50%
- Bare: 0%

#### Adjacent Area Diversity/Structure
- Native: 0%
- Mixed: 90%
- Sparse: 10%

#### Groundwater-Specific Questions
- Wetland soils: Recharge
- Subwatershed land use: Discharge
- Wetland size/soil group: Discharge
- Wetland hydroperiod: Recharge
- Inlet/Outlet configuration: Recharge
- Upland topo relief: Discharge

#### Additional Information
- Restoration potential: No
- Average width of pot. buffer: 0 feet
- Ease of potential restoration: 0
- Hydrologic alterations: 0
- Potential wetland types: 0
- Stormwater sensitivity: A
- Additional treatment needs: B

#### Watershed: St. Croix (Stillwater)
- WS# 37  
- Service Area: 6

#### For functional ratings, please run the Summary tab report.

**This report printed on:** 10/26/2017
## Wetland Functional Assessment Summary

<table>
<thead>
<tr>
<th>Wetland Name</th>
<th>Hydrogeomorphology</th>
<th>Maintenance of Hydrologic Regime</th>
<th>Flood/Stormwater/Attenuation</th>
<th>Downstream Water Quality</th>
<th>Maintenance of Wetland Water Quality</th>
<th>Shoreline Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland 3</td>
<td>Depressional/Isolated (no discernable inlets or outlets)</td>
<td>0.63</td>
<td>0.66</td>
<td>0.61</td>
<td>0.60</td>
<td>0.00</td>
</tr>
</tbody>
</table>

### Additional Information

<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland 3</td>
<td>Combination Discharge, Recharge</td>
<td>0.00</td>
<td>0.50</td>
<td>0.60</td>
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</tbody>
</table>

## Wetland Community Summary

<table>
<thead>
<tr>
<th>Wetland Name</th>
<th>Location</th>
<th>Vegetative Diversity/Integrity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Community</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cowardin Classification</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Type 2</td>
</tr>
<tr>
<td>Wetland 3</td>
<td>82-029-20-18-011-A</td>
<td>PEMB</td>
</tr>
</tbody>
</table>

### Denotes incomplete calculation data.
MnRAM: Site Response Record
For Wetland: Wetland 4
Location: 82-029-20-18-008-B

21D - Lake Elmo Airport

Plant Community: Fresh (Wet) Meadow
Cowardin Classification: Circular 39: Type 2

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<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Listed, rare, special species?</td>
</tr>
<tr>
<td>5</td>
<td>Rare community or habitat?</td>
</tr>
<tr>
<td>6</td>
<td>Pre-European-settlement condition?</td>
</tr>
</tbody>
</table>

Hydrogeomorphology/topography:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Depressional/Isolated</td>
</tr>
<tr>
<td>8-1</td>
<td>Maximum water depth</td>
</tr>
<tr>
<td>8-2</td>
<td>% inundated</td>
</tr>
<tr>
<td>9</td>
<td>Immediate drainage--local WS</td>
</tr>
<tr>
<td>10</td>
<td>Estimated size/existing site:</td>
</tr>
</tbody>
</table>

Upland Soil: Antigo silt loam, 2 to 6 percent slopes
Wetland Soil: Antigo silt loam, 2 to 6 percent slopes

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>11-Upland Soil</td>
<td>Antigo silt loam, 2 to 6 percent slopes</td>
</tr>
<tr>
<td>11-Wetland Soil</td>
<td>Antigo silt loam, 2 to 6 percent slopes</td>
</tr>
</tbody>
</table>

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>12</td>
<td>Outlet for flood control</td>
</tr>
<tr>
<td>13</td>
<td>Outlet for hydro regime</td>
</tr>
<tr>
<td>14</td>
<td>Dominant upland land use</td>
</tr>
<tr>
<td>15</td>
<td>Wetland soil condition</td>
</tr>
<tr>
<td>16</td>
<td>Vegetation (% cover)</td>
</tr>
<tr>
<td>17</td>
<td>Emerg. veg. flood resistance</td>
</tr>
<tr>
<td>18</td>
<td>Sediment delivery</td>
</tr>
<tr>
<td>19</td>
<td>Upland soils (soil group)</td>
</tr>
<tr>
<td>20</td>
<td>Stormwater runoff</td>
</tr>
<tr>
<td>21</td>
<td>Subwatershed wetland density</td>
</tr>
<tr>
<td>22</td>
<td>Channels/sheet flow</td>
</tr>
<tr>
<td>23</td>
<td>Adjacent buffer width</td>
</tr>
</tbody>
</table>

Adjacent area management:

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<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>24-A</td>
<td>Full</td>
</tr>
<tr>
<td>24-B</td>
<td>Manicured</td>
</tr>
<tr>
<td>24-C</td>
<td>Bare</td>
</tr>
</tbody>
</table>

Adjacent area diversity/structure:

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<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>25-A</td>
<td>Native</td>
</tr>
<tr>
<td>25-B</td>
<td>Mixed</td>
</tr>
<tr>
<td>25-C</td>
<td>Sparse</td>
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</table>

Adjacent area slope:

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<tbody>
<tr>
<td>26-A</td>
<td>Gentle</td>
</tr>
<tr>
<td>26-B</td>
<td>Moderate</td>
</tr>
<tr>
<td>26-C</td>
<td>Steep</td>
</tr>
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</table>

Shoreline Wetland:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>27</td>
<td>Downstream sens./WQ protect.</td>
</tr>
<tr>
<td>28</td>
<td>Nutrient loading</td>
</tr>
<tr>
<td>29</td>
<td>Shoreline wetland?</td>
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</tbody>
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<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>30</td>
<td>Wetland in-water width</td>
</tr>
<tr>
<td>31</td>
<td>Emerg. veg. erosion resistance</td>
</tr>
<tr>
<td>32</td>
<td>Erosion potential of site</td>
</tr>
<tr>
<td>33</td>
<td>Upslope veg./bank protection</td>
</tr>
<tr>
<td>34</td>
<td>Rare wildlife?</td>
</tr>
<tr>
<td>35</td>
<td>Scare/Rare/S1/S2 community</td>
</tr>
<tr>
<td>36</td>
<td>Vegetative cover</td>
</tr>
<tr>
<td>37</td>
<td>Veg. community interspersion</td>
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<tr>
<td>38</td>
<td>Wetland detritus</td>
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<td>39</td>
<td>Interspersion on landscape</td>
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<tr>
<td>40</td>
<td>Wildlife barriers</td>
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</table>

Amphibian-breeding potential:

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<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>41</td>
<td>Hydroperiod adequacy</td>
</tr>
<tr>
<td>42</td>
<td>Fish presence</td>
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<tr>
<td>43</td>
<td>Overwintering habitat</td>
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<tr>
<td>44</td>
<td>Wildlife species (list)</td>
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<tr>
<td>45</td>
<td>Fish habitat quality</td>
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<td>Fish species (list)</td>
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<td>Unique/rare opportunity</td>
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<td>48</td>
<td>Wetland visibility</td>
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<td>49</td>
<td>Proximity to population</td>
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<td>Public ownership</td>
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<td>Public access</td>
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<td>52</td>
<td>Human influence on wetland</td>
</tr>
<tr>
<td>53</td>
<td>Human influence on viewsesh</td>
</tr>
<tr>
<td>54</td>
<td>Spatial buffer</td>
</tr>
<tr>
<td>55</td>
<td>Recreational activity potential</td>
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<tr>
<td>56</td>
<td>Commercial crop--hydro impact</td>
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Groundwater-specific questions:

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<thead>
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<tbody>
<tr>
<td>57</td>
<td>Wetland soils</td>
</tr>
<tr>
<td>58</td>
<td>Subwatershed land use</td>
</tr>
<tr>
<td>59</td>
<td>Wetland size/soil group</td>
</tr>
<tr>
<td>60</td>
<td>Wetland hydroperiod</td>
</tr>
<tr>
<td>61</td>
<td>Inlet/Outlet configuration</td>
</tr>
<tr>
<td>62</td>
<td>Upland topo relief</td>
</tr>
</tbody>
</table>

Additional information:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>63</td>
<td>Restoration potential</td>
</tr>
<tr>
<td>64</td>
<td>LO affected by restoration</td>
</tr>
<tr>
<td>65</td>
<td>Existing size</td>
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<td>66</td>
<td>Restorable size</td>
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<tr>
<td>67</td>
<td>Potential new wetland</td>
</tr>
<tr>
<td>68</td>
<td>Average width of pot. buffer</td>
</tr>
<tr>
<td>69</td>
<td>Ease of potential restoration</td>
</tr>
<tr>
<td>70</td>
<td>Hydrologic alterations</td>
</tr>
<tr>
<td>71</td>
<td>Stormwater sensitivity</td>
</tr>
<tr>
<td>72</td>
<td>Additional treatment needs</td>
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</tbody>
</table>

Watershed: St. Croix (Stillwater)

WS# 37 Service Area: 6

For functional ratings, please run the Summary tab report.
This report printed on: 10/26/2017
## Wetland Functional Assessment Summary

<table>
<thead>
<tr>
<th>Wetland Name</th>
<th>Hydrogeomorphology</th>
<th>Maintenance of Hydrologic Regime</th>
<th>Flood/ Stormwater/ Attenuation</th>
<th>Downstream Water Quality</th>
<th>Maintenance of Wetland Water Quality</th>
<th>Shoreline Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland 4</td>
<td>Depressional/Isolated (no discernable inlets or outlets)</td>
<td>0.52</td>
<td>0.62</td>
<td>0.61</td>
<td>0.53</td>
<td>0.00</td>
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### Additional Information

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</tr>
</thead>
<tbody>
<tr>
<td>Wetland 4</td>
<td>0.58</td>
<td>0.00</td>
<td>0.00</td>
<td>Combination Discharge, Recharge</td>
<td>0.00</td>
<td>0.50</td>
<td>0.53</td>
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</table>

Moderate Not Applicable Not Applicable Moderate Not Applicable Not Applicable Moderate

## Wetland Community Summary

<table>
<thead>
<tr>
<th>Wetland Name</th>
<th>Community</th>
<th>Vegetative Diversity/Integrity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland 4</td>
<td>Cowardin Classification</td>
<td>Wetland Proportion</td>
</tr>
<tr>
<td></td>
<td>PEMB Type 2 Fresh (Wet) Meadow</td>
<td>100</td>
</tr>
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</table>

Thursday, October 26, 2017
## MnRAM: Site Response Record

**For Wetland: Wetland 5**  
**Location: 82-029-20-18-008-C**

### 21D - Lake Elmo Airport

<table>
<thead>
<tr>
<th>Plant Community</th>
<th>Fresh (Wet) Meadow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cowardin Classification</td>
<td>Circular 39 Type 2</td>
</tr>
</tbody>
</table>

#### Hydrogeomorphology/topography:

| 4 | Listed, rare, special species? | No |
| 5 | Rare community or habitat?     | No |
| 6 | Pre-European-settlement condition? | No |

### Groundwater-specific questions

| 58 | Wetland soils | Recharge |
| 59 | Subwatershed land use | Discharge |
| 60 | Wetland size/soil group | Discharge |
| 61 | Wetland hydroperiod | Recharge |
| 62 | Inlet/Outlet configuration | Recharge |
| 63 | Upland topo relief | Discharge |

### Additional information

| 64 | Restoration potential | No |
| 65 | LO affected by restoration | |
| 66 | Existing size | 0.094 |
| 67 | Average width of pot. buffer | 0 feet |
| 68 | Ease of potential restoration | |
| 69 | Hydrologic alterations | 0 |
| 70 | Potential wetland type | 0 |
| 71 | Stormwater sensitivity | B |
| 72 | Additional treatment needs | B |

#### Watershed: St. Croix (Stillwater)

**WS# 37 Service Area: 6**

For functional ratings, please run the **Summary tab report**.  
This report printed on: 10/26/2017
### Wetland Functional Assessment Summary

<table>
<thead>
<tr>
<th>Wetland Name</th>
<th>Hydrogeomorphology</th>
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<th>Downstream Water Quality</th>
<th>Maintenance of Wetland Water Quality</th>
<th>Shoreline Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland 5</td>
<td>Depressional/Isolated (no discernable inlets or outlets)</td>
<td>0.63</td>
<td>0.66</td>
<td>0.56</td>
<td>0.37</td>
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#### Additional Information

<table>
<thead>
<tr>
<th>Wetland Name</th>
<th>Ground-Water Interaction</th>
<th>Wetland Sensitivity to Stormwater and Urban Development</th>
<th>Additional Stormwater Treatment Needs</th>
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</thead>
<tbody>
<tr>
<td>Wetland 5</td>
<td>Combination Discharge, Recharge</td>
<td>0.00</td>
<td>0.10</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Wetland Name</th>
<th>Wetland Proportion</th>
<th>Individual Community Rating</th>
<th>Highest Wetland Rating</th>
<th>Average Wetland Rating</th>
<th>Weighted Average Wetland Rating</th>
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</thead>
<tbody>
<tr>
<td>Wetland 5</td>
<td>100</td>
<td>0.1</td>
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### Wetland Community Summary

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<th>Location</th>
<th>Community</th>
<th>Vegetative Diversity/Integrity</th>
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<tbody>
<tr>
<td>Wetland 5</td>
<td>82-029-20-18-008-C</td>
<td>PEMB, Type 2 Fresh (Wet) Meadow</td>
<td>100, 0.10, 0.10, 0.10</td>
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Denotes incomplete calculation data.
### MnRAM: Site Response Record

**For Wetland: Wetland 6**  
**Location:** 82-029-20-18-012-A

#### 21D - Lake Elmo Airport

<table>
<thead>
<tr>
<th>Plant Community: Fresh (Wet) Meadow</th>
<th>Cowardin Classification: Circular 39: Type 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>26-A Gentle</td>
<td>100%</td>
</tr>
<tr>
<td>26-B Moderate</td>
<td>0%</td>
</tr>
<tr>
<td>26-C Steep</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Groundwater-specific questions</strong></td>
<td></td>
</tr>
<tr>
<td>58 Wetland soils</td>
<td>Recharge</td>
</tr>
<tr>
<td>59 Subwatershed land use</td>
<td>Discharge</td>
</tr>
<tr>
<td>60 Wetland size/soil group</td>
<td>Discharge</td>
</tr>
<tr>
<td>61 Wetland hydroperiod</td>
<td>Recharge</td>
</tr>
<tr>
<td>62 Inlet/Outlet configuration</td>
<td>Recharge</td>
</tr>
<tr>
<td>63 Upland topo relief</td>
<td>Recharge</td>
</tr>
</tbody>
</table>

#### Hydrogeomorphology / topography:

<table>
<thead>
<tr>
<th>Depressional/FlowThru</th>
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</thead>
<tbody>
<tr>
<td>27 Downstream sens./WQ protect.</td>
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<tr>
<td>28 Nutrient loading</td>
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</tbody>
</table>

#### Shoreline Wetland

<table>
<thead>
<tr>
<th>Wetland in-water width</th>
<th>0 feet</th>
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<tbody>
<tr>
<td>Emerg. veg. erosion resistance</td>
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</tr>
<tr>
<td>Erosion potential of site</td>
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<tr>
<td>Upslope veg./bank protection</td>
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#### Amphibian-breeding potential

<table>
<thead>
<tr>
<th>Hydroperiod adequacy</th>
<th>Inadequate</th>
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<tr>
<td>Fish presence</td>
<td>A</td>
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<tr>
<td>Overwintering habitat</td>
<td></td>
</tr>
<tr>
<td>Wildlife species (list)</td>
<td></td>
</tr>
<tr>
<td>Fish habitat quality</td>
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<tr>
<td>Fish species (list)</td>
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#### Adjacent area management

<table>
<thead>
<tr>
<th>Full</th>
<th>0%</th>
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<tbody>
<tr>
<td>Manicured</td>
<td>100%</td>
</tr>
<tr>
<td>Bare</td>
<td>0%</td>
</tr>
</tbody>
</table>

#### Adjacent area diversity/structure

| Native | 0% |
| Mixed | 95% |
| Sparse | 5% |

#### Additional information

| Restoration potential | No |
| Average width of pot. buffer | 0 feet |
| Ease of potential restoration | 0 |
| Potential wetland type | 0 |
| Stormwater sensitivity | B |

#### Watershed St. Croix (Stillwater)

| WS#  | 37 | Service Area: 6 |

For functional ratings, please run the Summary tab report.  
This report printed on: 10/26/2017
## Wetland Functional Assessment Summary

<table>
<thead>
<tr>
<th>Wetland Name</th>
<th>Hydrogeomorphology</th>
<th>Maintenance of Hydrologic Regime</th>
<th>Flood/Stormwater Attenuation</th>
<th>Downstream Water Quality</th>
<th>Maintenance of Wetland Water Quality</th>
<th>Shoreline Protection</th>
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<td>Wetland 6</td>
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<td>0.58</td>
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<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
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<tr>
<th>Wetland Name</th>
<th>Vegetative Diversity/Integrity</th>
<th>Community</th>
<th>Cowardin Classification</th>
<th>Circular Plant Community</th>
<th>Wetland Proportion</th>
<th>Individual Community Rating</th>
<th>Highest Wetland Rating</th>
<th>Average Wetland Rating</th>
<th>Weighted Average Wetland Rating</th>
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<tr>
<td>Wetland 6</td>
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<td></td>
<td>PEMB</td>
<td>Type 2 Fresh (Wet) Meadow</td>
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<td>0.10</td>
<td>0.10</td>
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<td></td>
<td></td>
<td></td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
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- **Denotes incomplete calculation data.**

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Thursday, October 26, 2017
MnRAM: Site Response Record
For Wetland: Wetland 7
Location: 82-029-20-18-013-A

21D - Lake Elmo Airport

Plant Community: Fresh (Wet) Meadow
Cowardin Classification: Circular 39: Type 2

Groundwater-specific questions
58 Wetland soils
59 Subwatershed land use
60 Wetland size/soil group
61 Wetland hydroperiod
62 Inlet/Outlet configuration
63 Upland topo relief

Additional information
64 Restoration potential
65 LO affected by restoration
66 Existing size
67 Average width of pot. buffer
68 Ease of potential restoration
69 Hydrologic alterations
70 Potential wetland type
71 Stormwater sensitivity
72 Additional treatment needs

Watershed St. Croix (Stillwater)
WS# 37 Service Area: 6

For functional ratings, please run the Summary tab report.
This report printed on: 10/26/2017

For wetland 7, the following data is provided:

- Location: 82-029-20-18-013-A
- Plant Community: Fresh (Wet) Meadow
- Cowardin Classification: Circular 39: Type 2

### Hydrogeomorphology / Topography

- **Depressional/FlowThru**
- **Maximum Water Depth**: 0 inches
- **% Inundated**: 0%
- **Immediate Drainage—Local WS**: 30 acres
- **Estimated Size/Existing Site**: (see #66)

#### Upland Soil
- Crystal Lake silt loam, 1 to 3 percent slopes

#### Wetland Soil
- Crystal Lake silt loam, 1 to 3 percent slopes

### Additional Information

#### Outlet for Flood Control
- **Adjacent Buffer Width**: 10 feet

#### Outlet for Hydro Regime
- **Outlet for Hydro Regime**: 0 feet

#### Dominant Upland Land Use
- **Upland Soil Condition**: A

#### Wetland Soil Condition
- **Wetland Soil Condition**: A

#### Vegetation (% Cover)
- **Vegetation (% Cover)**: 90%

#### Emergent Vegetation Flood Resistance
- **Emergent Veg Flood Resistance**: C

#### Sediment Delivery
- **Sediment Delivery**: B

#### Upland Soils (Soil Group)
- **Upland Soils (Soil Group)**: A

#### Stormwater Runoff
- **Stormwater Runoff**: A

#### Subwatershed Wetland Density
- **Subwatershed Wetland Density**: A

#### Channels/Sheet Flow
- **Channels/Sheet Flow**: B

### Adjacent Area Management

#### Full
- **Adjacent Area Management**: 0%

#### Manicured
- **Adjacent Area Management**: 100%

#### Bare
- **Adjacent Area Management**: 0%

### Adjacent Area Diversity/Structure

#### Native
- **Adjacent Area Diversity/Structure**: 0%

#### Mixed
- **Adjacent Area Diversity/Structure**: 95%

#### Sparse
- **Adjacent Area Diversity/Structure**: 5%

### Adjacent Area Slope
- **Adjacent Area Slope**: NA

### Amphibian-Breeding Potential

#### Hydroperiod Adequacy
- **Hydroperiod Adequacy**: Inadequate

#### Fish Presence
- **Fish Presence**: A

#### Overwintering Habitat
- **Overwintering Habitat**: B

#### Wildlife Species (List)
- **Wildlife Species (List)**: NA

#### Fish Habitat Quality
- **Fish Habitat Quality**: NA

#### Fish Species (List)
- **Fish Species (List)**: NA

#### Unique/Rare Opportunity
- **Unique/Rare Opportunity**: No

#### Wetland Visibility
- **Wetland Visibility**: C

#### Proximity to Population
- **Proximity to Population**: Yes

#### Public Ownership
- **Public Ownership**: A

#### Public Access
- **Public Access**: C

#### Human Influence on Wetland
- **Human Influence on Wetland**: B

#### Human Influence on Viewsheet
- **Human Influence on Viewsheet**: B

#### Spatial Buffer
- **Spatial Buffer**: C

#### Recreational Activity Potential
- **Recreational Activity Potential**: NA

#### Commercial Crop—Hydro Impact
- **Commercial Crop—Hydro Impact**: NA

### Shoreline Wetland

#### Wetland In-Water Width
- **Wetland In-Water Width**: 0 feet

#### Emergent Veg Erosion Resistance
- **Emergent Veg Erosion Resistance**: B

#### Erosion Potential of Site
- **Erosion Potential of Site**: No

#### Upland Veg./Bank Protection
- **Upland Veg./Bank Protection**: A

#### Wetland Detritus
- **Wetland Detritus**: B

#### Interspersion on Landscape
- **Interspersion on Landscape**: B

#### Wildlife Barriers
- **Wildlife Barriers**: B

### Restoration Potential
- **Restoration Potential**: No

### LO Affected by Restoration
- **LO Affected by Restoration**: No

### Existing Size
- **Existing Size**: 0.013

### Restorable Size
- **Restorable Size**: 0

### Potential New Wetland
- **Potential New Wetland**: 0
### Wetland Functional Assessment Summary

<table>
<thead>
<tr>
<th>Wetland Name</th>
<th>Hydrogeomorphology</th>
<th>Maintenance of Hydrologic Regime</th>
<th>Flood/Stormwater Attenuation</th>
<th>Downstream Water Quality</th>
<th>Maintenance of Wetland Water Quality</th>
<th>Shoreline Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland 7</td>
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<td>0.00</td>
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<td>0.39</td>
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<td>0.00</td>
<td>0.47</td>
<td>0.00</td>
<td>Combination Discharge, Recharge</td>
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<td>0.33</td>
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</table>

Moderate Not Applicable Not Applicable Moderate Not Applicable Not Applicable Moderate Moderate

### Additional Information

### Wetland Community Summary

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<thead>
<tr>
<th>Wetland Name</th>
<th>Community</th>
<th>Vegetative Diversity/Integrity</th>
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<tbody>
<tr>
<td>Wetland 7</td>
<td>Cowardin Classification</td>
<td>Circular Plant 39</td>
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<tr>
<td></td>
<td>PEMB</td>
<td>Type 2</td>
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Denotes incomplete calculation data.
MnRAM: Site Response Record
For Wetland: Wetland 8
Location: 82-029-20-18-003-B

21D - Lake Elmo Airport

Plant Community: Fresh (Wet) Meadow
Cowardin Classification: Circular 39: PEMB
Type 2

Plant Community: Deep Marsh
Cowardin Classification: Circular 39: PAB2F
Type 4

1 Listed, rare, special species? No
2 Rare community or habitat? No
3 Pre-European-settlement condition? No

Hydrogeomorphology / topography:
7 Depressional/Isolated

8-1 Maximum water depth 24 inches
8-2 % inundated 40%
9 Immediate drainage—local WS 102 acres
10 Estimated size/existing site: (see #66)

11-Upland Soil Chetek sandy loam, 0 to 6 percent slopes
11-Wetland Soil Auburndale silt loam

12 Outlet for flood control A
13 Outlet for hydro regime A
14 Dominant upland land use B
15 Wetland soil condition A
16 Vegetation (% cover) 90%
17 Emerg. veg flood resistance A
18 Sediment delivery B
19 Upland soils (soil group) B
20 Stormwater runoff B
21 Subwatershed wetland density A
22 Channels/sheet flow B

23 Adjacent buffer width 50 feet

Adjacent area management
24-A Full 90%
24-B Manicured 0%
24-C Bare 10%

Adjacent area diversity/structure
25-A Native 0%
25-B Mixed 90%

26-C Sparse 10%

Adjacent area slope
26-A Gentle 90%
26-B Moderate 10%
26-C Steep 0%

27 Downstream sens./WQ protect. B
28 Nutrient loading B

29 Shoreline wetland? No

Shoreline Wetland
30 Rooted veg., % cover 0%
31 Wetland in-water width 0 feet
32 Emerg. veg. erosion resistance
33 Erosion potential of site
34 Upslope veg./bank protection
35 Rare wildlife? No
36 Scare/Rare/S1/S2 community No
37 Vegetative cover B
38 Veg. community interspersion C
39 Wetland detritus B
40 Interspersion on landscape B
41 Wildlife barriers A

Amphibian-breeding potential
42 Hydroperiod adequacy Adequate
43 Fish presence A
44 Overwintering habitat C
45 Wildlife species (list)
46 Fish habitat quality C
47 Fish species (list)

48 Unique/rare opportunity No
49 Wetland visibility C
50 Proximity to population Yes
51 Public ownership A
52 Public access C
53 Human influence on wetland B
54 Human influence on viewsed C
55 Spatial buffer A
56 Recreational activity potential C

57 Commercial crop–hydro impact NA

Groundwater-specific questions
58 Wetland soils Recharge
59 Subwatershed land use Discharge
60 Wetland size/soil group Discharge
61 Wetland hydroperiod Discharge
62 Inlet/Outlet configuration Recharge
63 Upland topo relief Discharge

Additional information
64 Restoration potential No
65 LO affected by restoration
66 Existing size 2.598
67 Restorable size 0
68 Potential new wetland 0

Watershed: St. Croix (Stillwater)
WS# 37 Service Area: 6

For functional ratings, please run the Summary tab report.
This report printed on: 10/26/2017
## Wetland Functional Assessment Summary

<table>
<thead>
<tr>
<th>Wetland Name</th>
<th>Hydrogeomorphology</th>
<th>Ground-Water Interaction</th>
<th>Wetland Sensitivity to Stormwater and Urban Development</th>
<th>Shoreline Protection</th>
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<tbody>
<tr>
<td>Wetland 8</td>
<td>Depressional/Isolated (no discernable inlets or outlets)</td>
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### Additional Information

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## Wetland Community Summary

<table>
<thead>
<tr>
<th>Wetland Name</th>
<th>Community</th>
<th>Wetland Propotion</th>
<th>Individual Community Rating</th>
<th>Highest Wetland Rating</th>
<th>Average Wetland Rating</th>
<th>Weighted Average Wetland Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland 8</td>
<td>PEMB Type 2</td>
<td>Fresh (Wet) Meadow</td>
<td>60</td>
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<td>1.00</td>
<td>0.55</td>
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<tr>
<td></td>
<td>PAB2F Type 4</td>
<td>Deep Marsh</td>
<td>40</td>
<td>1</td>
<td>1.00</td>
<td>0.55</td>
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</tbody>
</table>

- Denotes incomplete calculation data.
### Plant Community: Fresh (Wet) Meadow
**Cowardin Classification:** PEMB Site Type 2
**Peatland Type:** Depressional/FlowThru

- **Maximum water depth:** 12 inche
- **% inundated:** 10%
- **Immediate drainage—local WS:** 108.8 acr
- **Estimated size/existing site:** (see #66)

**Adjacent area slope**
- **Gentle:** 80%
- **Moderate:** 20%
- **Steep:** 0%

**Shoreline Wetland**
- **Rooted veg., % cover:** 0%
- **Emerg. veg. erosion resistance:**
- **Erosion potential of site:**
- **Upslope veg./bank protection:** No
- **Rare wildlife?**
- **Rare community or habitat?**
- **Pre-European-settlement condition?**

**Amphibian-breeding potential**
- **Hydroperiod adequacy:** Adequate
- **Fish presence:**
- **Overwintering habitat:**
- **Wildlife species (list):**

**Adjacent area management**
- **Full:** 10%
- **Manicured:** 0%
- **Bare:** 90%

**Adjacent area diversity/structure**
- **Native:** 0%
- **Mixed:** 10%

**Adjacent area slope**
- **Gentle:** 80%
- **Moderate:** 20%
- **Steep:** 0%

**Shoreline Wetland**
- **Rooted veg., % cover:** 0%
- **Emerg. veg. erosion resistance:**
- **Erosion potential of site:**
- **Upslope veg./bank protection:** No
- **Rare wildlife?**
- **Rare community or habitat?**
- **Pre-European-settlement condition?**

**Amphibian-breeding potential**
- **Hydroperiod adequacy:** Adequate
- **Fish presence:**
- **Overwintering habitat:**
- **Wildlife species (list):**

**Adjacent area management**
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**Adjacent area diversity/structure**
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## Wetland Functional Assessment Summary

<table>
<thead>
<tr>
<th>Wetland Name</th>
<th>Hydrogeomorphology</th>
<th>Maintenance of Hydrologic Regime</th>
<th>Flood/Stormwater/Attenuation</th>
<th>Downstream Water Quality</th>
<th>Maintenance of Wetland Water Quality</th>
<th>Shoreline Protection</th>
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<tbody>
<tr>
<td>Wetland 9</td>
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<td>Moderate</td>
<td>Moderate</td>
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### Additional Information

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</thead>
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<td>Discharge</td>
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<td>Not Applicable</td>
<td>Moderate</td>
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## Wetland Community Summary

<table>
<thead>
<tr>
<th>Wetland Name</th>
<th>Location</th>
<th>Cowardin Classification</th>
<th>Circular Plant Community</th>
<th>Wetland Proportion</th>
<th>Individual Community Rating</th>
<th>Highest Wetland Rating</th>
<th>Average Wetland Rating</th>
<th>Weighted Average Wetland Rating</th>
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</thead>
<tbody>
<tr>
<td>Wetland 9</td>
<td>82-029-20-18-002-B</td>
<td>PEMB</td>
<td>Type 2</td>
<td>Fresh (Wet) Meadow</td>
<td>65</td>
<td>0.1</td>
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<td>0.10</td>
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<tr>
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<td>PEMC</td>
<td>Type 3</td>
<td>Shallow Marsh</td>
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</tbody>
</table>

Denotes incomplete calculation data.
Appendix I.  Delineator Qualifications
BRAUNA HARTZELL, GISP
GEOGRAPHIC INFORMATION SYSTEM (GIS)/IMAGE PROCESSING ANALYST

EXPERIENCE (GIS)

Brauna Hartzell has more than 20 years of experience applying GIS software and database design techniques to support wetlands and water resources, historic preservation, community planning, transportation, aviation and military planning, and municipal infrastructure and storm water management. She has worked extensively with GIS and mapping software including ArcGIS desktop and has specialized experience with 3D Analyst, Network Analyst and Spatial Analyst. She also collects environmental field data using hand-held GPS units and post-processes information for inclusion in databases and use in spatial analyses. Brauna collaborates with personnel from multiple disciplines to solve complex spatial problems through scripting and spatial analysis to deliver results and data for project-specific needs. She utilizes geoprocessing models, Python, and VBA to meet analytical needs of projects.

Brauna is experienced with GIS-related data submittal requirements associated with the Federal Energy Regulatory Commission (FERC) and the Federal Aviation Administration (FAA) data standardization initiatives. She has extensive experience developing Geodatabases with the Spatial Data Standards for Facility, Infrastructure, and Environment (SDSFIE) standard and creating Federal Geographic Data Committee (FGDC)-compliant metadata.

Brauna has specialized experience with using 3D data formats for spatial analysis, contour generation and manipulation, and geospatial modeling. She is adept in the use of LiDAR-derived data and DTMs in support of hydrology and hydraulic analyses. Additionally, she has extensive experience with SSURGO databases and the National Hydrography Dataset.

EXPERIENCE (WETLAND/ENVIRONMENTAL)

Brauna Hartzell has more than ten years of experience in wetland delineation, wetland permitting, and restoration projects. She performs wetland and field delineations conforming to current United States Army Corps of Engineers (USACE) including the Northcentral and Northeast Regional Supplement and State standards, designs custom field data collection applications, collects field data using hand-held Global Positioning Systems (GPS) data collectors and tablets, and prepares National Environmental Policy Act (NEPA) documentation. Brauna has successfully guided numerous projects through the Section 404 permitting process.

Brauna has performed numerous wetland delineations in the Upper Midwest. She conducts wetland mitigation site monitoring according to established site-specific assessment protocols, performs vegetation surveys, and analyzes and presents field collected data in graphical and tabular form. She also assists in mitigation site design and construction specifications development.
BRAUNA HARTZELL, GISP (CONTINUED)

RELATED PROJECTS (WETLANDS)

Wetland Delineations
Various Clients
Midwest USA
Brauna performed wetland delineations in accordance with the Routine On-Site Method of 1987 United States Army Corps of Engineers (USACE) wetland delineation manual at various sites in Wisconsin and Minnesota. Work included conducting the delineation, documenting field investigations and site conditions, creating wetland boundary maps, and report writing. Delineations were performed for the following projects:

- Pellet Subdivision – Middleton, Wisconsin, 2002
- Potter’s Creek Subdivision – Green Bay, Wisconsin, 2003
- Oak Street Bridge Design – La Crosse, Wisconsin, 2003
- State Trunk Highway (STH) 29 – Marathon County, Wisconsin, 2003
- Hampton Heights Subdivision – Ledgeview, Wisconsin, 2004
- County Trunk Highway (CTH) W – Oconto County, Wisconsin, 2004
- Town of Rockland Preliminary Plat – Brown County, Wisconsin, 2004
- Mourning Dove Subdivision – Oconto County, Wisconsin, 2004
- Cinnamon Ridge Subdivision – Suamico, Oconto County, Wisconsin, 2004
- Kenosha Regional Airport – Kenosha, Wisconsin, 2005
- County Trunk Highway (CTH) A – Lincoln County, Wisconsin
- CTH D – Vernon County, Wisconsin, 2006
- Burton Street – Beloit, Wisconsin, 2006
- Central Wisconsin Airport – Mosinee, Marathon County, Wisconsin, 2008
- State Trunk Highway (STH) 67, Fond du Lac County, Wisconsin, 2011
- Interstate Highway 90/94 Corridor Study, 2014 & 2015
- Ontonagon County Airport, Ontonagon County, Michigan, 2016
- Central Wisconsin Airport – Mosinee, Marathon County, Wisconsin, 2016
- Little Rock Lake, Vilas County, Wisconsin, 2016

Past Employment
- Information Management Systems, Inc.
- Adult Communities Total Services, Inc.
- Archeological Assessments, Inc.
- University of Wisconsin – Madison

No. of Years With Mead & Hunt
- Hired 08/28/1992

No. of Years With Other Firms
- Four

Ontonagon County Airport, 2016
Michigan Bureau of Aeronautics

Ontonagon County, Michigan
Brauna served as the lead wetland delineator in support of permitting and on-site mitigation activities related to proposed wetland disturbance in another area of the airport. The area of interest is approximately 19.4 acres in size and resulted in the delineation of 11 wetlands in areas previously in agricultural production. Brauna also performed groundwater well monitoring and data analysis in support of mitigation site design.

Central Wisconsin Airport, 2016
Wisconsin Bureau of Aeronautics

Mosinee, Marathon County, Wisconsin
Brauna served as the lead wetland delineator in support of master planning activities related to determining the viability of shifting Runway 17/35 to the south. The area of interest is approximately 70 acres in size and resulted in the delineation of three large wetlands on airport property and two off-site. The three on-site wetlands experience regular mowing and other maintenance activities as well as show evidence of
groundwater contact on a sloping terrain with a seasonal high-water table; off-site wetlands consisted of an alder and a hardwood swamp.

Little Rock Lake Wetland Survey, 2016
National Ecological Observatory Network (NEON), Boulder, CO
Vilas County, Wisconsin
Brauna served as the lead wetland scientist in support of site equipment layout investigations for long-term ecological monitoring. A total of four wetlands were delineated within the area of interest at this mesotrophic seepage lake covering about 39 acres. Each proposed equipment installation site was surveyed and wetlands delineated in close proximity to any proposed location.

Interstate Highway (IH) 90/94 Corridor Study, 2013-2017
Wisconsin Department of Transportation (WisDOT) Southwest Region
Portage, Juneau, Sauk, and Columbia Counties, Wisconsin
Mead & Hunt is leading a team that is conducting a corridor study of IH 90/94 from US12/WIS 16 to IH39. The project consists of evaluating operational and safety issues, review of the interchanges and ramps within the corridor, and evaluating possible expansion. Environmental studies are being conducted and include; cultural resources surveys, endangered species surveys, contaminated material investigations, noise analysis and wetland delineations. Brauna is a wetland scientist assisting in the delineation, wetland field data collection and mapping. Cost: $210 million

STH 67 Resurfacing Design and Environmental Documentation, 2011
Wisconsin Department of Transportation (WisDOT) Northeast Region
Fond du Lac County, Wisconsin
Mead & Hunt lead redesign of this 20 mile corridor of STH 67 spanning Fond du Lac County through both rural and developed sections. In support of environmental documentation, a wetland delineation was performed within the right-of-way for the 20 mile corridor. Wetland types encountered include: shallow marsh, fresh wet meadows, shrub swamps, and riparian wetlands. In total, 69 wetlands were delineated. Brauna assisted with wetland delineation and survey, mapping and data management.

Wetland Mitigation, Runway 14/32 Safety Area, 2004-2011
WisDOT Bureau of Aeronautics
Madison, Wisconsin
Brauna served as project scientist for this reconstruction of a runway safety area and railroad within a state natural area. 140 acres of fen and sedge meadow were restored and enhanced, and 6,000 feet of Starkweather creek was restored with an annually flooded riparian corridor. The project also included restoration of ten acres of swamp forest and 35 acres of upland buffer, plus negotiation of annual management and monitoring to enhance rare plant habitats within Cherokee Fen. The mitigation cost was more than $1.5 million, with a total project construction cost of $25 million. Brauna assisted with wetland monitoring and collection of botanical and hydrologic data for compliance. She also monitored for invasive species.

Wetland Permit Application, 2003-2008
Tulip City Airport
Holland, Michigan
The purpose of the project was to increase the capacity of the main runway and correct unsafe conditions in the approaches to the airport. Four project alternatives were addressed in the permit application, as well as wetland avoidance and impact minimization. Special considerations included the minimization of wildlife habitat
potential for airport safety reasons and the location of the mitigation site “offsite” within three miles of the airport. In 2003, Brauna designed a riparian wetland mitigation site in the City of Holland. The project included construction plans and sections, an examination of existing site conditions, vegetative reestablishment and expected hydrology, and a monitoring protocol including performance stands. Monitoring in 2008 showed that site has achieved full performance in terms of wetland function and area.

Voges Road, Road Reconstruction Permit Application
City of Madison
Madison, Wisconsin
The proposed reconstruction of Voges Road, a vital corridor connection between Madison and McFarland, necessitated the submission of a Section 404 permit application. The proposed improvements included widening the road and upgrading to an urban curb-and-gutter section to accommodate increased traffic volumes and improve drainage along the road.
KIMBERLY SHANNON
ENVIRONMENTAL SCIENTIST

Kimberly Shannon is an environmental scientist with over a decade of experience. Over the years she has gained professional experience in coordinating and completing a variety of project types including oil and gas, electric transmission, nuclear, transportation, commercial development, and local government. She has honed her regulatory and technical skills while providing excellent service to diverse clients. Her technical expertise and strongest skills as a consultant include the identification, mapping, and delineation of streams and wetlands; 404 permitting and compensatory mitigation; United States Army Corps of Engineers (USACE) coordination, and assisting various clients through the 404 permitting process. Kimberly also has professional experience in the preparation and coordination of environmental assessment and categorical exclusion documents in support of the National Environmental Policy Act (NEPA) process, habitat evaluation for threatened and endangered species, proposal writing and pricing, technical writing and editing, training junior staff, and working with project managers, colleagues and clients to achieve project goals and objectives in a timely and cost effective manner. She coordinates with subcontractors and science/environmental staff in offices across the country to complete field work, reports, permits, and data deliverables.

RELATED PROJECTS

Mitigation Coordination for Oklahoma Department of Transportation (ODOT) with Multiple Agencies, EC 1660, 2015-present
ODOT
Statewide, Oklahoma

Kimberly is assisting ODOT with the coordination of various mitigation projects across Oklahoma. As part of this contract she is working directly with the USACE, other consultants, and the Oklahoma Chapter of The Nature Conservancy, a key mitigation partner for ODOT. Assisting TNC with production of a mitigation master plan for TNC’s Oka’ Yanahli Preserve in Pontotoc County, OK.

Kimberly’s years of various environmental project experience includes:

- Waters re-evaluations and mitigation plans – ODOT
- Mitigation plan for Durant Bypass – ODOT
- Local government contract for statewide county road and bridge projects – ODOT
- BNSF Railroad separation EA – ODOT
- Delineations, 404 permitting, and mitigation planning in Texas and Oklahoma – QuikTrip
- Natural gas liquids trunk line right of way assessments, reports and 404 permitting in OK, KS, TX, CO included over 400 miles and 1,000 waterbodies assessed – DCP Midstream, LLC
- Wetland delineations and site spot checks in Uintah Basin, Utah; Senior delineator for site-specific survey on Ute and Ouray Reservation – Constellation Energy Partners (CEP)
- Section 7 consultation and biological assessment (BA) for the American Burying Beetle in Tulsa, OK – Tulsa Botanic Garden

Areas of Expertise
- Permitting and licensing
- NEPA
- Public involvement
- Regulatory compliance
- Environmental Assessments
- Environmental Reports
- Stream and wetland delineation

LinkedIn url
https://www.linkedin.com/pub/kimberly-shannon/29/412/a38

Education
- MS, Applied and Natural Science, Oklahoma State University, 1997
- BS, Biology, Oklahoma State University, 1994
- Certificate, GIS, Tulsa Community College, 2010

Training and Seminars
- “Contractor Orientation Safety Course,” Burlington Northern Santa Fe Railroad (BNSF), Union Pacific Railroad (UPRR), 2009
- “Regional Supplement Seminar,” Wetland Training Institute, 2008

Presentations
- NEPA Updates for Oklahoma, Wallace Engineering, 2009
- Panel Presentation: Landowner Relationships, Natural Areas Associations Conference, 2004

Past Employment
Delineations, habitat assessments, vegetation mapping, aquatic ecology surveys, and NRC site audits in support of COL application and ER Luminant Generation Company – Comanche Peak Nuclear Power Plant, Glen Rose, TX

Coordinated staff for weeks of biological monitoring of seismic drilling and receiver line crews at Tishomingo – NWR Chesapeake Energy

Ontonagon County Airport, 2016
Michigan Bureau of Aeronautics
Ontonagon County, Michigan
Kim served as a wetland delineator in support of permitting and on-site mitigation activities related to a proposed wetland disturbance in another area of the airport. The area of interest spans approximately 19.4 acres and resulted in the delineation of 11 wetlands in areas previously in agricultural production. Kim also assisted groundwater well monitoring in support of mitigation site design.

Waters Re-Evaluations and Mitigation, 2009-January 2010
Oklahoma Department of Transportation (ODOT)
Statewide, Oklahoma
Kimberly assisted with multiple re-evaluations of potentially jurisdictional waterbodies related to bridge replacement projects across Oklahoma. Delineation reports, 404 permits, and mitigation plans were prepared for the ODOT. This project was completed while Kimberly was employed with another firm.

Mitigation Projects, 2009-2015
Oklahoma Department of Transportation (ODOT)
Statewide, Oklahoma
Kimberly prepared compensatory mitigation plans for 404 Permit Applications in support of ODOT road and bridge improvement projects across Oklahoma. She conducted and coordinated site assessments, site selection, landowner correspondence and coordination, site planning, agency coordination, and monitoring plans for multiple mitigation projects.

Mitigation Plan, Durant Bypass, May 2010-2015
Oklahoma Department of Transportation (ODOT)
Durant, Oklahoma
Kimberly prepared a compensatory mitigation plan for a 404 permit in support of the ODOT’s bypass loop around US70 in Durant, Oklahoma. She coordinated with the United States Army Corps of Engineers (USACE), ODOT, subcontractors, and the City of Durant during the project.

Delineation, Reporting, and 404 Permitting, November 2011-April 2012
QuikTrip
Dallas/Fort Worth Metroplex, Texas
Kimberly led and completed multiple delineations, protected species habitat evaluations, reporting efforts, and 404 permitting (NWP39) including mitigation bank and agency coordination for the client. This project was completed while Kimberly was employed with another firm.
Delineation, Reporting, and 404 Permitting for 72-TC, May 2014-September 2014
QuikTrip Corporation
Muskogee, Oklahoma
Kimberly coordinated and completed the delineation, protected species habitat evaluations, reporting efforts, and 404 permitting (NWP39) including mitigation plan preparation and agency coordination for the client. This project was completed while Kimberly was employed with another firm.

Local Government Contract for Statewide County Road and Bridge Projects
Oklahoma Department of Transportation (ODOT)
Statewide Oklahoma
These similar county-level projects included the delineation of potentially jurisdictional waterbodies, assessment of potential habitat for federally protected species, reporting efforts, the completion of project specific National Environmental Policy Act (NEPA) clearance documents, tribal coordination, and coordination with Oklahoma Department of Transportation (ODOT) contacts and county commissioners. Kimberly assisted with the coordination and completion of field assessments and related reports in support of the Categorical Exclusion (CE) documents. She also coordinated report review with ODOT and preparation of the CE report. This project was completed while Kimberly was employed with another firm.

Southern Hills Natural Gas Liquids Trunk Line ROW Assessments, Reports and 404 Permitting, December 2011-July 2012
DCP Midstream, LLC
Meade County, Kansas and Beaver, Harper, Woodward, Major, Blaine, Kingfisher, Logan, Oklahoma, Lincoln, and Pottawatomie Counties, Oklahoma
Kimberly reviewed and classified over 500 waterbodies along approximately 260 miles of pipeline right-of-way. She reviewed all right-of-way feature maps and coordinated field data for the presence of potentially jurisdictional waters and potential threatened and endangered species habitat for a large trunk line pipeline in Oklahoma. Kimberly classified and coordinated mapping efforts with GIS professionals and the client to assist with horizontal directional drilling (HDD) boring locations in order to avoid or minimize impacts to jurisdictional waterbodies. These data were used to complete delineation reports, 404 permitting (NWP12) and to prepare engineering alignment sheets. As appropriate, Kimberly coordinated directly with the Tulsa and Fort Worth District Regulatory Branch of the United States Army Corps of Engineers for the timely completion and issuance of NWP12. She worked directly with the client’s environmental project manager to assist with reroutes and attended alignment sheet review meetings. This project was completed while Kimberly was employed with another firm.

Southern Hills Natural Gas Liquids Lateral Lines Right-of-Way Assessments, Reports and 404 Permitting, March-August 2012
DCP Midstream, LLC
Woodward, Woods, Major, Logan, and Lincoln Counties, Oklahoma
Kimberly classified over 300 waterbodies along approximately 88 miles of pipeline right-of-way. She reviewed all right-of-way feature maps and coordinated field data for the presence of potentially jurisdictional waters and potential threatened and endangered species habitat for multiple lateral pipelines in Oklahoma. Kimberly classified and coordinated mapping efforts with GIS professionals and the client to assist with horizontal directional drilling (HDD) boring locations in order to avoid or minimize impacts to jurisdictional waterbodies. These data were used to complete delineation
Kimberly Shannon (Continued)

reports, 404 permitting (NWP12) and to prepare engineering alignment sheets. As appropriate, Kimberly coordinated directly with the Tulsa and Fort Worth District Regulatory Branch of the United States Army Corps of Engineers for the timely completion and issuance of NWP12. She worked directly with the client’s environmental project manager to assist with reroutes and attended alignment sheet review meetings. This project was completed while Kimberly was employed with another firm.

Chitwood/Sholem Lateral Pipeline Right-of-Way Assessments, Reports and 404 Permitting, April-August 2012
DCP Midstream, LLC
Jefferson County, Oklahoma and Clay and Jack Counties, Texas
Kimberly classified over 189 waterbodies along approximately 31.5 miles of pipeline right-of-way. She reviewed all right-of-way feature maps and coordinated field data for the presence of potentially jurisdictional waters and potential threatened and endangered species habitat for multiple pipelines in Oklahoma and Texas. Kimberly classified and coordinated mapping efforts with GIS professionals and the client to assist with horizontal directional drilling (HDD) boring locations in order to avoid or minimize impacts to jurisdictional waterbodies. These data were used to complete delineation reports, 404 permitting (NWP12) and to prepare engineering alignment sheets. As appropriate, Kimberly coordinated directly with the Tulsa and Fort Worth District Regulatory Branch of the United States Army Corps of Engineers for the timely completion and issuance of NWP12. She worked directly with the client’s environmental project manager to assist with reroutes and attended alignment sheet review meetings. This project was completed while Kimberly was employed with another firm.

Wetland Delineations and Site Spot Checks, May-September 2014
Constellation Energy Partners (CEP)
Uintah Basin, Utah
Kimberly worked in the Uintah Basin in northeast Utah on multiple occasions to assist as a Senior Delineator for site-specific waters and wetlands delineations, section block (square mile) surveys, and site spot checks for waterbodies on the Ute and Ouray Reservation. This project was completed while Kimberly was employed with another firm.

Biological Assessment (BA) for the American Burying Beetle, 2007-2008
Tulsa Botanic Garden
Tulsa, Oklahoma
In response to a federal nexus via a nationwide permit application for the construction of a dam at the Oklahoma Centennial Botanical Gardens, Kimberly prepared a biological assessment in response to Formal Section 7 Consultation with United States Fish and Wildlife Service for the American Burying Beetle. This project was completed while Kimberly was employed with another firm.

Wetland Inventory, 2006-2007
Camp Gruber Maneuver Training Center
Muskogee County, Oklahoma
As directed by EO 11990, Kimberly was part of a team that assessed the Camp Gruber site for new wetlands and verification of previously identified wetlands, included delineation of waterbodies subject to the jurisdiction of the United States Army Corps of Engineers (USACE). This project was completed while Kimberly was employed with another firm.
December 28, 2017

Mr. Josh Fitzpatrick
Environmental Protection Specialist
Federal Aviation Administration
Dakota – Minnesota Airports District Office
6020 28th Avenue South, Room 102
Minneapolis, MN 55450

RE: Lake Elmo Airport Improvement Project
Baytown Twp & West Lakeland Twp, Washington County, MN
SHPO Number: 2018-0345

Dear Mr. Fitzpatrick:

Thank you for the opportunity to comment on the above project. Information received in our office on 1 December 2017 has been reviewed pursuant to the responsibilities given the State Historic Preservation Officer by Section 106 of the National Historic Preservation Act of 1966 and implementing federal regulations at 36 CFR 800.

We have reviewed the documentation included with your November 21, 2017 cover letter, a submittal which included the following reports: Phase I Archaeological Identification Survey of Proposed Changes to Portions of the Lake Elmo Airport, Washington County, Minnesota (August 2017, Mississippi Valley Archaeology Center); and Phase I Reconnaissance Survey Report, Lake Elmo Airport (November 2017, Mead & Hunt) with associated inventory forms. Our comments are provided below.

Area of Potential Effects
We have completed our review of your correspondence along with the documentation provided in regards to your agency’s determination of the area of potential effect (APE) for the Federal undertaking. We agree that this APE determination is generally appropriate to take into account the potential direct and indirect effects of the proposed undertaking as we currently understand it. As the project’s scope of work is further defined, or if it is significantly altered from the current scope, additional consultation with our office may be necessary in order to revise the current APE.

Identification of Historic Properties
Archaeology
As a result of the investigations, two archaeological sites were identified within the APE for this project, 21WA0119 and 21WA0120. These sites have not been evaluated to determine their eligibility for listing in the National Register of Historic Places (NRHP). As long as the trees and vegetation are hand-cut within the site areas, and there is no ground disturbance and no use of heavy machinery in the site areas, this project should have no effect on archaeological resources. If impacts to these sites cannot be avoided, Phase II evaluation will be needed.
History/Architecture Properties
Thirteen history/architecture properties were identified within the APE for this project. We agree with your agency's determination that the following twelve properties are not eligible for listing in the NRHP: Edward Flynn House (WA-BYT-004), house at 3245 Neal Ave. N (WA-BYT-008), house at 3101 Neal Ave. N (WA-BYT-009), house at 13030 30th St. N (WA-BYT-010), house at 13100 30th St. N (WA-BYT-011), house at 12905 40th St. N (WA-BYT-012), house at 12805 40th St. N (WA-BYT-013), house at 12689 40th St. N (WA-BYT-014), house at 12657 40th St. N (WA-BYT-015), Lake Elmo Airport (WA-BYT-016), house at 2925 Neal Ave. N (WA-WLK-006), and house at 2933 Manning Ave. N (WA-WLK-007). We agree that the remaining property, the St. Paul, Stillwater and Taylor's Falls Railroad Corridor (XX-RRD-044), needs further evaluation to determine its eligibility for listing in the NRHP.

Assessment of Effects
Provided that impacts to sites 21WA0119 and 21WA0120 are avoided as stated, and that all project activities occur outside the boundaries of the St. Paul, Stillwater and Taylor's Falls Railroad Corridor Historic District, we concur with your agency's determination that no historic properties will be affected by this project.

Implementation of the undertaking in accordance with this finding, as documented, fulfills the agency's responsibilities under Section 106. If the project is not constructed as proposed, including, but not limited to, a situation where engineering/design changes to the currently proposed project diverts substantially from what was presented at the time of this review, or engineering/design changes involving undisturbed new rights-of-way or easements are made for the undertaking following completion of this review, the agency will need to reopen Section 106 consultation with our office.

Please contact Kelly Gragg-Johnson, Review and Compliance Specialist, at (651) 259-3455 if you have any questions regarding our review of this project.

Sincerely,

[Signature]
Sarah J. Beimers, Manager
Government Programs and Compliance
1. DESCRIPTION OF THE UNDERTAKING

The Lake Elmo Airport (Airport) has undertaken an environmental assessment (EA) with the Federal Aviation Administration (FAA) for Airport improvements including:

1. Relocate Runway 14/32 to the northeast and extend to the southeast, including all necessary grading, clearing, and runway lighting.
2. Construct cross-field taxiway to serve new Runway 14 end.
3. Convert existing Runway 14/32 to a partial parallel taxiway and construct other taxiways as needed to support the relocated runway, including taxiway lighting and/or reflectors.
4. Extend Runway 04/22 to the northeast and add necessary lighting and taxiway connectors.
5. Realign 30th Street North around the new Runway 14/32 runway protection zone to reconnect with Neal Avenue North.
6. Construct a connector road.
7. Establish non-precision instrument approach procedures to all four runway ends.
8. Remove approximately 20 acres of trees.

A map identifying project features can be found in Appendix A.

2. AREA OF POTENTIAL EFFECT

The Area of Potential Effect (APE) is the area within which an undertaking may affect an historic property or cultural resource, either directly or indirectly. The APE for this project encompasses all areas proposed for disturbance and the view shed (the area which the project may visually impact) of the project (Appendix B).

3. EFFORTS TO IDENTIFY HISTORIC PROPERTIES

Qualified historians from Mead & Hunt worked with the FAA to delineate the Area of Potential Effect (APE), which was defined to include the Lake Elmo Airport and first-tier properties, those that are directly adjacent to airport property, with structures that are 45 years in age or older. Where project activities are more extensive and have additional direct and indirect effects, such as at the southeast end of Runway 32 and proposed 30th Street realignment areas, the APE was expanded to include second tier properties,
those adjacent to first tier properties. The APE takes into account direct and indirect effects to resources based on the proposed project activities. A map of the APE is included in Appendix B.

Prior to fieldwork, the project team conducted a literature review at the Minnesota State Historic Preservation Office (SHPO) to identify any previously surveyed architecture/history properties within the APE. One property within the APE, the Edward Flynn House (WA-BYT-004), was previously identified.

Mead & Hunt historians conducted Phase I fieldwork on May 30, 2017 (Appendix C). In addition to the previously identified Edward Flynn House, historians identified 12 historic-age resources, which are defined as constructed in or before 1972. Of the 13 surveyed properties, 12 are recommended not eligible for listing in the National Register of Historic Places (NRHP) and no further work is required.

The remaining property, the Union Pacific Railway—historically the St. Paul, Stillwater, & Taylor’s Falls (StPS&TF) Railroad—is recommended for further study if future actions were to impact the line. The line may have significance under the Railroads in Minnesota, 1862-1956 Multiple Property Documentation Form (MPD), applying NRHP Criterion A: Transportation as an early connection between the manufacturing/commerce nodes of Stillwater and the Twin Cities, and as an important component of Minnesota’s railroad network that provided an early link between the Twin Cities, Stillwater, and wider markets.

Project activities, however, are located on airport property, outside the railroad right-of-way and potential historic boundary (as outlined in the MPD, the historic boundary will be the historic right-of-way of the company that built the line) and have a minimal potential for impact to the railroad corridor. Project related tree removal, will not alter any character-defining features of the potential StPS&TF Railroad Corridor Historic District or diminish its potential significance. Furthermore, the tree removal will have a limited impact on the overall setting and visual appearance from the railroad corridor itself. The loss of a relatively small number of trees along the entire rail corridor (which currently extends from St. Paul to Stillwater) will not drastically change the railroad’s overall visual appearance, setting, or feeling.

In addition, there is no potential for indirect visual effects to the railroad corridor as changes to the runways, lighting, and navigational aids proposed adjacent to the railroad will not drastically alter current views from along the corridor. Similarly, there are no anticipated noise impacts to the railroad. Aircraft size and type will not change from what is currently landed on the runways adjacent to the railroad corridor. There will be no discernable change to noise levels experienced on railroad property. As such, it was determined that no further work is required for this property at this time. Should project activities change to potentially impact the railroad, then a reexamination of their effects on the StPS&TF Railroad would be completed.
The Mississippi Valley Archaeology Center (MVAC) conducted a Phase I archaeological survey (Appendix D) for the proposed Lake Elmo Airport in Washington County, Minnesota on June 1, and July 12, and 13, 2017.

A total of approximately 126 acres was surveyed. Survey methods included pedestrian survey in plowed fields with excellent surface visibility, and shovel testing within portions of the current airport grounds and wooded areas within and adjacent to the plowed fields with no surface visibility.

Two new historic sites were identified. 21WA0119 consists of historic foundations with one structure consisting of a limestone foundation with a concrete addition, and a second foundation made of concrete and cinderblock. There are also some concrete slabs of unknown use. Based on historical documentation, these structures were erected sometime between 1874 and 1901, and were present until possibly the early 1980’s. 21WA0120 consists of two historic foundations made of concrete. Based on historical research, the structures were erected sometime between 1874 and 1901, and were present until at the least the mid to late 1960’s.

Historical maps and deed research indicate that from 1933 to 1946, the foundations associated with both of these sites, and the land surrounding them, were owned by the Jacob Schmidt Brewing Company. It is unknown if the buildings at these two sites were used in any of the manufacturing or storage for the brewery which during the 1930’s and 1940’s, was the seventh largest in the nation. The intact foundations indicate integrity, and the relationship to the Jacob Schmidt Brewing Company could indicate significance. These two sites may be potentially eligible for listing on the NRHP under Criteria D, as they could yield important information about the past. However, since ultimately ground disturbing activities will be able to avoid these sites, the sites were not formally evaluated for eligibility for the NRHP. The only action in the site areas is the groves of trees they are located in will be clear cut.

No other cultural material was identified within the project area, therefore no further work is recommended for the remainder of the project. However, if in the future ground disturbing activities are planned in the locations of WA0119 and WA0120, the SHPO will be consulted to see if further evaluations are necessary.

4. BASIS FOR FINDING

The FAA has therefore determined that a finding of No Historic Properties Affected is appropriate for the project. The FAA respectfully requests that the Lower Sioux Indian Community THPO, Upper Sioux Indian Community THPO, Prairie Island Indian Community THPO, Mille Lacs Band of Ojibwe THPO, the Shakopee Mdewakanton Sioux Community, and SHPO provide written concurrence with this Section 106 finding within 30 days of receipt.
ATTACHMENTS
Appendix A  Project Exhibit
Appendix B  APE & Phase I Reconnaissance Survey Sites
Appendix C  Phase I Reconnaissance Survey
Appendix D  Phase I Archeological Survey

[Signature]

Josh Fitzpatrick
Environmental Protection Specialist
Federal Aviation Administration
Dakota-Minnesota Airport District Office

20 October 2017

Date
Attachment A
1. Relocate Runway 14/32 to the northeast and extend to the southeast, including all necessary grading, clearing, and runway lighting.
2. Construct cross-field taxiway to serve new Runway 14 end.
3. Convert existing Runway 14/32 to a partial parallel taxiway and construct other taxiways as needed to support the relocated runway, including taxiway lighting and/or reflectors.
4. Extend Runway 04/22 to the northeast and add necessary lighting and taxiway connectors.
5. Realign 30th Street North around the new Runway 14/32 runway protection zone to reconnect with Neal Avenue North.
6. Construct a connector road.
7. Establish non-precision instrument approach procedures to all four runway ends.
8. Remove approximately 20 acres of trees (pink areas).
Attachment B
The Federal Aviation Administration (FAA) determined that a Section 106 finding of a No Historic Properties Affected is applicable for the Lake Elmo Airport Improvement Project. The FAA respectfully requests the Lower Sioux THPO to provide written concurrence with the Section 106 determination of No Historic Properties Affected within 30 days of receipt.

I have placed a hard copy in the mail to President Pendleton as well. Do you want me to continue to do that?

If you have any comments, questions, or concerns regarding the analyses and conclusions used to determine the potential effects of the proposed project on historic, cultural, and archaeological resources, or have any questions regarding the project, please do not hesitate to contact me.

Sincerely,

Josh Fitzpatrick
Environmental Protection Specialist
FAA Dakota-Minnesota Airport District Office
Joshua.Fitzpatrick@faa.gov
(612) 253-4639
Dear Ms. Weyaus:

The Federal Aviation Administration (FAA) determined that a Section 106 finding of a No Historic Properties Affected is applicable for the Lake Elmo Airport Improvement Project. The FAA respectfully requests the Mille Lacs Band of Ojibwe THPO to provide written concurrence with the Section 106 determination of No Historic Properties Affected within 30 days of receipt.

If you have any comments, questions, or concerns regarding the analyses and conclusions used to determine the potential effects of the proposed project on historic, cultural, and archaeological resources, or have any questions regarding the project, please do not hesitate to contact me.

Sincerely,

Josh Fitzpatrick
Environmental Protection Specialist
FAA Dakota-Minnesota Airport District Office
Joshua.Fitzpatrick@faa.gov
(612) 253-4639
Dear Mr. White:

The Federal Aviation Administration (FAA) determined that a Section 106 finding of a No Historic Properties Affected is applicable for the Lake Elmo Airport Improvement Project. The FAA respectfully requests the Prairie Island Indian Community THPO to provide written concurrence with the Section 106 determination of No Historic Properties Affected within 30 days of receipt.

If you have any comments, questions, or concerns regarding the analyses and conclusions used to determine the potential effects of the proposed project on historic, cultural, and archaeological resources, or have any questions regarding the project, please do not hesitate to contact me.

Sincerely,

Josh Fitzpatrick
Environmental Protection Specialist
FAA Dakota-Minnesota Airport District Office
Joshua.Fitzpatrick@faa.gov
(612) 253-4639
Dear Mr. Wabasha:

The Federal Aviation Administration (FAA) determined that a Section 106 finding of a No Historic Properties Affected is applicable for the Lake Elmo Airport Improvement Project. The FAA respectfully requests the Shakopee Mdewakanton Sioux Community to provide written concurrence with the Section 106 determination of No Historic Properties Affected within 30 days of receipt.

If you have any comments, questions, or concerns regarding the analyses and conclusions used to determine the potential effects of the proposed project on historic, cultural, and archaeological resources, or have any questions regarding the project, please do not hesitate to contact me.

Sincerely,

Josh Fitzpatrick
Environmental Protection Specialist
FAA Dakota-Minnesota Airport District Office
Joshua.Fitzpatrick@faa.gov
(612) 253-4639
From: Fitzpatrick, Joshua (FAA)  
Sent: Friday, October 20, 2017 10:24 AM  
To: Samantha Odegard <samanthao@uppersiouxcommunity-nsn.gov>  
Subject: Section 106 Determination of Effect for the Lake Elmo Airport Improvement Project

Dear Ms. Odegard:

The Federal Aviation Administration (FAA) determined that a Section 106 finding of a No Historic Properties Affected is applicable for the Lake Elmo Airport Improvement Project. The FAA respectfully requests the Upper Sioux THPO to provide written concurrence with the Section 106 determination of No Historic Properties Affected within 30 days of receipt.

I have placed a hard copy in the mail to your Chairman as well. Do you want me to continue to do that?

If you have any comments, questions, or concerns regarding the analyses and conclusions used to determine the potential effects of the proposed project on historic, cultural, and archaeological resources, or have any questions regarding the project, please do not hesitate to contact me.

Sincerely,

Josh Fitzpatrick  
Environmental Protection Specialist  
FAA Dakota-Minnesota Airport District Office  
Joshua.Fitzpatrick@faa.gov  
(612) 253-4639
Phase I
(Reconnaissance Survey) Report

Lake Elmo Airport

Prepared for
Metropolitan Airports Commission

Prepared by
Mead & Hunt
www.meadhunt.com

Co-principal investigators Katherine Haun Schuring and Kathryn Ohland
Project Managers Emily Pettis and Evan Barrett

November 2017
# Table of Contents

## Executive Summary

### 1. Introduction
- **A. Location and purpose of project**: 3
- **B. Project description**: 5
- **C. Area of Potential Effects**: 7

## Survey Methodology and Research Design

## Historic Overview

### A. Washington County

### B. Agriculture

### C. Transportation

### D. Aviation in Washington County

## Results and Recommendations

## Bibliography

## Appendices

### A. Area of Potential Effects Map

### B. Survey Map and Minnesota Architecture/History Inventory Forms

## Tables

### 1. Surveyed properties within the APE**: 12
Executive Summary

The Metropolitan Airports Commission (MAC) recently completed a Long-Term Comprehensive Plan (LTCP) for the Lake Elmo Airport, which was approved by the MAC Board in September 2016. The key planning objectives of the LTCP include: addressing failing end-of-life infrastructure, enhancing safety, and improving operational capacity for design aircraft family. To meet these objectives, the MAC, owner of the Lake Elmo Airport, retained Mead & Hunt, Inc. (Mead & Hunt) to develop plans for a proposed airport update project. The overall project activities include:

- Relocating Runway 14/32 to the northeast and extending it to the southeast, including all necessary grading, clearing, and runway lighting.

- Constructing a new cross-field taxiway to serve the new Runway 14 end, including taxiway lighting and/or reflectors.

- Converting the existing Runway 14/32 to a partial parallel taxiway and constructing other taxiways as needed to support the relocated runway, including taxiway lighting and/or reflectors.

- Establishing a new non-precision approach to the Runway 14 end.

- Extending Runway 4/22 to the northeast and adding necessary lighting and taxiway connectors.

- Upgrading existing Runway 4 approach to RNAV (GPS).

- Realigning 30th Street N. around the new Runway 14/32 Runway Protection Zone to reconnect with Neal Avenue.

The project will use Federal Aviation Administration (FAA) funding and therefore must comply with Section 106 of the National Historic Preservation Act of 1966 (Section 106), as amended, and its implementing regulations, 36 CFR 800.

Qualified historians from Mead & Hunt worked with the FAA to delineate the Area of Potential Effects (APE), which was defined to include the Lake Elmo Airport and first-tier properties, those that are directly adjacent to airport property, with structures that are 45 years in age or older. Where project activities are more extensive and have additional direct and indirect effects, such as at the southeast end of Runway 32 and proposed 30th Street realignment areas, the APE was expanded to include second tier properties, those adjacent to first tier properties. The APE takes into account direct and indirect effects to resources based on the proposed project activities. A map of the APE is included in Appendix A.

Prior to fieldwork, the project team conducted a literature review at the Minnesota State Historic Preservation Office (SHPO) to identify any previously surveyed architecture/history properties within the APE. One property within the APE, the Edward Flynn House (WA-BYT-004), was previously identified.

Mead & Hunt historians Katherine Haun-Schuring and Kathryn Ohland conducted Phase I fieldwork on May 30, 2017. In addition to the previously identified Edward Flynn House, historians identified 12
historic-age resources, which are defined as constructed in or before 1972. A survey map identifying all surveyed properties and Minnesota Architecture/History Inventory Forms are included in Appendix B. Of the 13 surveyed properties, 12 are recommended not eligible for listing in the National Register of Historic Places (National Register) and no further work is required. The remaining property, the Union Pacific Railway—historically the St. Paul, Stillwater, & Taylor’s Falls (StPS&TF) Railroad—is recommended for further study. The line may have significance under the Railroads in Minnesota, 1862-1956 Multiple Property Documentation Form (MPD), applying National Register Criterion A: Transportation as an early connection between the manufacturing/commerce nodes of Stillwater and the Twin Cities, and as an important component of Minnesota’s railroad network that provided an early link between the Twin Cities, Stillwater, and wider markets. Project activities, however, are located on airport property, outside the railroad right-of-way and potential historic boundary (as outlined in the MPD, the historic boundary will be the historic right-of-way of the company that built the line) and have a minimal potential for impact to the railroad corridor. As such, it was determined, in consultation with the FAA, that no further work is required for this property at this time. Should project activities change, a reexamination of their effects on the StPS&TF Railroad should be completed.

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1. Introduction

A. Location and purpose of project

The Metropolitan Airports Commission (MAC) proposes substantial updates to the Lake Elmo Airport in order to adhere to the Long Term Comprehensive Plan (LTCP), developed and approved by the MAC in September 2016, and to meet current FAA safety requirements. A description of project activities is included in Section 1.B. The approximately 630-acre airport is located on multiple parcels within both Baytown and West Lakeland Townships and is roughly bounded by Manning Avenue on the west; the Union Pacific Railway, historically the St. Paul, Stillwater & Taylor’s Falls (StPS&TF) Railroad, on the north; Neal Avenue on the east; and 30th Street on the south (see Figure 1). The land around the airport is a mixture of rural and suburban, with farmsteads dating to the late nineteenth century, residences from the early and mid-twentieth century, and modern development present.

The project will receive Federal Aviation Administration (FAA) funding; therefore, it must comply with Section 106 of the National Historic Preservation Act of 1966 (Section 106), as amended, and its implementing regulations, 36 CFR 800. In March 2017 Mead & Hunt, Inc. (Mead & Hunt) was retained by the MAC to complete Phase I survey in order to identify properties that may be eligible for listing in the National Register of Historic Places (National Register) and to facilitate compliance with Section 106 review.

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2 For the purposes of this report, the historic name of the railroad will be used throughout.
Figure 1. Map showing the project location. The star indicates the approximate location of the Lake Elmo Airport within Washington County, highlighted within the red boundary.
B. Project description

The proposed project will relocate the primary runway (Runway 14/32) 615 feet to the northeast and increase the runway length from 2,850 feet to 3,500 feet to the southeast. The existing Runway 14/32 will be converted to a partial parallel taxiway; additional taxiways are proposed as needed to support the relocated runway. To accommodate the runway relocation and provide necessary safety clearances within the Runway Projection Zones (RPZ), groves of trees on airport property will be removed, including along the StPS&TF Railroad corridor and adjacent to the relocated Runway 14/32. Additionally, the crosswind runway (Runway 4/22) will be extended 254 feet to an overall length of 2,750 feet. Taxiways, lighting, and navigational aids for both runways will also be added or upgraded throughout the airport. To accommodate the Runway 14/32 RPZ, 30th Street N. is proposed for realignment. Beginning at the intersection with Neal Avenue N., a portion of the roadway will be curved to the south on existing airport property around the new runway before meeting with the existing alignment. An overview map of the project activities is presented in Figure 2.
Section 1
Introduction

Figure 2. Map of proposed project activities.
C. **Area of Potential Effects**

In consultation with the FAA, the Area of Potential Effects (APE) for architecture/history was defined to include the Lake Elmo Airport and adjacent first-tier properties. Where project activities are more extensive and have additional direct and indirect effects, such as at the southeast end of Runway 32 and proposed 30th Street realignment areas, the APE was expanded to include second-tier properties. The APE encompasses direct effects, such as those areas affected by ground disturbance activities for runway, taxiway, and road construction and tree removals. Additionally, the APE takes into consideration indirect visual and noise impacts. The APE is illustrated on the map in Appendix A.
2. Survey Methodology and Research Design

The objective of the architectural history survey was to identify historic-age properties, defined as 45 years or older, in the APE that meet the National Register Criteria for Evaluation. Prior to fieldwork, the project team conducted a literature review at the Minnesota State Historic Preservation Office (SHPO) to identify any previously surveyed architecture/history properties in the APE. One property, the Edward Flynn House (WA-BYT-004) at 13131 40th Street N., was previously identified as part of a 1980 county-wide survey; the property was not formally evaluated at that time.

Professional historians from Mead & Hunt, who exceed the Secretary of the Interior’s Professional Qualification Standards for history and/or architectural history, as outlined in 36 CFR Part 61, conducted the Phase I fieldwork on May 30, 2017. The field investigation was limited to historic-age resources identified from the public right-of-way in West Lakeland and Baytown Townships, as well as the Lake Elmo Airport. Mead & Hunt assessed the significance and historic integrity of these properties to make a recommendation for listing in the National Register (see Section 4 for recommendations).

Based on properties identified in the APE, project research focused on the themes of agricultural development and transportation within Washington County. Surveyed properties directly relate to the statewide historic thematic context Historic Context Study of Minnesota Farms (1820-1960) and the Railroads in Minnesota, 1862-1956 Multiple Property Documentation Form (MPD), which provides contextual information and National Register registration requirements for railroads within the state. Repositories consulted to obtain historical information include:

- Minnesota Historical Society
- Washington County Historical Society
- Lake Elmo Airport
- Metropolitan Airport Commission
- Stillwater Public Library

Primary and secondary sources include:

- SHPO inventory forms
- County and city histories
- County assessment records
- Plat maps and aerial images
- Stillwater Public Library subject files
- MAC Lake Elmo files
- Online resources
- Personal communication with property owner
3. Historic Overview

The purpose of this historic overview is to provide a context in which to identify important historic themes and to evaluate historic-age properties in the APE.

A. Washington County

Located in eastern Minnesota, Washington County is bordered by the St. Croix and Mississippi Rivers on the east and south, respectively; Ramsey and Anoka Counties on the west; and Chisago County on the north. Historically, Washington County contained prairie lands with timber stands growing along rivers, creeks, and lakes. It possessed abundant fur, timber, and mineral resources that became the source of the county’s earliest industries. Due to its proximity to rivers, the county was also well-suited for early agricultural development.

Though the earliest European explorers traveled through the area in 1680, permanent settlement began in the late 1830s. Washington County was established on October 27, 1849, as one of the nine original counties in Minnesota Territory. The county remained largely rural with the majority of its land cultivated for crops or used for livestock production until the mid-twentieth century, when suburban development changed the landscape.

While a rural atmosphere is retained in large portions of the county, certain areas are decidedly suburban, such as those nearest St. Paul and Stillwater. Within Baytown and West Lakeland Townships, suburban residential development began in the mid-to-late twentieth century, with Ranch, Split-level, and Rambler houses constructed on large lots. More recently, housing subdivisions are under development to the immediate west of the airport.

B. Agriculture

Agriculture has been a primary industry within the county since its initial Euro-American settlement. The number of farms rose continuously during the ensuing decades, with 85 percent of Washington County land utilized for farming by 1900. During this period the primary crops were wheat, corn, oats, barley, rye, hay, and potatoes. During the latter decades of the nineteenth century advancements in cultivation machinery and farm diversification revolutionized agriculture and allowed for increased yields, particularly in oats and corn. County exports also increased with the construction of multiple railroad lines in the late nineteenth century, which provided access to new markets. Dairying was also a popular industry, with 52 percent of farms producing milk, butter, and cheese by 1910.

Examples of late-nineteenth-century developments include:


6 Zellie, *Washington County Historic Contexts*, 166.

farms can be found in Lake Elmo and Baytown and West Lakeland Townships, including the c.1880 Edward Flynn Farm, which is located adjacent to the Lake Elmo Airport.

Washington County remained predominantly rural well into the twentieth century. Fruit growers and nurseries joined established crop farms during the post-World War II (postwar) period, though 80 percent of the land was still farmed with corn and soybeans. Although farming remained prominent during the 1960s and continues today as evidenced by the cultivated farm fields adjacent to the airport, farms are slowly being replaced by suburban residential development. Currently, the county’s agricultural products include tree and fruit nurseries, sod farms, and corn, with sheep, goats, and horses as the prevalent livestock.

C. Transportation
The early Washington County transportation network consisted of Indian trails, steamboats on the St. Croix and Mississippi Rivers, and territorial and military roads. Beginning in the late 1860s railroads surpassed all previous modes of transportation in use and importance. The St. Paul & Chicago (later Chicago, Milwaukee, & St. Paul) Railroad, constructed in 1869, served as the first line through the county. Soon after, additional railroad companies established several lines, ultimately creating freight and passenger connections to Minneapolis, St. Paul, Duluth, and wider markets. The StPS&TF (currently the Union Pacific Railway) was constructed through the county in 1872. It provided freight and passenger transportation between the Twin Cities and Chicago to the southeast and Omaha, Nebraska, to the southwest. The railroad corridor currently serves as the northern border of the Lake Elmo Airport property.

At the turn of the twentieth century emphasis shifted from the railroad to roads, catalyzed by the Good Roads Movement. Early vehicular roads through the county were primitive, but road improvements, including paving, started in earnest in the 1920s following the creation of the Trunk Highway System. Over the following decades travel by rail declined significantly as more Minnesotans chose the automobile as their primary mode of transportation. By the 1960s most rail passenger service within Washington County ended.

D. Aviation in Washington County
During the twentieth century air travel became another noteworthy mode of transportation within Washington County, with numerous airfields developed on converted farmland. Early airfields within the county included the Luchsinger farm in Lakeland and the Northport airstrip in Grant Township (both nonextant). During World War II the U.S. Army and Navy actively used these and other airfields in Washington County to train pilots. Notably, the Northport airstrip, formally established as an airport

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8 Zellie, Washington County Historic Contexts, 167.
12 Zellie, Washington County Historic Contexts, 133.
Section 3
Historic Overview

c.1939, served as the chief training field for the government-sponsored War Training Service (formerly the Civilian Pilot Training program).\textsuperscript{14} In order to support training activities, the Army Air Corps leased several farm fields, including the Edward Flynn Farm, where glider pilots could land.\textsuperscript{15}

Recognizing the future importance of air transportation in the state and with the hope of making the Twin Cities a leader in aviation within the upper Midwest, the Minnesota State Legislature created the MAC in 1943. The MAC was designed to take a regional approach to air service, discourage competition between Minneapolis and St. Paul, and promote air transportation and commerce in the seven-county Twin Cities metro area. To meet these goals, the MAC established a system of airports, with the primary airport being Wold-Chamberlain Field (which became Minneapolis-St. Paul International Airport in 1948) and six reliever airports to accommodate smaller aircraft traffic.\textsuperscript{16}

In 1949 the MAC decided that one of the six reliever airports would be located within the eastern suburbs of St. Paul. It purchased 160 acres of farmland near the community of Lake Elmo in Baytown Township for development as the Lake Elmo Airport. In 1951 the airport officially opened and featured two runways and a small number of privately owned hangars. Over the coming decades, the MAC expanded the airport property and constructed support buildings, including a maintenance building. Private development continued with the construction of Fixed Base Operators (FBOs) and hangars. Today the airport encompasses more than 600 acres and features more than 150 buildings supporting and housing 189 aircraft as of October 2016. It is currently used by local businesses and private pilots, as well as the Civil Air Patrol.\textsuperscript{17}

Currently there are two airports, Lake Elmo Airport and Daniel A. DePonti Memorial Airport, and a handful of private airfields within Washington County. The DePonti Airport (originally called the Journey’s End Airport) was privately developed during the 1950s but was sold to the City of Forest Lake in 1998 for continued use as an airport.\textsuperscript{18} All of the other previously established airfields, such as Northport, are nonextant, with the land reused for development.\textsuperscript{19}

\textsuperscript{14} Goodman, “Historic Airports in Washington County,” 1, 6; Goodman, \textit{A History of Washington County: Gateway to Minnesota History}, 206.

\textsuperscript{15} Goodman, “Historic Airports in Washington County,” 6.


\textsuperscript{17} Goodman, “Historic Airports in Washington County,” 8.

\textsuperscript{18} Goodman, “Historic Airports in Washington County,” 7–8.

\textsuperscript{19} Goodman, “Historic Airports in Washington County”; Goodman, \textit{A History of Washington County: Gateway to Minnesota History}. 
4. Results and Recommendations

Historians identified and documented 13 historic-age properties within the APE, including the previously identified Edward Flynn House (see Table 1). Twelve properties are recommended not eligible for listing in the National Register as they do not appear to possess a significant association with an important historic theme or person, and do not possess architectural significance. No further work is recommended for these properties. New or updated inventory forms have been prepared for these resources and are included in Appendix B.

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The final property, the StIPS&TF Railroad (XX-RRD-044), is recommended for further study for its association with railroad transportation in Minnesota and Washington County. Completed in 1872, the StIPS&TF Railroad connected St. Paul with Stillwater. The line was largely used to transport lumber and was a major carrier of passengers and freight in and out of the Twin Cities to wider markets, such as
Chicago. Per the *Railroads in Minnesota, 1862-1956 Multiple Property Documentation Form* (MPD), the railroad may have significance under National Register *Criterion A* as a Railroad Corridor Historic District under Significance Requirement 2 as it provided a connection between the manufacturing/commerce nodes at Stillwater and the Twin Cities, and/or Significance Requirement 3 as an important component of Minnesota’s railroad network that provided an important early link between the Twin Cities, Stillwater, and wider markets.

Based on a review of the proposed project activities, there are limited potential impacts to the railroad corridor. All ground disturbance associated with the relocation and extension of the runways and construction of taxiways will be located on airport property, outside the railroad right-of-way and potential historic boundary (see Figure 2; as outlined in the MPD, the historic boundary will be the historic right-of-way of the company that built the line). Additionally, to accommodate the relocated Runway 14/32 RPZ and meet current FAA safety regulations, groups of trees located in the northwestern quadrant of the airport property, adjacent to the railroad corridor boundary, will be removed. However, the tree removal, will not alter any character-defining features of the potential StPS&TF Railroad Corridor Historic District or diminish its potential significance. Furthermore, the tree removal will have a limited impact on the overall setting and visual appearance from the railroad corridor itself. The loss of a relatively small number of trees along the entire rail corridor (which currently extends from St. Paul to Stillwater) will not drastically change the railroad’s overall visual appearance, setting, or feeling (see Figure 3 and 4).

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Figure 3. Tree removal areas adjacent to the StPS&TF Railroad.
In addition, there is no potential for indirect visual effects to the railroad corridor as changes to the runways, lighting, and navigational aids proposed adjacent to the railroad will not drastically alter current views from along the corridor. Similarly, there are no anticipated noise impacts to the railroad. Aircraft size and type will not change from what is currently landed on the runways adjacent to the railroad corridor. As such, there will be no discernable change to noise levels experienced on railroad property.

As project activities have a limited potential for impact on the railroad property, an intensive-level review of the corridor is not warranted at this time and compliance with Section 106 is complete. Should project activities change, a reexamination of the project and its effects on railroad property should be completed.
Bibliography


Van Fleet, Miranda. “Casey Jones State Trail -St. Paul & Sioux City Railroad/Chicago, St. Paul


Appendix A. Area of Potential Effects Map
Appendix B. Result Map and Inventory Forms
Description, including alterations
The buildings on this property are largely obscured by vegetation. The following description is based on limited field review and aerial imagery. The one-and-one-half-story vernacular house with a rectangular footprint was constructed in 1914. It is clad in horizontal wood siding and has an asphalt-shingled, front-gable roof with an eave overhang. An interior brick chimney is located at the roof ridgeline. The front (north) facade is largely covered by a one-story, flat-roof addition. Grouped replacement windows are located on the west elevation. Windows are replacement, one-over-one, double-hung sash with metal storms.

A modern pole building is located north of the house.

Historical Narrative
N/A

Significance
The property was evaluated under Criterion C: Architecture. Research and field survey identified no evidence of distinctive characteristics of a type, method, or period of construction; the work of a master; high artistic value; or the collective representation of a significant and distinguishable entity related to a trend of history. Therefore, the property lacks significance under Criterion C. Based on the results of the literature review, the property does not appear to be significant to any trend of local, state, or national history. Thus, the property is not eligible under Criterion A: History. The property does not appear to qualify under Criterion B: Significant Person. It is recommended not eligible for the National Register. No further work is recommended.

Area of Significance
N/A

Period of Significance
N/A

Integrity
N/A

National Register Eligibility Recommendation
Not Eligible
Lake Elmo Airport, Lake Elmo, Washington County
Minnesota Historic/Architecture Inventory Form

Identification

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Previous National Register Status

__ NRHP   __ CEF   __ SEF   __ DOE   __ Locally Des.

Description, including alterations

The buildings on this property are largely obscured by vegetation. The following description is based on limited field review and aerial imagery. This one-and-one-half-story vernacular house with a rectangular footprint was constructed in 1901. It is clad in vinyl siding and has an asphalt-shingled, front-gable roof. The front (south) facade features a modern wood deck and a bay window with replacement, one-over-one, double-hung sash. A second bay window with replacement, one-over-one, double-hung sash is located on the side (west) elevation. Windows are replacement, one-over-one, double-hung sash.

Three modern outbuildings are located on the property, including a detached garage and two sheds. The detached, two-stall garage is located southeast of the house. One shed is located east of the house and the other to the south.

Historical Narrative

N/A

Significance

The property was evaluated under Criterion C: Architecture. Research and field survey identified no evidence of distinctive characteristics of a type, method, or period of construction; the work of a master; high artistic value; or the collective representation of a significant and distinguishable entity related to a trend of history. Therefore, the property lacks significance under Criterion C. Based on the results of the literature review, the property does not appear to be significant to any trend of local, state, or national history. Thus, the property is not eligible under Criterion A: History. The property does not appear to qualify under Criterion B: Significant Person. It is recommended not eligible for the National Register. No further work is recommended.

Area of Significance

N/A

Period of Significance

N/A

Integrity

N/A

National Register Eligibility Recommendation

Not Eligible

SHPO Inventory No.   WA-BYT-008

Review and Compliance No.

Project No.

Survey No. FN2

Description

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Location of Property Centroid

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Lake Elmo Airport, Lake Elmo, Washington County
Minnesota Historic/Architecture Inventory Form

Identification

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<td>1702920330005</td>
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</table>

Previous National Register Status

- NRHP
- CEF
- SEF
- DOE
- Locally Des.

Description, including alterations

This one-story Ranch house with a rectangular footprint was constructed in 1971. It rests on a concrete block foundation, is clad in brick veneer and vertical wood siding, and has an asphalt-shingled, side gable roof with an eave overhang. The front (west) facade features a front gable projection, recessed porch supported by square columns, brick planter, and integral two-stall garage. An interior brick chimney is located at the roof ridgeline. Windows are replacement, vinyl casements; sliding; and one-over-one, double-hung sash.

There are three outbuildings located on the property. Two sheds are located at the north end of the property and the third outbuilding is located east of the house in the rear yard. All three are clad in vertical wood siding and have asphalt-shingled gable roofs.

Historical Narrative

N/A

Significance

The property was evaluated under Criterion C: Architecture. Research and field survey identified no evidence of distinctive characteristics of a type, method, or period of construction; the work of a master; high artistic value; or the collective representation of a significant and distinguishable entity related to a trend of history. Therefore, the property lacks significance under Criterion C. Based on the results of the literature review, the property does not appear to be significant to any trend of local, state, or national history. Thus, the property is not eligible under Criterion A: History. The property does not appear to qualify under Criterion B: Significant Person. It is recommended not eligible for the National Register. No further work is recommended.

Area of Significance

N/A

Period of Significance

N/A

Integrity

N/A

National Register Eligibility Recommendation

Not Eligible

Mead & Hunt, Inc. November 2017
Lake Elmo Airport, Lake Elmo, Washington County
Minnesota Historic/Architecture Inventory Form

3101 Neal Avenue N.
Identification
Historic Name: House
Current Name: House
Address: 13030 30th Street N.
City/Twp: Baytown Twp.
County: Washington
PIN: 1702920330001

Description, including alterations
This Split-level house with a rectangular footprint was constructed in 1971. It rests on an elevated concrete block foundation, is clad in replacement aluminum siding, and has an asphalt-shingled, front-gable roof. The front (south) facade features an upper-story overhang, a one-story wing with an entrance and simple concrete stoop, and a slightly projecting, two-stall garage on the west end. An exterior brick chimney is located on the side (east) elevation. A three-season porch with an exterior brick chimney is located on the rear (north) elevation. Windows are original sliding, casements, and one-over-one, double-hung sash.

A modern pole building is located north of the house in the rear yard. It is clad in metal and has a side gable metal roof. It features a sliding metal door and original sliding windows on the front (south) facade.

Historical Narrative
N/A

Significance
The property was evaluated under Criterion C: Architecture. Research and field survey identified no evidence of distinctive characteristics of a type, method, or period of construction; the work of a master; high artistic value; or the collective representation of a significant and distinguishable entity related to a trend of history. Therefore, the property lacks significance under Criterion C. Based on the results of the literature review, the property does not appear to be significant to any trend of local, state, or national history. Thus, the property is not eligible under Criterion A: History. The property does not appear to qualify under Criterion B: Significant Person. It is recommended not eligible for the National Register. No further work is recommended.

Area of Significance
N/A

Period of Significance
N/A

Integrity
N/A

National Register Eligibility Recommendation
Not Eligible
Identification

Historic Name: House
Current Name: House
Address: 13100 30th Street N
City/Twp: Baytown Twp.
County: Washington
PIN: 1702920330006

Description, including alterations
This one-story Ranch house with a rectangular footprint was constructed in 1972. It is clad in replacement vinyl siding and has an asphalt-shingled, side-gable roof with an eave overhang. The front (south) facade features grouped original casement windows, brick veneer under the water table, and a projecting front-gable, two-stall garage on the east end. The entrance on the front facade has a simple concrete stoop that is covered by an extension of the front gable roof and is supported by a wrought iron support. A second entrance with a concrete stoop is located on the side (east) elevation. An interior brick chimney is located at the roof ridge line. Windows are replacement sliding, original casements, and original fixed-over-awning.

A pole building is located north of the house in the rear yard.

Historical Narrative
N/A

Significance
The property was evaluated under Criterion C: Architecture. Research and field survey identified no evidence of distinctive characteristics of a type, method, or period of construction; the work of a master; high artistic value; or the collective representation of a significant and distinguishable entity related to a trend of history. Therefore, the property lacks significance under Criterion C. Based on the results of the literature review, the property does not appear to be significant to any trend of local, state, or national history. Thus, the property is not eligible under Criterion A: History. The property does not appear to qualify under Criterion B: Significant Person. It is recommended not eligible for the National Register. No further work is recommended.

Area of Significance
N/A

Period of Significance
N/A

Integrity
N/A

National Register Eligibility Recommendation
Not Eligible
Lake Elmo Airport, Lake Elmo, Washington County
Minnesota Historic/Architecture Inventory Form

13100 30th Street N.

WA-BYT-011

Mead & Hunt, Inc. November 2017
Description, including alterations

There are five buildings on this property: a c.1880 house, c.1960 side-gable house, c.1945 concrete block outbuilding, c.1955 Quonset, and c.1930 outbuilding. Some buildings on this property are largely obscured by vegetation. The following descriptions are based on limited field review and aerial imagery.

The two-story vernacular house with a rectangular footprint was constructed c.1880. It is composed of two blocks: a two-story hip roof main block, and a one-and-one-half-story side-gable wing. This house is clad in brick and features two-over-two, double-hung windows with segmental arches and stone sills. The front (south) facade of the main block features a large multi-light, replacement, picture window with five-light sidelights and an entrance with an arched transom and simple concrete stoop. The c.1895 wing features gable wall dormers and a second entrance with an arched lintel and simple stoop. A one-story porch is located on the south (rear) elevation. Windows are replacement, two-over-two, double-hung and fixed sash. The front porch has been removed.

A c.1960, one-story, side-gable house with a rectangular footprint is located to the west of the c.1880 house. It rests on a concrete block foundation, is clad in wood siding, and has an asphalt-shingled, side gable roof. The front (west) facade features a large, multi-light, fixed window and central entrance with a simple wood stoop. An interior brick chimney is located at the roof ridgeline and vertical wood siding is located in the gable ends. Windows are original, one-over-one, double-hung sash.

A c.1945 concrete block outbuilding is located between the two houses. The building has an asphalt-shingled, front-gable roof with wood siding in the gable end. The front (north) elevation features a double-leaf sliding wood door. Windows are fixed sash.

A c.1955 Quonset is located south of the house in the rear yard. It has an arched metal roof.

A c.1930 outbuilding is located south of the c.1880 house and c.1955 Quonset. It has a side-gable roof.

Historical Narrative

Irish immigrants Edward and Patrick Flynn purchased this parcel of land in Washington County in 1861 to establish a farm. Edward Flynn, who retained ownership of the property throughout the ensuing years, built the farmhouse’s two-story main block c.1880 and, according to the current homeowner, the one-and-one-half-story wing in 1895. Veronica Flynn, one of Edward’s five children, obtained ownership of the property after her father’s death in 1898. Although Veronica owned the property for many years, she did...
Lake Elmo Airport, Lake Elmo, Washington County
Minnesota Historic/Architecture Inventory Form

not farm and moved to Lake Elmo in the 1930s, while retaining ownership of the family farmstead. According to the current owner, the front porch was removed sometime in the early twentieth century, during Veronica’s ownership. During World War II the farmhouse and adjacent farm fields were used by the Military’s War Training Service in conjunction with the Northport airport for pilot training. Officers involved with the program resided in the Flynn farmhouse.

In 1940, just prior to her death, Veronica gave the farmstead to her youngest brother. He sold it to George Kern in 1944. During his approximately 25-year ownership, Kern converted the land into a sod farm and added the picture window to the farmhouse facade. He also constructed the c.1945 outbuilding and c.1960 side-gable house on the west end side of the property for use by a hired worker. The Quonset was also added to the property. Following Kern, the property was owned by the Kirby family, who made no significant alterations. Ownership then passed to the current resident, Kenneth Hannah, in the mid-1980s. According to Mr. Hannah, the barn on the property was recently removed and transported to North Carolina for reuse as a church. Currently, the c.1945 outbuilding and c.1960 side-gable house are located on a different parcel but remain associated with the larger farmstead.¹

Significance
The property was evaluated under Criterion C: Architecture. Research and field survey identified no evidence of distinctive characteristics of a type, method, or period of construction; the work of a master; high artistic value; or the collective representation of a significant and distinguishable entity related to a trend of history. The house also has diminished integrity due to the loss of the front porch and replacement of original windows, most notably the addition of a large picture window on the facade. Therefore, the property lacks significance under Criterion C. Based on available research the property does not appear to be significant to any trend of local, state, or national history. The property does not appear to have been significant in the context of Washington County agriculture. Although the property was used temporarily by the military to train pilots, it was not significant within the context of overall military operations or the war effort in Washington County and Minnesota. Therefore, the property lacks significance within the context of Washington County or Minnesota aviation. Thus, the property is not eligible under Criterion A: History. The early owners of the property, Edward and Veronica Flynn, do not appear to have been significant in the history of Washington County, nor do any of the subsequent owners. As such, the property does not appear to qualify under Criterion B: Significant Person. The property is recommended not eligible for the National Register. No further work is recommended.

Area of Significance
N/A

Period of Significance
N/A

Integrity
N/A

National Register Eligibility Recommendation
Not Eligible

Lake Elmo Airport, Lake Elmo, Washington County
Minnesota Historic/Architecture Inventory Form

13131 40th Street N.

13131 40th Street N.
13131 40th Street N. Aerial images for this property are not current; the red X denotes the barn that was recently removed from the property.
Identification

Historic Name  St. Paul Stillwater and Taylor’s Falls Railroad/Chicago, St. Paul, Minneapolis & Omaha Railway/Chicago & North Western Railway
Current Name  Union Pacific Railway
Address  N/A
City/Twp  Lake Elmo
County  Washington
PIN  

Description, including alterations

The St. Paul, Stillwater & Taylor’s Falls Railroad/Chicago, St. Paul, Minneapolis & Omaha Railway/Chicago & North Western Railway/Union Pacific Railway (referred to by its original moniker throughout: SIPS&TF) extends on a southwest to northeast axis at the northern edge of the Lake Elmo Airport. It enters the project area just east of the corridor’s intersection with Manning Avenue and travels approximately 1.11 miles before exiting the project area at its intersection with 40th Street N. The corridor’s single track with wood rail ties rests on a raised ballast bed. Grassy areas line the railroad bed on both sides, with groves of deciduous trees largely located at the edge of the grassy area. A guarded at-grade crossing is located at the intersection with 40th Street N and Manning Avenue. No other rail features are located along the corridor in the Area of Potential Effect (APE).

Historical Narrative

The StPS&TF Railroad was incorporated in 1869 by officers of the St. Paul & Sioux City Railroad Company. They intended to build a railroad from St. Paul to Taylor’s Falls via Stillwater with a branch connecting to Hudson, Wisconsin. The line was completed from St. Paul to Stillwater, passing through Lake Elmo, in 1872. In 1880 the company consolidated with others to form the Chicago, St. Paul, Minneapolis & Omaha Railway Company (CStPM&O), which was commonly known as the “Omaha.” In 1882 the Chicago & North Western Railway acquired control of the CStPM&O but the line continued to operate as the “Omaha.” The SIPS&TF line was largely used to transport lumber and was a major carrier of passengers and freight in an out of the Twin Cities. The line is currently owned and operated by Union Pacific Railway.

Significance

The StPS&TF may have significance for its association with railroad transportation in Minnesota and Washington County.

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The StPS&TF Railroad may have significance for its association with railroad transportation in Minnesota and Washington County. Completed in 1872, the railroad was an early connection between St. Paul and Stillwater that was used to transport timber as well as passengers and freight in and out of the Twin Cities to wider markets, such as Chicago.² Per the *Railroads in Minnesota, 1862-1956 Multiple Property Documentation Form*, the railroad may have significance applying *Criterion A* under significance requirement 2, as it provided a connection between the manufacturing/commerce nodes at Stillwater and the Twin Cities, and/or requirement 3, as an important component of Minnesota’s railroad network that provided an important early link between the Twin Cities, Stillwater, and wider markets.³ For the purpose of the project, however, further evaluation of the corridor is not recommended at this time as proposed project activities are limited to tree clearing outside the railroad right-of-way, resulting in limited potential for impact on the corridor. See *Phase I (Reconnaissance Survey) Report: Lake Elmo Airport* on file at SHPO for further details regarding project activities.

**Area of Significance**
Transportation

**Period of Significance**
Further study required

**Integrity**
N/A

**National Register Eligibility Recommendation**
Further study required

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Lake Elmo Airport, Lake Elmo, Washington County
Minnesota Historic/Architecture Inventory Form

St. Paul, Stillwater & Taylor's Falls Railroad at intersection with Manning Avenue N.

St. Paul, Stillwater & Taylor's Falls Railroad at intersection with 40th Street N.
Description, including alterations
This Split-level house with rectangular footprint was constructed c.1970. It rests on a raised concrete foundation, is clad in original wide-lap wood siding, and has an asphalt-shingled, side gable roof. The front (north) facade features a central entrance with a simple wood stoop and grouped, replacement, one-over-one, double-hung and sliding windows.

A c.1970 garage is located west of the house. It is clad in original wide-lap wood siding and has an asphalt-shingled, front-gable roof.

Historical Narrative
N/A

Significance
The property was evaluated under Criterion C: Architecture. Research and field survey identified no evidence of distinctive characteristics of a type, method, or period of construction; the work of a master; high artistic value; or the collective representation of a significant and distinguishable entity related to a trend of history. Therefore, the property lacks significance under Criterion C. Based on the results of the literature review, the property does not appear to be significant to any trend of local, state, or national history. Thus, the property is not eligible under Criterion A: History. The property does not appear to qualify under Criterion B: Significant Person. It is recommended not eligible for the National Register. No further work is recommended.

Area of Significance
N/A

Period of Significance
N/A

Integrity
N/A

National Register Eligibility Recommendation
Not Eligible
Lake Elmo Airport, Lake Elmo, Washington County
Minnesota Historic/Architecture Inventory Form

Identification

<table>
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<th>Historic Name</th>
<th>House</th>
</tr>
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<tr>
<td>Current Name</td>
<td>House</td>
</tr>
<tr>
<td>Address</td>
<td>12805 40th Street N.</td>
</tr>
<tr>
<td>City/Twp</td>
<td>Baytown Twp.</td>
</tr>
<tr>
<td>County</td>
<td>Washington</td>
</tr>
<tr>
<td>PIN</td>
<td>1802920110004</td>
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Previous National Register Status

- NRHP - CEF - SEF - DOE - Locally Des.

Description, including alterations

This Split-level house with a rectangular footprint was constructed in 1965. It rests on an elevated concrete block foundation, is clad in vertical wood siding, and has an asphalt-shingled, side-gable roof with a wide eave overhang. The front (north) facade features a central entrance with transom and side light, a group of fixed-over-awning windows, and a partial upper-story overhang over the elevated basement. An interior brick chimney is located at the roof ridgeline. Windows are the original casements and fixed-over-awning sash.

A large, two-stall detached garage with vertical wood siding and asphalt-shingled, shed roof are located east of the house. The garage features an interior brick chimney at the roof ridgeline and a large addition on the rear (south) elevation.

Historical Narrative

N/A

Significance

The property was evaluated under Criterion C: Architecture. Research and field survey identified no evidence of distinctive characteristics of a type, method, or period of construction; the work of a master; high artistic value; or the collective representation of a significant and distinguishable entity related to a trend of history. Therefore, the property lacks significance under Criterion C. Based on the results of the literature review, the property does not appear to be significant to any trend of local, state, or national history. Thus, the property is not eligible under Criterion A: History. The property does not appear to qualify under Criterion B: Significant Person. It is recommended not eligible for the National Register. No further work is recommended.

Area of Significance

N/A

Period of Significance

N/A
Lake Elmo Airport, Lake Elmo, Washington County
Minnesota Historic/Architecture Inventory Form

Integrity
N/A

National Register Eligibility Recommendation
Not Eligible

12805 40th Street N.

12805 40th Street N.
Identification

Historic Name: House
Current Name: House
Address: 12689 40th Street N.
City/Twp: Baytown Twp.
County: Washington
PIN: 1802920110002

Previous National Register Status
NRHP ___ CEF ___ SEF ___ DOE ___ Locally Des.

Description, including alterations

There are four buildings on this property: a c.1880 house, modern barn, modern pole building, and modern gazebo. This two-story Queen Anne house with an irregular footprint was constructed c.1880. It is clad in wood siding and has an asphalt-shingled, irregular roof. The front (west) facade features a two-story, projecting front-gable bay with a fixed window and replacement fish-scale shingles in the gable end. A second two-story projecting bay with replacement decorative shingles is located on the side (east) elevation. The entrance is located on the side (west) elevation and is covered by a portico supported by brackets. Windows are replacement, one-over-one, double-hung and fixed sash.

A c.1985 barn is located southwest of the house. It is clad in wood siding and has a front-gable roof. The side (north) elevation features two gable wall dormers. Windows are replacement, one-over-one, double-hung and sliding sash.

A modern pole building is located southwest of the house and a modern gazebo is located to the south in the rear yard.

Historical Narrative

N/A

Significance

The property was evaluated under Criterion C: Architecture. Research and field survey identified no evidence of distinctive characteristics of a type, method, or period of construction; the work of a master; high artistic value; or the collective representation of a significant and distinguishable entity related to a trend of history. Therefore, the property lacks significance under Criterion C. Based on the results of the literature review, the property does not appear to be significant to any trend of local, state, or national history. Thus, the property is not eligible under Criterion A: History. The property does not appear to qualify under Criterion B: Significant Person. It is recommended not eligible for the National Register. No further work is recommended.

Area of Significance

N/A

Period of Significance
Lake Elmo Airport, Lake Elmo, Washington County
Minnesota Historic/Architecture Inventory Form

N/A

**Integrity**
N/A

**National Register Eligibility Recommendation**
Not Eligible

12689 40th Street N.

12689 40th Street N.
Lake Elmo Airport, Lake Elmo, Washington County
Minnesota Historic/Architecture Inventory Form

Mead & Hunt, Inc.  November 2017
Description, including alterations
This one-story Ranch house with a rectangular footprint was constructed in 1968. It rests on a concrete block foundation, is clad in replacement vinyl siding, and has an asphalt-shingled, side-gable roof with an eave overhang. The front (north) facade features a simple concrete stoop, slightly projecting bay on the west end, and a bay window with replacement fixed and one-over-one, double-hung sash. An interior brick chimney is located at the roof ridgeline. Windows are original, one-over-one, double-hung and replacement sliding sash. An original attached garage may have been incorporated into the massing at an unknown time.

A modern two-stall detached garage with wide-lap wood siding and an asphalt-shingled, side-gable roof is located south of the house.

Historical Narrative
N/A

Significance
The property was evaluated under Criterion C: Architecture. Research and field survey identified no evidence of distinctive characteristics of a type, method, or period of construction; the work of a master; high artistic value; or the collective representation of a significant and distinguishable entity related to a trend of history. Therefore, the property lacks significance under Criterion C. Based on the results of the literature review, the property does not appear to be significant to any trend of local, state, or national history. Thus, the property is not eligible under Criterion A: History. The property does not appear to qualify under Criterion B: Significant Person. It is recommended not eligible for the National Register. No further work is recommended.

Area of Significance
N/A

Period of Significance
N/A

Integrity
N/A

National Register Eligibility Recommendation
Not Eligible
Description, including alterations

The approximately 630-acre Lake Elmo Airport is located on multiple parcels within Baytown and West Lakeland Townships and is roughly bounded by Manning Avenue on the west, the Union Pacific (historically the St. Paul, Stillwater, & Taylor’s Falls Railroad) on the north, Neal Avenue on the east, and 30th Street on the south. Residences, dating from the late nineteenth century to the 2000s, are adjacent to the airport along with a handful of late-nineteenth-century farmsteads. Three access roads provide entry to the airport: two off of Manning Avenue and the third off of 30th Street. The main access road is located off of Manning Avenue and is signed as 33rd Avenue N., in the approximate center of the airport property.

The airport features two runways: a primary runway (Runway 14-32) extending in a northwest-southeast orientation and a cross wind runway (Runway 4-22) extending in a northeast-southwest orientation. Taxiways, lights, and navigational aids are located along both runways. There are three groups of hangars on the airport, identified as Hangar Areas 1-3 in Figure 1. Hangar Areas 1 and 2, which consist of historic-age and modern hangars, are located adjacent to Manning Avenue and are separated by 33rd Avenue N. Hangar Area 3 consists of modern hangars, constructed from 1990 to the present, and is located in the northwest quadrant adjacent to the Union Pacific rail line.
The airport features several modern and historic-age aviation support buildings called out in Figure 2. The following brief building descriptions are organized by support buildings and Hangar Areas 1-3.
Located at the north end of the property near the railroad corridor, Valters Aviation serves as the airport’s fixed-base operator (FBO) (see Figure 3). The c.1990, one-story building rests on a concrete block foundation, is clad in standing-seam metal siding, and has a shallow, front-gable, standing-seam metal roof. It features a large, vertical, bi-fold door on the south elevation and metal, fixed sash windows. A c.2000, one-story, shed-roof addition is located on the north elevation.
The c.1980, one-story Lake Elmo Metropolitan Airports Commission (MAC) maintenance building is located at the east end of the airport’s main access road (see Figure 4). The concrete block building rests on a poured concrete foundation and has a flat roof with metal coping and metal fixed sash windows. It features seven bays, each with an overhead door, on the front (west) facade. The southern two bays are slightly higher than the remainder of the building. A one-story, c.2000 addition wraps around the side (north) and rear (east) elevation and features a band of fixed frame windows.

A c.1960, irregularly shaped, one-story building, possibly a former FBO building, is located southwest of the maintenance building (see Figure 5). It rests on a poured-concrete foundation, is clad in vertical metal siding, and has flat metal roof. The front (north) facade features an overhead door, casement windows, and polygonal projecting bay on the southeast end. A large vertical bi-fold door is located on side (southeast) elevation.
A c.1970, one-story maintenance building is located near the southern end of the property and is accessed via 30th Street (see Figure 6). It rests on a poured-concrete foundation, is clad in standing-seam metal siding, and has a shallow front-gable roof that is covered in standing-seam metal. The front (northeast) facade features a large overhead metal door. Windows are three-part sliding sash.

The airport has approximately 128 hangars constructed from the 1950s to the present. The historic-age hangars, dating to the 1950s and 1960s, are located in Hangar Areas 1 and 2. These hangars consist of a mixture of box and T-hangars and Quonsets (see Figures 7-10). They vary in type and size; feature
alterations, including replacement siding, windows, and doors; and do not appear to be planned as a cohesive group. The historic-age box and T-hangars commonly rest on poured-concrete foundations, are clad in metal, and have front- or side-gable roofs. They feature sliding or vertical bi-fold doors and some have sliding or fixed windows. The Quonsets rest on poured-concrete foundations, are clad in metal siding, and have arched metal roofs. They also feature sliding or vertical bi-fold metal doors. Modern box hangars are interspersed with historic-age hangars in Hangar Areas 1 and 2.

Figure 7. Historic-age T-hangar, view facing south.

Figure 8. Historic-age Box and Quonset hangars, view facing south.
Modern box hangars, constructed from c.1990 to the present, are located in Hangar Area 3 (see Figures 11 and 12). They rest on poured-concrete foundations, are clad in vertical metal siding, and have metal front- or side-gable roofs. The hangars feature a large vertical bi-fold door often with an adjacent single-leaf entry door. Some have sliding or fixed windows.
Historical Narrative

During World War II the Minnesota State Legislature recognized the future importance of air transportation in the state. With the hope of making the Twin Cities a leader in aviation within the upper Midwest, the legislature created the Metropolitan Airports Commission (MAC) in 1943 with the aim of promoting air transportation and commerce in the seven-county Twin Cities metro area. The MAC was designed to take a regional approach to air service and discourage competition between Minneapolis and St. Paul. As a result, the MAC established a system of airports with the primary airport being Wold-Chamberlain Field (which became Minneapolis-St. Paul International Airport in 1948) and six reliever airports to accommodate smaller aircraft traffic.\(^1\) The organization decided that one reliever airport would

be located within the eastern suburbs of St. Paul. As such, in 1949 it purchased 160 acres of farmland near the community of Lake Elmo in Baytown Township for development as the Lake Elmo Airport. At its officially opening in 1951, the Lake Elmo Airport had two runways: a northwest-southeast 2,300-foot-long paved runway (Runway 13-31) and a northeast-southwest 2,400-foot-long sod runway (Runway 3-21).²

Not long after its construction, private individuals and small companies began developing hangars and support buildings on-site (see Figure 13). Hangars, including the nine original T-hangars, were constructed in Hangar Area 1, off of Manning Avenue (see Figure 2). The first FBO at the airport, operated by A.R. Metzger, opened in 1951.³

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² The runway numbers were changed in 1999 to 14-32 and 04-22, respectively.


⁴ “Historical Aerial Photograph, Washington County,” 1953, available in the Borchert Map Library, University of Minnesota.
In 1966 the MAC expanded the Lake Elmo Airport by purchasing an additional 470 acres of farmland in Baytown and West Lakeland Townships. In the following year it lengthened Runway 13-31 to 2,600 feet and relocated, extended, and paved Runway 3-21 to 2,500 feet. In the coming decade MAC constructed support buildings, including a maintenance facility and navigational aids. Private hangar and FBO development continued on the west side of the airport (see Figures 14 and 15). Throughout the 1970s and 1980s the airport supported two FBOs, Elmo Aero and Mayer Aviation, which replaced the original Metzger FBO. A third FBO, Lake Elmo Flight Services, also operated for a time and constructed a combined hangar and office facility near the northern edge in 1990.

Figure 14. 1957 aerial photograph Lake Elmo Airport.\(^6\)


\(^6\) “Historical Aerial Photograph, Washington County,” 1957, available in the Borchert Map Library, University of Minnesota.
By the 1990s development shifted to the northern quadrant of the airport (Hangar Area 3). Several modern box hangars were built in this area at that time to accommodate growing demand for aircraft storage. Former FBOs dissolved, leaving Mayer Aviation as the sole FBO. The company was subsequently replaced by the current FBO, Valters Aviation, in 2003. The most recent MAC-initiated airport improvements came in in the early 1990s when it extended Runway 13-31 to its current length of 2849 feet.

Today, the Lake Elmo Airport is one of two airports within Washington County, the other being the Daniel A. DePonti Memorial Airport. It is over 600 acres in size; remains under MAC ownership; is used by local businesses, private pilots, and the Civil Air Patrol; supports 150 buildings; and houses 189 aircraft as of October 2016.

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7 “Historical Aerial Photograph, Washington County,” 1964, available in the Borchert Map Library, University of Minnesota.


Significance
The Lake Elmo Airport, including its collection of support buildings and hangars, was evaluated under Criteria A, B, and C. Criterion D, which deals with potential information sources, was evaluated by the Mississippi Valley Archaeology Center under another cover. The archaeology report will be on file at SHPO.

Research and field survey identified no evidence of distinctive characteristics of a type, method, or period of construction; the work of a master; high artistic value; or the collective representation of a significant and distinguishable entity related to a trend of history within Criterion C in the areas of Architecture or Engineering. Based on a review of aerial photography, airport histories, and expansion studies, the Lake Elmo Airport does not exhibit a planned development pattern. It was constructed over the course of 40 years and represents a mix of MAC- and privately constructed support buildings and hangars, which are typical box, T-, and Quonset hangar types found in regional airports statewide and do not represent a significant method of construction, nor do they represent a significant or cohesive collection of a building type. Additionally, many of the support buildings and historic-age hangars have been altered to varying degrees through replacement siding, windows, and doors. Therefore, the property lacks significance under Criterion C.

Based on the results of the literature review, the Lake Elmo Airport does not appear to be significant to any trend of local, state, or national history. While it is a reliever airport within the MAC system, the airport is not significant within the history or development of that system. It is not distinct or extraordinary in comparison to the other reliever airport within the MAC system or regionally, nor is it important within the overall history of aviation in Minnesota or Washington County. Thus, the property is not eligible under Criterion A: History.

Research did not reveal any notable individuals associated with MAC, the airport or its operations, regional aviation, or aviation activities within the state. As such, the property does not appear to qualify under Criterion B: Significant Person.

The Lake Elmo Airport is recommended not eligible for the National Register. No further work is recommended.

Area of Significance
N/A

Period of Significance
N/A

Integrity
N/A

National Register Eligibility Recommendation
Not Eligible
Description, including alterations
The buildings on this property are not visible from the public right-of-way. Aerial images indicate that the property has three buildings that are largely surrounded by mature trees. The primary structure is a gable-ell house that appears to feature a bay window on the front (south) facade. County Assessor records indicate it was constructed in 1901. Two gable-roof outbuildings are located to the west of the house. Both appear to be modern.

Historical Narrative
N/A

Significance
The property was evaluated under Criterion C: Architecture. Research and field survey identified no evidence of distinctive characteristics of a type, method, or period of construction; the work of a master; high artistic value; or the collective representation of a significant and distinguishable entity related to a trend of history. Therefore, the property lacks significance under Criterion C. Based on the results of the literature review, the property does not appear to be significant to any trend of local, state, or national history. Thus, the property is not eligible under Criterion A: History. The property does not appear to qualify under Criterion B: Significant Person. It is recommended not eligible for the National Register. No further work is recommended.

Area of Significance
N/A

Period of Significance
N/A

Integrity
N/A

National Register Eligibility Recommendation
Not Eligible
Lake Elmo Airport, Lake Elmo, Washington County
Minnesota Historic/Architecture Inventory Form

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2933 Manning Avenue N.
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Phase I Archaeological Identification Survey of Proposed Changes to Portions of the Lake Elmo Airport, Washington County, Minnesota

Prepared for:
Mead and Hunt
7900 West 78th Street
Suite 370
Minneapolis, MN 55439-2572

Principal Investigator and Report Prepared by:
Vicki L. Twinde-Javner

Mississippi Valley Archaeology Center
University of Wisconsin-La Crosse

Reports of Investigations No. 1113

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ABSTRACT/MANAGEMENT SUMMARY

At the request of Mead and Hunt, on June 1, and July 12 and 13, 2017, personnel from the Mississippi Valley Archaeology Center (MVAC) led by the Principal Investigator conducted a Phase I archaeological survey for a proposed expansion to the Lake Elmo Airport in Washington County, Minnesota. The project is within Sections 18 and 19 of Township 29 North, Range 20 West in Baytown and West Lakeland Townships in Minnesota Archaeological Region 4e. This work was done for the Metropolitan Airports Commission to be in compliance with the National Environmental Policy Act (NEPA) and Council on Environmental Quality (CEQ) as part of the Federal Aviation Administration (FAA) policies and procedures as detailed in FAA Order 1050.1F.

A total of approximately 126 acres was surveyed. Survey methods included pedestrian survey in plowed fields with excellent surface visibility, and shovel testing within portions of the current airport grounds and wooded areas within and adjacent to the plowed fields with no surface visibility.

Two new historic sites were identified. 21WA0119 consists of historic foundations with one structure consisting of a limestone foundation with a concrete addition, and a second foundation made of concrete and cinderblock. There is also some concrete slabs of unknown use. Based on historical documentation, these structures were erected sometime between 1874 and 1901, and were present until possibly the early 1980’s. 21WA0120 consists of two historic foundations made of concrete. Based on historical research, the structures were erected sometime between 1874 and 1901, and were present until at the least the mid to late 1960’s.

Historical maps and deed research indicate that from 1933 to 1946, the foundations associated with both of these sites, and the land surrounding them, were owned by the Jacob Schmidt Brewing Company. It is unknown if the buildings at these two sites were used in any of the manufacturing or storage for the brewery which during the 1930’s and 1940’s, was the seventh largest in the nation. The intact foundations indicate integrity, and the relationship to the Jacob Schmidt Brewing Company could indicate significance. These two sites may be potentially eligible for listing on the National Register of Historic Places (NRHP) under Criteria D, as they could yield important information about the past. However, since ultimately ground disturbing activities will be able to avoid these sites, the sites were not formally evaluated for eligibility for the NRHP. The only action in the site areas is the groves of trees they are located in will be clear cut.

No other cultural material was identified within the project area, therefore no further work is recommended for the remainder of the project. However, if in the future, ground disturbing activities are planned in the locations of WA0119 and WA0120, the State Historic Preservation Office should be consulted to see if further evaluations are necessary.
# TABLE OF CONTENTS

Abstract/Management Summary ................................................................. ii  
Table of Contents ......................................................................................... iii  
List of Figures ............................................................................................... iii  
List of Tables ................................................................................................. iv  

Introduction And Project Description .......................................................... 1  
Research Design ............................................................................................ 5  
Literature Search ........................................................................................... 5  
  Environmental Setting .................................................................................. 6  
  Regional Cultural Context .......................................................................... 6  
  Prehistoric .................................................................................................... 6  
  Historic ........................................................................................................ 7  
  Previous Sites and Surveys .......................................................................... 8  
  Land Use History ......................................................................................... 9  
Methodology/Work Summary ......................................................................... 11  
Results ........................................................................................................... 17  
  21WA0119 – Lake Elmo Air Foundations 1 .................................................. 17  
  21WA0120 – Lake Elmo Air Foundations 2 .................................................. 27  
Recommendations .......................................................................................... 31  
References Cited ............................................................................................ 32  
Appendix 1: Literature Review from MN SHPO .......................................... 35  

## List of Figures

- Figure 1. Approximate location of project in Minnesota ......................................................... 2  
- Figure 2. Approximate location of project area with UTM coordinates ................................. 3  
- Figure 3. Aerial view of project area provided by Mead and Hunt ........................................ 4  
- Figure 4. Andreas (1874) map of project area ..................................................................... 10  
- Figure 5. Northwest Publishing Company (1901) map of project area ................................. 10  
- Figure 6. Example of field conditions in plowed fields south of 30th Street North ............. 12  
- Figure 7. Example of field conditions in plowed fields north of 30th Street North .............. 12  
- Figure 8. Example of utility disturbance east of Neal Avenue North ................................. 13  
- Figure 9. Example of field conditions in existing airfield north of taxiway for Runway 4/22 . 15  
- Figure 10. Example of field conditions in existing airfield south of Runway 4/22 .......... 15  
- Figure 11. Example of field conditions in new compass point airfield north of Runway 14/32 .... 16  
- Figure 12. Example of field conditions northeast of Runway 4/22 .................................... 16  
- Figure 13. Approximate locations of 21WA0119 and 21WA0120 ........................................ 18  
- Figure 14. Sketch map of 21WA0119 ............................................................................... 19  
- Figure 15. View of limestone foundation at 21WA0119 .................................................... 20
INTRODUCTION AND PROJECT DESCRIPTION

In June and July 2017, personnel from the Mississippi Valley Archaeology Center (MVAC) led by the Principal Investigator performed a Phase I archaeological identification survey for a proposed expansion to the Lake Elmo Airport in Washington County, Minnesota (Figure 1). This work was done at the request of the Metropolitan Airports Commission (MAC) for compliance with the National Environmental Policy Act (NEPA) and Council on Environmental Quality (CEQ) as part of the Federal Aviation Administration (FAA) policies and procedures as detailed in FAA Order 1050.IF. The MAC has developed a number of previous planning studies, and prepared the first long-term comprehensive plan for the Lake Elmo Airport in 1966 with updates in 1976, 1992, 2008, and 2016. The current proposed expansion is one part of this plan to update existing infrastructure and improve safety and provide appropriate facilities for the types of aircraft currently using this airport (Airport Development and Environment Departments 2016: 1-1). The MAC, owner of the Lake Elmo Airport, is proposing to:

- Build a new 3,500 foot replacement runway for the existing 2,850 foot primary runway, Runway 14/32. This will include shifting the runway 615 feet to the northeast and will include all necessary grading, clearing, and runway lighting.
- Realign 30th Street North along the new Runway 32 Runway Protection Zone (RPZ) and reconnect to the existing intersection with Neal Avenue.
- Construct a new cross field taxiway to serve the new Runway 14 end, including taxiway lighting and/or reflectors.
- Convert existing Runway 14/32 to a partial parallel taxiway and construct with other taxiways as needed to support the relocated runway, including taxiway lighting and/or reflectors.
- Reconstruct Runway 4/22 and extend to 2,750 feet, including necessary lighting and taxiway connectors.
- Establish a new non-precision approach to new Runway 14 and upgrade existing Runway 4 approach to RNAV (GPS).
- Add a new connector road from the existing service road for better access to the hangars north of the main entrance driveway to the airport.
- Add an additional compass point east of Runway 14/32.

The Area of Potential Effect (APE) for the project will include any proposed areas of ground disturbance related to the actions described above. The project consisted of survey of approximately 126 acres of both agricultural land, wooded areas, and portions of the existing airfield. Since the project area has not been previously surveyed, and no known sites were in the project area, the purpose of the survey was to identify any cultural resources in the APE. The project is within Sections 18 and 19 of Township 29 North, Range 20 West in Baytown and West Lakeland Townships (Figures 2 and 3). The survey outline is an amorphous shape and representative UTM coordinates for this project can be found in Figure 2.
Figure 1. Approximate location of project area in Minnesota.
Figure 2. Approximate location of project area shown with UTM coordinates.
Figure 3. Aerial view of project area provided by Mead and Hunt.
RESEARCH DESIGN

The research design for the airport expansion project sought to identify cultural resources that might be impacted by planned construction activities. Methods involved: pre-field investigation to identify known sites; review of historic aerial photos and plat maps; and survey of areas that may be affected by the proposed changes to the airport and realignment of a portion of 30th Street North. Since no previous surveys have taken place in the project area, and the area is closer to water sources indicating a higher probability of cultural resources, the entire project area was surveyed. The survey included both pedestrian survey and shovel testing. The extent of the APE included all proposed area of potential ground disturbance. Any cultural resources identified during the survey were to be mapped, GPS coordinates recorded, and site forms filled out for the Minnesota Historical Society as applicable.

LITERATURE SEARCH

ENVIRONMENTAL SETTING

The APE includes: the current grounds of the Lake Elmo Airport facility which is east of Manning Avenue, north of 30th Street North, and west of Neal Avenue North; new runway areas south of the existing airport grounds encompassing portions of existing farm fields north and south of 30th Street North; realignment of 30th Street North encompassing plowed fields south of 30th Street North; and, some minor improvements along Neal Avenue North as a result of the realignment of 30th Street North.

The project lies in the Central Lake Deciduous Region. The topography of this region includes moraines, till plans and outwash plains. Numerous lakes are found throughout the region and the Mississippi River flows through the regions eastern and central part. In early historic times, the vegetation in the southern and western parts of the region would have been dominated by Big Woods species with numerous large inclusions of prairie and wood oak (Anfinson 1990: 147-148). The original vegetation cover of the project area would have consisted of brushland (oak openings and barrens with scatter trees and groves of oaks of scrubby form with some brush and thickets and occasionally with pines (Marschner 1930). The project area is within what is considered the Eastern Broadleaf Forest Province. This province covers nearly 12 million acres of the central and southeastern portion of Minnesota, and serves as a transition between semiarid portions of the state that were historically prairie and semi-humid mixed conifer-deciduous forests to the northeast (Minnesota DNR 2017).

The bedrock geology of the project area is part of the Mille Lacs-Highland Moraine Association with glacial end deposits (Hobbs and Goebel 1982). The soils within this region generally have medium to coarse textures with prairie soils in the south and west, and forest soils in the north and east. Outcrops of bedrock are limited to occasional granitic rock exposures in the
region’s center and eastern edge (Anfinson 1990: 148). Due to the size of the project area, it contains various types of soils (Table 1) (Natural Resource Conservation Service 2017).

**Table 1. Soil types in project area.**
- Antigo silt loam, 0 to 6 percent slopes
- Antigo silt loam, 2 to 6 percent slopes
- Campia silt loam, 0 to 8 percent slopes
- Chetek sandy loam, 0 to 6 percent slopes
- Chetek sandy loam, 6 to 12 percent slopes
- Comstock silt loam
- Crystal Lake silt loam, 1 to 3 percent slopes
- Freer silt loam
- Santiago silt loam, 2 to 6 percent slopes

**REGIONAL CULTURAL CONTEXT**

*Prehistoric*

The project lies in what has been classified as the Central Lake Deciduous Region. The prehistory of this area has been divided into three periods: Early, Middle, and Late Prehistoric. Technology and cultural changes interpreted in the archaeological record are used to define these periods. Within these periods, Johnson (1988) has identified Paleoindian, Eastern Archaic, Woodland and Mississippian cultural traditions.

**Early Prehistoric Period** (before 6000 B.C. - 1000 B.C.): Paleoindians maintained a hunting-gathering subsistence, traveling in small bands. Large Pleistocene mammals such as the woolly mammoth and mastodon were supported by a vast Boreal conifer forest (Wright 1974). Clovis and Folsum fluted points of the Early Prehistoric Period are representative of this period and have been recovered in southern and southwestern Minnesota (Anfinson 1997). During the latter phases of the Paleoindian tradition, it appears that human populations began spreading throughout the state based on projectile point finds (Johnson 1988: 6-9).

**Eastern Archaic people** (6000 - 800 B.C.) continued hunting and gathering, and the appearance of groundstone technology suggests a shift to greater use of plant resources (Wright 1974). Early Archaic peoples focused on bison hunting, and later on deer and elk. In the latter half of the Eastern Archaic Period copper became an important resource material in the production of utilitarian items. Stemmed points became popular during this time period and chipped stone scrapers, knives, punches, and drills were utilized. During this time period, techniques for making ground and pecked stone tools was established (Johnson 1988: 10-14).

**Middle Prehistoric Period** (800 B.C. - A.D. 900): The beginning of the Middle Prehistoric Period is marked by the appearance of pottery and burial mound construction, mainly identified
as the Woodland tradition. Woodland pottery contained grit, a crushed rock or sand, which was used to temper the clay during firing. The thin-walled pottery often displayed decorated impressions. Conical and linear mounds were mainly utilized for burial mounds, as very few effigy mounds along the Wisconsin border from the Twin Cities southward Woodland peoples still relied on seasonal hunting and gathering, but developed a more sedentary lifestyle. Projectile points varied in form with side and corner notched points becoming popular. The use of copper lessens during this time, but it continues to be used for awls or piercing tools and ornaments. Ground stone tools, including the popular grooved maul, were utilized (Johnson 1988: 15-19). Increasing population growth, intensification of regional identity and local groups, increasing efficient use of local raw materials and food sources, and intrusion of ideas, materials, and technology from other regions are major trends identified in Minnesota during this time period (Benchley et al. 1997a: 124).

Late Prehistoric Period (A.D. 900-1650): In southern Minnesota this period is identified with the appearance of the Mississippian culture and the introduction of corn horticulture. Mississippian culture was based upon intensive agriculture including the cultivation of maize or corn, beans, squash, sunflowers and tobacco. Although intensive agriculture was important, hunting and fishing remained essential, with Bison an important food staple. Large semi-permanent villages were maintained. Chipped stone technology continued including side-notched and unnotched triangular points, double pointed knives, trapezoidal forms of hide scrapers, along with drills and punches. Ground stone tools also were continued to be used, along with bone tools. Eastern Minnesota pottery was tempered with crushed shell and included wide or narrow incised geometric decoration. The use of burial mounds continued in some areas, and in the southern part of Minnesota, some of the mounds are more distinctive than their Woodland counterparts in that the exterior was covered in limestone slabs (Johnson 1988: 24-27).

Historic

With the coming of the Europeans to the area, European items and disease came into Minnesota from the east and south. Eastern tribes began to push to the west, displacing the original habitants. At the beginning of the contact period, the largest and possibly most widespread group was the Eastern Dakota, who occupied most of the Lake-forest biome of the central and northern Minnesota. They were displaced from the Lake-forest biome into the prairies, mainly by the Ojibway during the Chippewa (Ojibway)-Dakota wars, which lasted from the 1730’s until 1854. Other Native groups were present in Minnesota during the early historic time period, including the Iowa, Oto, and possibly the Assiniboine (Benchley et al. 1997b: 203-207).

The construction of Fort Snelling on the west side of the Mississippi River brought Euro-American civilization to Minnesota (Anfinson 1989: 20). Washington County was established on October 27, 1849. This was one of the nine original counties into which Minnesota was divided in 1849, although it is smaller than originally mapped. The county was named after George
Washington (Upham 2001: 615). Baytown Township was organized in May of 1858 (Upham 2001: 616). Lakeland Township (which West Lakeland Township was part of originally), was settled in 1839 and organized on October 20, 1858. West Lakeland Township was named as such in 1951 when Lakeland Township incorporated (Upham 2001: 607, 620).

PREVIOUS SITES AND SURVEYS

This project is located in SHPO region 4e. A literature review request was submitted to the Minnesota Historical Society (MHS) for the Township, Range, and Sections that the project area passes through and the Sections that would be within one mile of the existing project area. The Principal Investigator also visited the State Historic Preservation Office (SHPO) on May 10, 2017, to look through the maps, and previous site and survey files housed at that facility.

According to information provided by and researched at the Minnesota SHPO, one previously recorded site is within one mile of the project area. 21Waa, called Bass Lake Station, is located in Township 29 North, Range 21 West, Section 13. This site is a historic depression. The topographic maps at the SHPO office did not have this site mapped, but according to a list of sites provided by the SHPO office, the site is located in the southwest quarter of Section 13, which would put it at least a half mile to the west of the project area. Additionally, there is one historic cemetery located a quarter to a half mile northwest of the project along Stillwater Boulevard North. No previous recorded sites overlap the current project area.

Based on the list of reports for Washington County provided by the SHPO, and a review of reports in the Washington County drawer at the SHPO during the May 2017 visit, there has been no previous field surveys in the project area. A cultural resource assessment for the Lake Elmo Village area, which included the area just west of Manning Avenue opposite the airport grounds, was completed in 2007. However, this assessment included a literature review, background information, and recommendations for future work in the area, but did not include field survey (Boden and Mathis 2007).

LAND USE HISTORY

Various maps and atlases were researched to establish a general pattern of development along the project area and land use history. Online resources were used along with maps and atlases found at the MHS library. Mead and Hunt assisted MVAC with some of this research. Minnesota Historic Contexts applicable to this project include Early Agriculture and River Settlement (1840-1870).

According to the General Land Office (GLO) Records map from the Bureau of Land Management for this area, a 1854 original survey map (actual field survey dates to 1847) does not have any indications of cultural features, mounds, old roads or trails within either Sections 18
or 19 of Township 29 North, Range 20 West. The map and associated notes do not have any information regarding potential archaeological sites in these sections (Bureau of Land Management 2017, Field Notes Volume 130).

Historic maps of the area including plat maps and topographic maps were reviewed. Andreas’ (1874) map of the area does not exhibit any structures or cultural features within the project area. One structure is noted near the very northwest corner of the current airport property near the railroad tracks. Since there is no scale on the map, it is unclear if this structure is within the project area. The only project action in this part of the airport is for a new access road. A structure is noted in the center of Section 19, but is it is out of the project area (Figure 4).

The 1901 plat map of the area does show two structures in the project area, both north and south of 30th Street North (Blackwoods Avenue) (Northwest Publishing Company 1901) (Figure 5). The 1916 plat map of the area does not exhibit structures in the project area, but this map does very few structures within the two townships and appears to be more of a map showing property ownership boundaries (Hixson 1916). The case is similar with the 1938 plat map (Hudson Map Company 1938) of the area.

Based on historic aerial photos, the land where the current facility is located and the proposed expansion area was plowed fields back until at least 1938. Two clusters of structures are noted both north and south of 30th Street North on the 1938 through 1964 aerial photos (Regents of the University of Minnesota 2017) which are currently in groves of trees that were shovel tested as part of this project. These locations match the approximate locations of the structures on the historic plat maps. The 1938 aerial photo also shows that there were a few other ponds or what appear to be water sources in the northeast portion of the project area that are no longer apparent. See Results section of this report for historic aerial photos and further discussion.

The Lake Elmo Airport was opened in 1951. The first airfield near the current facility was opened in 1939 between the cities of White Bear Lake and Stillwater, and was known as Northport. During World War II, the Army used Northport to train pilots under the Civilian Piolet Training Program. The Army also leased the Flynn Farm to the east of the current airport and established a landing area to train glider pilots. After the war, the Flynn Farm airfield was closed and the land was once again used for agricultural purposes. After World War II, the MAC saw a need for an airport east of the Twin Cities, and in 1949, approximately 160 acres of land was purchased and the Lake Elmo Airport opened in 1951. At this time, draining, grading, and surfacing began for the single 75 foot wide by 2300 foot long paved runway that runs northwest-southeast. Since 1951, the runway was extended to 2850 feet with a full lighting system, and a second 2400 foot paved runway was added that runs northeast-southwest. The airport has a full taxiway system, an automated weather station, and two areas for instrument approach procedures. In 1966, an additional 470 acres was purchased for expansion of the airport, which includes all of the current project area except the area immediately east of Neal Avenue (Airport Development and Environment Departments 2016: 1-3, and Foster 2013: 3).
Figure 4. Andreas (1874) map of project area.

Figure 5. Northwest Publishing Company (1901) map of project area.
METHODOLOGY/WORK SUMMARY

On June 1, and July 12 and 13th, 2017, an MVAC field crew led by the Principal Investigator conducted a Phase I archaeological investigative survey of the proposed project area in Minnesota Archaeological Region 4e. The APE for the project included all areas of proposed ground disturbance which included portions in the existing airport facility north of 30th Street North and east of Manning Avenue, plowed fields and a small amount of wooded areas north of 30th Street North between Manning Avenue and Neal Avenue North, plowed fields and a small amount of wooded area south of 30th Street between Manning Avenue and Neal Avenue North, and approximately 840 feet north to south on the east side of Neal Avenue North, approximately 50 feet from the centerline of the road. There were no previously recorded sites within the project area, so the objective of the Phase I survey was to look for new sites.

The portions of the project north and south of 30th Street North, outside of the existing airport facility grounds, mainly consisted of plowed fields with a few wooded areas. At the time of the June 1 survey, the plowed fields contained soybeans that were 4 to 6 inches in height. Although there was some remnant corn stalks from previous harvests in the fields, the surface visibility was, in general, excellent with most areas in the plowed fields exceeding 95 percent surface visibility. The fields were walked on a warm sunny day which made the visibility optimal. To include various alternatives for the realignment of 30th Street North, some additional area was pedestrian surveyed south of 30th Street North in July when the soybeans had grown to more than a foot in height, but the surface visibility between the rows was still excellent. Pedestrian survey was carried out within the plowed fields in 12 to 15 meter intervals (Figures 6 and 7).

The proposed realignment of a portion of 30th Street North would possibly impact a small portion of Neal Ave, and the survey parameters were indicated to be 50 feet from centerline along the road for approximately 840 feet to cover any potential work. Once Gopher One marked the utilities along Neal Avenue, the east side of the road was shown to be saturated with utilities, therefore was not surveyed (Figure 8). The west side of the road had utilities near the road edge, and then was sloped up to the end of the plowed field that was pedestrian surveyed by MVAC. Therefore, this grassy area on the west side of Neal Avenue was not surveyed. Since the plowed fields on either side of the portion of 30th Street North that is to be impacted were very close to the road edge, with only a small amount of grass and slope/ditch between the road and the plowed fields, no shovel testing was undertaken along 30th Street North since the pedestrian survey of the immediately adjacent plowed fields should have given adequate coverage.

Historic aerial photos and historic maps were reviewed prior to the survey. Historic aerial images from 1953 and 1964 show the runways, but since these aerials are in black and white, although some grading was apparent, it was hard to estimate the actual grading limits within the current airport facility verses what was plowed field at that time, therefore the entire APE was considered in the survey. Within the airport facility, shovel tests were placed in 15 meter
Figure 6. Example of field conditions in plowed fields south of 30th Street North. View facing north.

Figure 7. Example of field conditions in plowed fields north of 30th Street North. View facing north.
intervals in all areas that were not obviously disturbed by ditch or grading. One area between existing Runway 14/32 and the taxiway was not shovel tested due to the fact there was graded slope on both edges with a ditch line running down the center. An area just east of Runway 14/32 at its southeastern end was obviously graded with some steep slope. A small area at the northeastern end of the facility that had some wetland, ditch, and slope. MVAC made a reasonable and good faith effort to shovel test any of the other areas that could not be ruled out as obviously disturbed on the surface. This included most of the rest of the project area except areas of steep slope or wetland. Some of the shovel tests along the access driveway for the northernmost set of airplane hangars showed obvious disturbance within a few inches of the ground surface by previous grading. The area southwest of Runway 14/32 exhibited obvious disturbance by previous grading with a few inches of the surface. The portion of the open area north of the taxiway for Runway 4/22 exhibited some disturbance, while other shovel tests appeared to show developed soil for the area (Figures 9 through 12).

There were a few wooded areas north and south of 30th Street North in and immediately adjacent to the plowed fields, and shovel testing was undertaken in 15 meter intervals. A few small areas of wetland were located north of 30th Street North, and were not shovel tested.

All shovel tests were excavated into sterile subsoil, and all soil was screened through 1/4 inch mesh. In general, shovel tests ranged from 48 to 50 centimeters below the current ground surface, depending on location and terrain. Areas that were wetland, steep slope, had obvious
disturbance by road construction, or obvious grading or ditching from airport construction were not surveyed. Examples of shovel test profiles are below:

**Example Soil Profiles**

0-32 cm, 10YR 2/2 Very Dark Brown Silt
32-49 cm, 10YR 6/8 Brownish Yellow Silty Clay

0-37 cm, 10YR 3/1 Very Dark Grey Silt
37-52 cm, 10YR 6/6 Brownish Yellow Silty Clay

0-27 cm, 10YR Very Dark Brown Silt
27-34 cm, 10YR 4/4 Dark Yellowish Brown Silt
34 – 55 cm, 10YR 6/8, Brownish Yellow Silt

All sites were mapped and GPS points were taken to establish UTM coordinates. Sketch maps were drawn of each site, and general notes were taken on the surrounding terrain and other pertinent information. Historic debris found at the two historic sites identified during this survey were photographed as appropriate and were noted in the general field notes. However, due to the more recent nature of the historic debris at the sites, no material was collected. All field notes, photographs, and other documentation will be stored at MVAC.
Figure 9. Example of field conditions in existing airfield north of taxiway for Runway 4/22. View facing southwest.

Figure 10. Example of field conditions in existing airfield south of Runway 4/22. View facing northeast.
Figure 11. Example of field conditions in new compass point north of Runway 14/32. View facing northwest.

Figure 12. Example of field conditions northeast of Runway 4/22. View facing southeast.
RESULTS

Two new historic sites, 21WA0119 and 21WA0120, were identified while shovel testing in two groves of trees north and south of 30th Street North (Figure 13). These sites coincide with the foundations noted on the 1938 through 1960 aerial photos, and the 1901 and later plat maps.

21WA0119 - Lake Elmo Air Foundations 1

21WA0119, called Lake Elmo Air Foundations 1, is in the SW/14 of the SW1/4 of the SE1/4 of Section 18 in Township 29 North, Range 20 West in Baytown Township (see Figure 13). This site was found while shovel testing in a grove of trees north of 30th Street North, southeast of the existing Lake Elmo Airport facility. This site consists of foundations associated with two buildings and some concrete slabs of unknown origin. The first foundation was found approximately 420 feet north of 30th Street North, and had a limestone portion measuring 26 feet by 15 feet, with a later concrete block addition at its northwest corner measuring approximately 19 feet by 18 feet (Figures 14 and 15). The concrete addition had a metal waterspout, a copper pipe with electrical wire, and electrical plugins apparent. The area where these foundations were located was extremely overgrown and it was apparent that the foundations had been affected by downed and uprooted trees in the area. The depth of the foundations was approximately three feet.

Since this whole wooded area was extremely overgrown, it was hard to get accurate measurements between the foundations. However, measurements were estimated using GPS data. Approximately 113 feet to the west of the first foundation, a large concrete slab measuring approximately 50 feet long by 14.5 feet wide was identified. The purpose of this slab is unknown. Approximately 53 feet southwest of this concrete slab was the remnant of another concrete building. This building was approximately 77 feet long by 17 feet wide. The outsides of this foundation were made of concrete block/cinder block and there were 7 foot “rooms” or entrance areas made of cinderblock at the northern and eastern ends of the building (Figure 16). The interior of this building had three separate concrete slabs inside at different levels in height. The highest was at the northern end, with the second level approximately 12 inches lower in the middle, and then another transition sloping down approximately 4 inches at the southern end. This may have been some type of barn. To the west of this area, some concrete rubble was also noted in the thick undergrowth, but the purpose of it was unknown. Review of Lidar Imagery for the site did not appear to show further foundations to the west in the grove of trees (Minnesota Department of Natural Resources and MNGeo 2017).

No cultural material was found in any of the shovel tests in and surrounding the site area. Some historic debris noted on the surface in and around the foundations included mostly 1960/1970 debris including terracotta pots, plastic materials, a lawn chair, scrap metal, nails, container glass fragments, ceramic crockery, and metal pails. Notes were taken about the
Figure 13. Approximate locations of 21WA0119 and 21WA0120.
* Note: Due to thick vegetation at the time of discovery, the distance between the foundations was scaled using GPS coordinates.

Figure 14. Sketch map of 21WA0119.
Figure 15. View of limestone foundation at 21WA0119.

Figure 16. View of cinderblock foundation at 21WA0119.
debris and it was photographed as appropriate, but due to the more recent nature of the material, it was not collected.

Although the grove of trees was extremely overgrown, there were two areas at the southern end that were more “clear” with less trees than the rest of the area. It appears that this may have been the original yard or entrance areas to the two buildings. The 1938 aerial photo shows that the driveway for this site used to enter from 30th Street North (formerly Blackwoods Avenue) and go into area just west of the eastern most foundation (the one containing the limestone foundation) (Figure 17). There are more buildings on the western edge of the site in 1938 than the amount of foundations found by MVAC in 2017, but the 1947 aerial photo shows that some of these buildings (likely outbuildings) were gone (Figure 18). The 1953 and 1964 aerial photos (Figures 19 and 20) show only possibly three buildings at the site, and the structures that appeared to be on the western side of the site were no longer there. There appears to be a line of planted trees to the west of the foundations.

The 1874 plat does not exhibit structures in this area (Andreas 1874), but the 1901 plat map of the area does (Northwest Publishing Company 1901) (See Figures 4 and 5). The limestone foundation portion of this site would suggest a pre-1900 use for that portion of the site, so the limestone foundation was likely constructed post 1874 since it was not on the Andreas map. The 1964 aerial photos still shows structures in this location and a 1967 topographic map still has a structure symbol in this location. A structure is shown in this location up until the 1982-1983 plat maps, so it was just likely razed after that time.

Of interest to the history of this site is that the 1938 plat map indicates that the land the site is on and the land surrounding it was owned by the Jacob Schmidt Brewing Company (Figure 21). The Jacob Schmidt Brewing Company building was located at 882 West Seventh Street in downtown St. Paul. Jacob Schmidt first worked and established the North Star Brewing Company on the later 1800’s. With a partnership with Adolph and Otto Bremer, Schmidt worked to establish the North Star Brand into the late 1800’s. After a fire destroyed that brewery in 1900, Adolf Bremmer and Schmidt bought a brewery that was in financial trouble and reopened in 1901 as the Jacob Schmidt Brewing Company. Otto Bremer continued helping with the business, but his first interest was banking. In 1911, Schmidt died, but Adolph and Otto Bremer continued working together. The company continued to grow until 1919 when the 18th Amendment passed and breweries stopped brewing beer. During this time, the company produced a soft drink line that met with poor success until they started producing Schmidt’s Select, a non-alcoholic but “beery” flavored malt drink. By 1933, when beer was legalized again, Schmidts’ beer became popular again. The company continued to grow and Schmidt Beer became so popular that the brewery ranked seventh largest in the United States. After the death of the last of the original owners, by 1955 the company changed hands although still operating under the Jacob Schmidt brand name, until it was purchased by the G. Heileman Brewing Company in 1972 (Jacob Schmidt Brewing Company 1950 and 1972).
Figure 17. 1938 aerial photo of general project area and locations of 21WA0119 and 21WA0120 (Regents of the University of Minnesota 2017).
Figure 18. 1947 aerial photo of general project area and locations of 21WA0119 and 21WA0120 (Regents of the University of Minnesota 2017).
Figure 19. 1953 aerial photo of general project area and locations of 21WA0119 and 21WA0120 (Regents of the University of Minnesota 2017).
Figure 20. 1964 aerial photo of general project area and locations of 21WA0119 and 21WA0120 (Regents of the University of Minnesota 2017).
Figure 21. Plat map dating to 1938 showing Jacob Schmidt Brewing Company ownership of portions of project area and locations of sites 21WA0119 and 21WA0120 (Hudson Map Company 1938).
Mead and Hunt assisted MVAC with deed research for this site, and this research found that Otto Bremer purchased this land in 1928, and the land was officially deeded over to the Jacob Schmidt Brewing Company in 1933. The brewing company owned the property until 1946, and then sold it to George H. Halpin and Richard P. Carlton, copartners as Countryside Farms.

The Jacob Schmidt Brewing Company was significant to the brewing industry of the Twin Cities area during its time as one of the top ten brewing companies in the nation. Otto Bremer purchased the land surrounding the site in 1928 during prohibition, but when the brewing company was manufacturing various types of soda. The land was officially sold to the Jacob Schmidt Brewing Company in 1933, the year prohibition ended. Unfortunately, no information could be found in the company histories of why this land was purchased. Perhaps it was to harvest barley and hops for the brewery operation downtown at a time when the end of prohibition allowed for the manufacture of alcoholic beverages again. Perhaps the land was rented out. This is conjecture at this point, but the most relevant issue to 21WA0119 is what was the brewing company’s relationship to the structures identified at the site, if any? If the structures were used for company storage or in a process that aided in the brewing process for one of the ten top breweries in the nation, it could suggest a level of significance for the site. The 1938 plat map did not show the Schmidt Brewing Company owning any additional land in Baytown and West Lakeland Township, or in the Oakland Township to the west.

This site dates from circa pre-1901 to the early 1980’s. The limestone foundation component of the site indicates likely an early construction date with later concrete additions. The foundations show on plat maps up until the early 1980’s. The intact foundations indicate integrity, and the relationship to the Jacob Schmidt Brewery for thirteen years from the 1930’s to the 1940’s could suggest a level of significance. This site may be potentially eligible for listing on the National Register of Historic Places (NRHP) under Criteria D, as it could yield important information about the past. However, since ultimately ground disturbing activities will be able to avoid this site, it was not formally evaluated for eligibility for the NRHP. The only project action that will take place within the site area is that the grove of trees surrounding the site will be clear cut.

21WA0120 – Lake Elmo Air Foundations 2

21WA0120, called Lake Elmo Air Foundations 2, is in the NW/14 of the NE1/4 of the NE1/4 of Section 19 in Township 29 North, Range 20 West in West Lakeland Township (See Figure 13). This site was found while shovel testing in a grove of trees south of 30th Street North, southeast of the existing Lake Elmo Airport facility. This site consists of concrete foundations associated with two buildings spaced approximately 377 feet apart (Figure 22). The first foundation was approximately 20 feet inside the tree line in the northeast corner of the grove of trees, and 120 feet south of 30th Street North. This foundation measured 20 feet north to south.
Figure 22. Sketch map of 21WA0120.

*Note: Due to thick vegetation at the time of discovery, distance between foundations was scaled using GPS coordinates.*
and 29 feet east to west. A few pieces of historic debris were noted on the surface including an old broom, some broken post 1950’s bottles, and some metal fencing material. The broken bottles did not have enough present to be diagnostic.

This grove of trees was extremely overgrown and it was hard to measure the distance between the two buildings with a tape measure, but based on GPS coordinates, the second foundation is approximately 377 feet to the southwest. The second concrete foundation was located near the southwest corner of the grove of trees, close to the edge of the adjacent plowed field. This foundation measured 32 feet north to south and 18.5 feet east to west (See Figure 22 and 23). This foundation was divided into two rooms by a foundation piece 12 feet from the southern end of the building. Within a 50 to 60 foot radius of this foundation, there was a significant amount of discarded post 1950 debris and even more recent historic debris including bed or couch cushion springs, scrap metal and fencing material, several metal cans and buckets, plastic material, glass bottles, and a wood stove (Figure 24). Portions of a metal toy rifle were also present. Notes were taken about the debris and it was photographed as appropriate, but due to the more recent nature of the material, it was not collected. Only one small fragmentary piece of crockery was found in a shovel tests in this grove of trees, and it was not collected.

Based on the 1938 aerial photos of the area, it appears that the driveway for this property went from 30th Street North (Blackwoods Avenue) to the structure found at the southwest grove of trees, while the foundation found closest to 30th Street North appears to be an outbuilding. The 1938 aerial shows that there may have been another building south of the one closest to 30th Street North, but since no foundation relating to this was found by MVAC in 2017, this building may have not had a foundation, and it may have been some other type of temporary or portable structure. The 1947 aerial shows both structures, and it is not clear on the 1953 aerial photo if both structures are present. The 1964 aerial does not show the building closest to 30th Street North, so it is presumed to have been razed between 1953 and 1964. The 1964 aerial photo does show the structure furthest from 30th Street North (at the southwest corner of the grove of trees) (see Figures 17 through 20). A 1966 plat map shows a structure in this area (Rockford Map Publisher 1966), but the 1967 topographic map of the area does not have a structure shown in this area by the time, so it likely that both structures were razed prior to 1967. Lidar imagery reviewed for the site do no show additional structures in the grove of trees (Minnesota Department of Natural Resources and MNGeo 2017). There was a circular item east of the southern foundation noted on the Lidar map, but no cultural feature relating to it was identified by MVAC in the field in 2017.

Historic plat maps indicate that structures were not in this area in 1874 (Andreas 1874), but were in this area by 1901 (Northwest Publishing Company 1901). Historic map research and deed research for the site indicates that the foundations at 21WA0120 and the land surrounding them were also owned by Otto Bremer beginning in 1927, and the Jacob Schmidt Brewing Company from 1933 to 1946 (see Figure 19), and the land was then deeded over the Countryside Farms like the area north of 30th Street North. The same type of question applies to this site as at
Figure 23. View of southern most foundations at 21WA0120.

Figure 24. Example of historic debris near southern foundation at 21WA0120.
21WA0119. What was the relationship to these foundation to one of the top brewing companies in the nation right after prohibition?

This site dates from circa pre-1901 to the mid/late 1960’s. Although maps show a structure in this area in 1901, this would be a little early for concrete foundations, so there may have been some other type of limestone structure here originally that was razed or built over. MVAC did not find evidence of an earlier structure during the survey. The intact foundations indicate integrity, and the relationship to the Jacob Schmidt Brewery Company for thirteen years from the 1930’s to the 1940’s could suggest a level of significance. This site may be potentially eligible for listing on the National Register of Historic Places (NRHP) under Criteria D, as it could yield important information about the past. However, since ultimately ground disturbing activities will be able to avoid this site, it was not formally evaluated for eligibility for the NRHP. The only project action that will take place within the site area is that grove of trees will be clear cut.

RECOMMENDATIONS

Although from historical resource it is known that the Jacob Schmidt Brewery Company, at one point one of the top ten brewing companies in the nation, owned the land surrounding and including the foundations found at both 21WA0119 and 21WA0120, the relationship of the foundations to the brewery and its operations, if any, is unknown at this time. Company histories and deed research did not provide any details of why the company would have owned land at least twelve miles from the brewery. Due to their age, intact foundation material, and some type of relationship to the Jacob Schmidt Brewing Company, the two sites may be potentially eligible for listing the NRHP under Criteria D as they may provide important information about the past. However, since ground disturbing activities will be able to avoid the foundations, the sites were not formally evaluated for eligibility for the NRHP. The groves of trees surrounding the sites will be clear cut, and to avoid any inadvertent disturbance to the foundations, it is recommended that the trees in and immediately around the foundations be hand cut, and no heavy equipment drive near the foundations. If, in the future, ground disturbance is planned in the areas of the site locations, the SHPO should be consulted to see if further evaluation of the sites are necessary.

Aside from the 21WA0119 and 21WA0120, no other cultural material was identified during the survey. Therefore no further work is recommended for the remainder of the project area.
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Natural Resource Conservation Service 2017

Northwest Publishing Company

Regents of the University of Minnesota

Rockford Map Publishers

Upham, Warren

Wright, H. E. Jr.
Appendix 1: Literature Review from MN SHPO.
## Archaeological Site Locations

<table>
<thead>
<tr>
<th>Site Number</th>
<th>Site Name</th>
<th>Twp.</th>
<th>Range</th>
<th>Sec.</th>
<th>Quarter Sections</th>
<th>Acres</th>
<th>Phase</th>
<th>Site Description</th>
<th>Tradition</th>
<th>Context</th>
<th>Reports</th>
<th>NR</th>
<th>CEF</th>
<th>DOE</th>
</tr>
</thead>
<tbody>
<tr>
<td>21W Aaa</td>
<td>Bass Lake Station</td>
<td>29</td>
<td>21</td>
<td>13</td>
<td>SW</td>
<td>0</td>
<td>HD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

County: **Washington**
Evan Barrett

From: Joshua.Fitzpatrick@faa.gov
Sent: Thursday, December 7, 2017 2:00 PM
To: Evan Barrett
Subject: FW: Lake Elmo Airport ESA Effect Determination
Attachments: OPHI - Presentation for ODOT FAA Workshop.pdf

Evan, below is Section 7 concurrence from USFWS. Please include and reference in EA. If acreages for tree removal increase then I will need to reinitiate consultation.

Also, per below the Service is asking if Lake Elmo would like to be a candidate site for rusty patched bumble bee reintroduction where they dedicate a portion of land to bumble bee restoration efforts. Perhaps we can talk about this at our Tuesday meeting?

Thank you,

Josh Fitzpatrick
Environmental Protection Specialist
FAA Dakota-Minnesota Airport District Office
Joshua.Fitzpatrick@faa.gov
(612) 253-4639

From: Horton, Andrew [mailto:andrew_horton@fws.gov]
Sent: Thursday, December 07, 2017 12:36 PM
To: Fitzpatrick, Joshua (FAA) <Joshua.Fitzpatrick@faa.gov>
Cc: Peter Fasbender <Peter_Fasbender@fws.gov>; Smith, Tamara <tamara_smith@fws.gov>
Subject: Re: Lake Elmo Airport ESA Effect Determination

Josh,

I have reviewed the proposed activities at the Lake Elmo Airport and agree with your determination that the project may affect, but is not likely to adversely affect the northern long-eared bat (*Myotis septentrionalis*). Impacts to the species from the removal of 20-acres of trees at this location are likely to be insignificant or discountable because they will be removed at a time when the northern long-eared bat is not present on the landscape, eliminating the risk of direct mortality. Regarding the rusty patched bumble bee (*Bombus affinis*), consultation is not necessary because the proposed action is located outside of a high potential zone. It is also unlikely that any portion of the airport currently has suitable foraging or nesting habitat. With that said, this property is located within 2-miles of recent rusty patched bumble bee observations and has a considerable land area that could be supportive of conservation efforts for the species. The Service would be interested in any possibility of the airport managing a portion of the property to encourage native flowering species that would provide nectar and pollen sources for populations that may be in the area. We would recommend this, of course, only if it was compatible with the safety requirements and did not interfere with airport operations. I would also like to add that other airports have taken this approach with success and this could be a great opportunity to have a local success story supporting endangered species. More information on one example I came across is included in the attachment.

This concludes consultation under Section 7 of the Endangered Species Act, as amended. Please contact our office if this project changes or new information reveals effects of the action to proposed or listed species or critical habitat to an extent not covered in your original request. Also, please reach out to us if you would like to take this opportunity to support the rusty patched bumble bee. Thank you.
On Fri, Nov 3, 2017 at 10:50 AM, <Joshua.Fitzpatrick@faa.gov> wrote:

Dear Mr. Horton:

The Lake Elmo Airport (Airport) has undertaken an environmental assessment (EA) with the Federal Aviation Administration (FAA) for Airport improvements including:

- Relocate Runway 14/32 to the northeast and extend to the southeast, including all necessary grading, clearing, and runway lighting.

- Construct cross-field taxiway to serve new Runway 14 end.

- Convert existing Runway 14/32 to a partial parallel taxiway and construct other taxiways as needed to support the relocated runway, including taxiway lighting and/or reflectors.

- Extend Runway 04/22 to the northeast and add necessary lighting and taxiway connectors.

- Realign 30th Street North around the new Runway 14/32 runway protection zone to reconnect with Neal Avenue North.

- Construct a connector road.

- Establish non-precision instrument approach procedures to all four runway ends.

- Remove approximately 20 acres of trees.

The attached exhibit illustrates all of the project elements identified in the proposed action.

Lake Elmo Airport is located in Washington County, Minnesota. As of September 18, 2017, there were six federally-listed species under the Endangered Species Act (ESA) with habitat in Washington County. Four of these species are freshwater mussels including the Higgins eye pearlymussel, the Snuffbox, the Spectaclecase, and the Winged mapleleaf. These species contain habitat in either the Mississippi or the St. Croix Rivers, and would not be affected by the proposed action. The FAA made a no effect determination to these four freshwater mussels on November 3, 2017.
The other two ESA listed species are the Northern long-eared bat (NLEB) (listed as threatened) and the Rusty patched bumble bee (listed as endangered).

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Federal Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern long-eared bat</td>
<td><em>Myotis septentrionalis</em></td>
<td>Threatened</td>
</tr>
<tr>
<td>Rusty patched bumble bee</td>
<td><em>Bombus affinis</em></td>
<td>Endangered</td>
</tr>
</tbody>
</table>

Based on the above, the NLEB and Rusty patched bumble bee have potential habitat at or near Lake Elmo Airport, and/or have been documented as occurring within a 2.5-mile radius of the project area. Characteristics, habitat, and mitigation measures associated with each of these species are discussed below.

**Northern long-eared bat**

The predominant threat to the NLEB is white-nose syndrome; a fungal disease which has eliminated up to 99 percent of NLEB populations in the northeastern United States. White-nose syndrome has been reported in Washington County. During summer, the NLEB typically roosts singly or in colonies under the bark, in cavities or in crevices of living and dead trees. Males and non-reproductive females may also roost in caves and mines during the summer; most hibernate during winter in caves and mines with constant temperatures, high humidity and no air currents. No critical habitat has been designated for this bat. Potential habitat for the NLEB is present within the proposed action area and may be present in areas in which trees will be removed.

The proposed action will require the removal of trees on Airport property for construction of the runway and clearance of associated approach and departure surfaces. Approximately 20 acres of deciduous trees will be cleared in association with the proposed action. The groups of multiple species range in age from saplings, with a diameter at breast height of less than three inches to large, mature trees of 40 feet or more in height. The trees are located along fence rows, within agricultural fields, or in surrounding wetlands. Standing and downed dead trees are also present within these areas. Trees and woody shrubs include, but are not limited to the species listed below.

<p>| Trees and Woody Shrubs Observed at Lake Elmo Airport |
|-----------------------------------------------|---------|----------|----------|
| Common Name                  | Scientific Name            | Height   | Habit / Dominant |
| Boxelder                     | <em>Acer negundo</em>             | 40-60 feet | Tree / Yes    |
| Silver maple                 | <em>Acer saccharinum</em>         |          | Tree / No     |
| Redosier dogwood             | <em>Cornus sericea</em>           |          | Shrub / No    |
| White ash                    | <em>Fraxinus americana</em>       |          | Tree / No     |
| Green ash                    | <em>Fraxinus pennsylvanica</em>   | 40 feet  | Tree / No     |</p>
<table>
<thead>
<tr>
<th>Tree Species</th>
<th>Common Name</th>
<th>Height</th>
<th>Type / Presence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern cottonwood</td>
<td><em>Populus deltoides</em></td>
<td>Up to 80ft</td>
<td>Tree / No</td>
</tr>
<tr>
<td>Quaking aspen</td>
<td><em>Populus tremuloides</em></td>
<td>Up to 80ft</td>
<td>Tree / No</td>
</tr>
<tr>
<td>Black cherry</td>
<td><em>Prunus serotina</em></td>
<td>Up to 15ft</td>
<td>Tree / No</td>
</tr>
<tr>
<td>Burr oak</td>
<td><em>Quercus macrocarpa</em></td>
<td>50 feet</td>
<td>Tree / Yes</td>
</tr>
<tr>
<td>Pin oak</td>
<td><em>Quercus palustris</em></td>
<td>30-50 feet</td>
<td>Tree / No</td>
</tr>
<tr>
<td>Common buckthorn</td>
<td><em>Rhamnus cathartica</em></td>
<td>Up to 20ft</td>
<td>Shrub / Yes</td>
</tr>
<tr>
<td>Missouri gooseberry</td>
<td><em>Ribes missouriense</em></td>
<td>Up to 6 feet</td>
<td>Shrub / Yes</td>
</tr>
<tr>
<td>Black willow</td>
<td><em>Salix nigra</em></td>
<td></td>
<td>Tree / No</td>
</tr>
<tr>
<td>American black elderberry</td>
<td><em>Sambucus nigra ssp. canadensis</em></td>
<td>Up to 12 feet</td>
<td>Shrub / Yes</td>
</tr>
<tr>
<td>American elm</td>
<td><em>Ulmus americana</em></td>
<td>40-60 feet</td>
<td>Tree / Yes</td>
</tr>
<tr>
<td>Slippery elm</td>
<td><em>Ulmus rubra</em></td>
<td></td>
<td>Tree / No</td>
</tr>
<tr>
<td>Common pricklyash</td>
<td><em>Zanthoxylum americanum</em></td>
<td>8-10 feet</td>
<td>Shrub / No</td>
</tr>
</tbody>
</table>

The 4(d) rule for the NLEB stipulates that incidental take for projects inside the white-nose syndrome zone is not prohibited. The federal agency can rely upon the finding of the programmatic biological opinion for the final 4(d) rule to fulfill their project-specific Section 7 responsibilities. The following Avoidance and Minimization Measures (AMMs) from the Range-Wide Biological Assessment for Transportation Projects for Indiana Bat and Northern Long-Eared Bat (USFWS/USDOT, April 2015) are proposed for the tree removal activities.

**Tree Removal AMM 2** - To avoid and minimize impacts to the NLEB, tree clearing will be completed between October 1 and April 30, which is the dormant season for the bat at this latitude.

**Tree Removal AMM 3** - Tree removal will be limited to that specified in project plans. Tree removal limits will be clearly indicated in the field by bright orange flagging/fencing prior to any tree clearing to ensure contractors stay within clearing limits. Tree clearing limitations will be discussed with contractors at the pre-construction meeting to ensure that they understand clearing limits and how they are marked in the field.

*Rusty patched bumble bee*

Rusty patched bumble bees (*Bombus affinis, (RPBB)) live in colonies that have an annual cycle. The bees gather pollen and nectar from a variety of flowering plants and prefer tallgrass prairie habitat. Historically its range included 28 states, the District of Columbia, and two provinces in Canada. Since 2000, the RPBB has been reported in only 13 states and one Canadian province. A combination of the loss of habitat and related diversity of flowering plants due to intense farming and general development, along with pesticide use, led to the listing of this species as endangered in January 2017. No critical habitat has been designated for the RPBB, and the airport is in a low potential habitat zone per the USFWS website. There are no areas of tallgrass prairie within the study area, and areas dominated by grasses and flowering forbs are mowed on a regular basis. Therefore, there are no potential vegetation types that provide habitat for the RPBB that would be affected by
the proposed action. The FAA utilized the IPAC website and the species was not identified to be present in the action area.

**Biological Resources (including fish, wildlife, and plants)**

During multiple days of field work in June 2017 conducted by two Mead & Hunt biologists to identify and delineate wetlands, a variety of plant and animal species were identified within the study area including insects, arachnids, birds, mammals, amphibians, and wetland and upland vegetation. Birds identified within the study area included, but were not limited to, American crows, red-winged blackbirds, bluejays, chickadees, vireos, swifts/swallows, and multiple sparrow species. One female white-tailed deer was observed and photographed. Frogs were observed in wetland areas. Wetland vegetation is documented in the wetland data sheets and related report completed in September 2017. Upland herbaceous vegetation was dominated by Kentucky bluegrass, red clover, dandelion, oxeye daisy, yarrow, thistle and plantains. Areas with these dominant plants are frequently mowed and maintained. No bald or golden eagles were observed during the field work.

Based on the information described above the FAA has made a may affect, not likely to adversely affect ESA determination to both the NLEB and RPBB. The FAA requests concurrence from the USFWS on both of these determinations.

If you have any questions or concerns, please let me know.

Thanks,

Josh Fitzpatrick

Environmental Protection Specialist

FAA Dakota-Minnesota Airport District Office

Joshua.Fitzpatrick@faa.gov

(612) 253-4639
Pollinator Habitat at Airports

Scott Lucas
Ohio Department of Transportation
presenting on behalf of:
Ohio Pollinator Habitat Initiative
What is the Ohio Pollinator Habitat Initiative?

• Ohio Pollinator Habitat Initiative (OPHI) began in 2015.
• The purpose of the initiative:
  • Create and improve pollinator habitat across the State of Ohio.
  • Increase and improve pollinator conservation and awareness.
• The motto is: “All you can, where you can.”
• The group has a large number of partners.
Partners

• Pheasants Forever
• Ohio Division of Wildlife
• US Fish and Wildlife Service
• Ohio Department of Agriculture
• Various Soil and Water Conservation Districts
• And many more...
Why would you want to plant pollinator habitat at an airport?

- Reduce the number of large bird strikes with planes
  - Large birds like Canada geese and different species of gulls tend to avoid tall grass
- Reduction in carbon footprint
  - Prairies absorb about 1 metric ton of carbon per acre according to experts.
- Save mowing costs
  - Once established, prairies only need mowed once a year
- Last but not least, create habitat for pollinators
What are the costs for establishing a warm season grass pasture?

The initial cost of establishing a warm season grass pasture per acre estimates:

- Seed costs: $240/acre
- Site prep (tillage): $8-20/acre (average = $14/acre)
- Site prep (herbicide): $3-13/acre (average = $8/acre)
- Seeding costs $10-50/acre (average = $30/acre)
- Weed management $8-27/acre (average = $18/acre)

**TOTAL COSTS $310/acre**

---

16 Iowa State University Extension and Outreach, “Incorporating Prairies into Multifunctional Landscapes.” August 2011.

17 Estimated price of $240/acre for seed provided by Pheasants Forever.
Are there grants available for planting pollinator habitat?

Opportunities for receiving grants could be available through:

- NOAA’s grant program
  - https://grantsonline.rdc.noaa.gov/flows/home/Login/LoginController.jspf
- Partnerships with not-for-profit organizations
  - Not-for-profit organizations can apply for grants that for-profit organizations cannot apply for
- Ohio EPA Educational Program
  - http://www.epa.ohio.gov/oeef/EnvironmentalEducation.aspx
- OPHI has resources available for project specific grant programs
  - http://www.ophi.info/
Who has planted pollinator plots at airports?

The Dayton International Airport has multiple plantings:

- 270 acres of tall Native Warm Season Grass Prairies
- Switchgrass Plots
- Agricultural fields
- Airfield turf
Who do I contact if I want to look into planting pollinator habitat at my airport?

Dayton International Airport plantings:
Mike Cross at 937-623-8343
MCross@flydayton.com

ODOT’s involvement in pollinator plantings:
Scott Lucas at 614-644-6603
Scott.Lucas@dot.ohio.gov

OPHI statewide:
Marci Lininger at 614-416-8993 ex: 27
Marci_Lininger@fws.gov
Thank you for your time.
September 11, 2017
Correspondence # ERDB 20170278-0002

Mr. Evan Barrett
Mead & Hunt, Inc.
7900 West 78th Street, Suite 370
Minneapolis, MN 55439

RE: Natural Heritage Review of the proposed Lake Elmo Airport Improvements,
T29N R20W Sections 18 & 19; Washington County

Dear Mr. Barrett,

As requested, the Minnesota Natural Heritage Information System has been queried to determine if any rare species or other significant natural features are known to occur within an approximate one-mile radius of the proposed project. Based on this query, rare features have been documented within the search area (for details, please visit the Rare Species Guide at http://www.dnr.state.mn.us/rsg/index.html for more information on the biology, habitat use, and conservation measures of these rare species). Please note that the following rare features may be adversely affected by the proposed project:

**State-listed Species**

- Blanding’s turtles (*Emydoidea blandingii*), a state-listed threatened species, have been reported in the vicinity of the proposed project and may be encountered on site. Blanding’s turtles use wetlands as well as upland areas up to and over a mile distant from wetlands. Uplands are used for nesting, basking, periods of dormancy, and traveling between wetlands. Factors believed to contribute to the decline of this species include collisions with vehicles, wetland drainage and degradation, and the development of upland habitat. Any added mortality can be detrimental to populations of Blanding’s turtles, as these turtles have a low reproduction rate that depends upon a high survival rate to maintain population levels.

This project has the potential to impact this rare turtle through direct fatalities or habitat disturbance/destruction due to dewatering, excavation, fill, or other construction activities associated with the project. Actions to avoid or minimize disturbance to this state-protected turtle may include, but are not limited to, the following recommendations:

- Avoid Type 2 & 3 wetlands,
- To avoid any incidental takings, avoid filling or dewatering wetlands during the winter,
- Implement stringent sediment and erosion control methods,
- Use wildlife-friendly erosion control methods (see enclosed fact sheet),
- Monitor for turtles during construction and report any sightings to the DNR,
o Refer to the first list of recommendations in the enclosed Blanding’s Turtle Fact Sheet. If greater protection for turtles is desired, the second list of recommendations can be implemented as well.

o If further assistance is needed regarding the Blanding’s turtle, please contact the DNR Regional Nongame Specialist, Erica Hoaglund, at 651-259-5772 or Erica.Hoaglund@state.mn.us.

The attached flyer should be given to all contractors working in the area. If Blanding’s turtles are encountered on site, please remember that state law and rules prohibit the destruction of threatened or endangered species, except under certain prescribed conditions. If turtles are in imminent danger they must be moved by hand out of harm’s way, otherwise they are to be left undisturbed.

Federally Protected Species

- The rusty patched bumble bee (*Bombus affinis*), a federally-listed endangered species, was documented within two and a half miles of the proposed project. The rusty patched bumble bee typically occurs in grasslands and urban gardens with flowering plants from April through October. This species nests underground in abandoned rodent cavities or in clumps of grasses. Please reference the guidance at the following website to determine if the project has the potential to impact this protected species: [https://www.fws.gov/midwest/endangered/insects/rpbb/guidance.html](https://www.fws.gov/midwest/endangered/insects/rpbb/guidance.html).

Environmental Review and Permitting

- The Environmental Assessment Worksheet should address whether the proposed project has the potential to adversely affect the above rare features and, if so, it should identify specific measures that will be taken to avoid or minimize disturbance.

- Please include a copy of this letter in any state or local license or permit application. Please note that measures to avoid or minimize disturbance to the above rare features may be included as restrictions or conditions in any required permits or licenses.

The Natural Heritage Information System (NHIS), a collection of databases that contains information about Minnesota’s rare natural features, is maintained by the Division of Ecological and Water Resources, Department of Natural Resources. The NHIS is continually updated as new information becomes available, and is the most complete source of data on Minnesota’s rare or otherwise significant species, native plant communities, and other natural features. However, the NHIS is not an exhaustive inventory and thus does not represent all of the occurrences of rare features within the state. Therefore, ecologically significant features for which we have no records may exist within the project area. If additional information becomes available regarding rare features in the vicinity of the project, further review may be necessary.

For environmental review purposes, the results of this Natural Heritage Review are valid for one year; the results are only valid for the project location (noted above) and the project description provided on the NHIS Data Request Form. Please contact me if project details change or for an updated review if construction has not occurred within one year.

The Natural Heritage Review does not constitute review or approval by the Department of Natural Resources as a whole. Instead, it identifies issues regarding known occurrences of rare features and potential effects to these
rare features. If you have not done so already, please contact your DNR Regional Environmental Assessment Ecologist to determine whether there are other natural resource concerns associated with the proposed project (contact information available at http://www.dnr.state.mn.us/eco/ereview/erp_regioncontacts.html). Please be aware that additional site assessments or review may be required.

Thank you for consulting us on this matter, and for your interest in preserving Minnesota’s rare natural resources. An invoice will be mailed to you under separate cover.

Sincerely,

Samantha Bump
Natural Heritage Review Specialist
Samantha.Bump@state.mn.us

Enc.  Blanding’s Turtle Fact Sheet & Flyer
      Wildlife Friendly Erosion Control
      Rusty Patched Bumble Bee Fact Sheet

Cc:  Becky Horton
     Leslie Parris
     Erica Hoaglund
Preventing Entanglement by Erosion Control Blanket

Plastic mesh netting is a common component in erosion control blanket. It is utilized to hold loose fibrous materials in place (EG straw) until vegetation is established. Erosion control blanket is being utilized extensively and is effective for reducing soil erosion, benefitting both soil health and water quality. Unfortunately there is a negative aspect of the plastic mesh component: It is increasingly being documented that its interaction with reptiles and amphibians can be fatal (Barton and Kinkead, 2005; Kapfer and Paloski, 2011). Mowing machinery is also susceptible to damage due to the long lasting plastic mesh.

Potential Problems:
- Plastic netting remains a hazard long after other components have decomposed.
- Plastic mesh netting can result in entanglement and death of a variety of small animals. The most vulnerable group of animals are the reptiles and amphibians (snakes, frogs, toads, salamanders, turtles). Ducklings, small mammals, and fish have also been observed entangled in the netting.
- Road maintenance machinery can snag the plastic mesh and pull up long lengths into machinery, thus binding up machinery and causing damage and/or loss of time cleaning it out.

Suggested Alternatives:
- Do not use in known locations of reptiles or amphibians that are listed as Threatened or Endangered species.
- Limit use of blanket containing welded plastic mesh to areas away from where reptiles or amphibians are likely (near wetlands, lakes, watercourses, or rock outcrops) or habitat transition zones (prairie – woodland edges, rocky outcrop – woodland edges, steep rocky slopes, etc.)
- Select products with biodegradable netting (preferably made from natural fibers, though varieties of biodegradable polyesters also exist on the market). Biodegradable products will degrade under a variety of moisture and light conditions.
- DO NOT use products that require UV-light to degrade (also called “photodegradable”) as they do not degrade properly when shaded by vegetation.

Solution: Most categories of erosion control blanket and sediment control logs are available in natural net options.
- Specify 'Natural Netting' for rolled erosion control products, per MnDOT Spec 3885. See Table 3885-1.
- Specify 'Natural Netting' for sediment control logs, per MnDOT Spec 3897

The plastic mesh component of erosion control blanket becomes a net for entrapment.

Literature Referenced
Blanding’s Turtle  
(*Emydoidea blandingii*)

**HABITAT USE**

Blanding’s turtles need both wetland and upland habitats to complete their life cycle. The types of wetlands used include ponds, marshes, shrub swamps, bogs, and ditches and streams with slow-moving water. In Minnesota, Blanding’s turtles are primarily marsh and pond inhabitants. Calm, shallow water bodies (Type 1-3 wetlands) with mud bottoms and abundant aquatic vegetation (e.g., cattails, water lilies) are preferred, and extensive marshes bordering rivers provide excellent habitat. Small temporary wetlands (those that dry up in the late summer or fall) are frequently used in spring and summer -- these fishless pools are amphibian and invertebrate breeding habitat, which provides an important food source for Blanding’s turtles. Also, the warmer water of these shallower areas probably aids in the development of eggs within the female turtle. Nesting occurs in open (grassy or brushy) sandy uplands, often some distance from water bodies. Frequently, nesting occurs in traditional nesting grounds on undeveloped land. Blanding’s turtles have also been known to nest successfully on residential property (especially in low density housing situations), and to utilize disturbed areas such as farm fields, gardens, under power lines, and road shoulders (especially of dirt roads). Although Blanding’s turtles may travel through woodlots during their seasonal movements, shady areas (including forests and lawns with shade trees) are not used for nesting. Wetlands with deeper water are needed in times of drought, and during the winter. Blanding’s turtles overwinter in the muddy bottoms of deeper marshes and ponds, or other water bodies where they are protected from freezing.

**LIFE HISTORY**

Individuals emerge from overwintering and begin basking in late March or early April on warm, sunny days. The increase in body temperature which occurs during basking is necessary for egg development within the female turtle. Nesting in Minnesota typically occurs during June, and females are most active in late afternoon and at dusk. Nesting can occur as much as a mile from wetlands. The nest is dug by the female in an open sandy area and 6-15 eggs are laid. The female turtle returns to the marsh within 24 hours of laying eggs. After a development period of approximately two months, hatchlings leave the nest from mid-August through early-October. Nesting females and hatchlings are often at risk of being killed while crossing roads between wetlands and nesting areas. In addition to movements associated with nesting, all ages and both sexes move between wetlands from April through November. These movements peak in June and July and again in September and October as turtles move to and from overwintering sites. In late autumn (typically November), Blanding’s turtles bury themselves in the substrate (the mud at the bottom) of deeper wetlands to overwinter.

**IMPACTS / THREATS / CAUSES OF DECLINE**

- loss of wetland habitat through drainage or flooding (converting wetlands into ponds or lakes)
- loss of upland habitat through development or conversion to agriculture
- human disturbance, including collection for the pet trade and road kills during seasonal movements
- increase in predator populations (skunks, raccoons, etc.) which prey on nests and young

*It is illegal to possess this threatened species.*
**RECOMMENDATIONS FOR AVOIDING AND MINIMIZING IMPACTS**

These recommendations apply to typical construction projects and general land use within Blanding’s turtle habitat, and are provided to help local governments, developers, contractors, and homeowners minimize or avoid detrimental impacts to Blanding’s turtle populations. **List 1** describes minimum measures which we recommend to prevent harm to Blanding’s turtles during construction or other work within Blanding’s turtle habitat. **List 2** contains recommendations which offer even greater protection for Blanding’s turtle populations; this list should be used in addition to the first list in areas which are known to be of state-wide importance to Blanding’s turtles (contact the DNR’s Natural Heritage and Nongame Research Program if you wish to determine if your project or home is in one of these areas), or in any other area where greater protection for Blanding’s turtles is desired.

<table>
<thead>
<tr>
<th>List 1. Recommendations for all areas inhabited by Blanding’s turtles.</th>
<th>List 2. Additional recommendations for areas known to be of state-wide importance to Blanding’s turtles.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GENERAL</strong></td>
<td></td>
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<tr>
<td>A flyer with an illustration of a Blanding’s turtle should be given to all contractors working in the area. Homeowners should also be informed of the presence of Blanding’s turtles in the area.</td>
<td>Turtle crossing signs can be installed adjacent to road-crossing areas used by Blanding’s turtles to increase public awareness and reduce road kills.</td>
</tr>
<tr>
<td>Turtles which are in imminent danger should be moved, by hand, out of harms way. Turtles which are not in imminent danger should be left undisturbed.</td>
<td>Workers in the area should be aware that Blanding’s turtles nest in June, generally after 4pm, and should be advised to minimize disturbance if turtles are seen.</td>
</tr>
<tr>
<td>If a Blanding’s turtle nests in your yard, do not disturb the nest.</td>
<td>If you would like to provide more protection for a Blanding’s turtle nest on your property, see “Protecting Blanding’s Turtle Nests” on page 3 of this fact sheet.</td>
</tr>
<tr>
<td>Silt fencing should be set up to keep turtles out of construction areas. It is critical that silt fencing be removed after the area has been revegetated.</td>
<td>Construction in potential nesting areas should be limited to the period between September 15 and June 1 (this is the time when activity of adults and hatchlings in upland areas is at a minimum).</td>
</tr>
<tr>
<td><strong>WETLANDS</strong></td>
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<tr>
<td>Small, vegetated temporary wetlands (Types 2 &amp; 3) should not be dredged, deepened, filled, or converted to storm water retention basins (these wetlands provide important habitat during spring and summer).</td>
<td>Shallow portions of wetlands should not be disturbed during prime basking time (mid morning to mid-afternoon in May and June). A wide buffer should be left along the shore to minimize human activity near wetlands (basking Blanding’s turtles are more easily disturbed than other turtle species).</td>
</tr>
<tr>
<td>Wetlands should be protected from pollution; use of fertilizers and pesticides should be avoided, and run-off from lawns and streets should be controlled. Erosion should be prevented to keep sediment from reaching wetlands and lakes.</td>
<td>Wetlands should be protected from road, lawn, and other chemical run-off by a vegetated buffer strip at least 50’ wide. This area should be left unmowed and in a natural condition.</td>
</tr>
<tr>
<td><strong>ROADS</strong></td>
<td></td>
</tr>
<tr>
<td>Roads should be kept to minimum standards on widths and lanes (this reduces road kills by slowing traffic and reducing the distance turtles need to cross).</td>
<td>Tunnels should be considered in areas with concentrations of turtle crossings (more than 10 turtles per year per 100 meters of road), and in areas of lower density if the level of road use would make a safe crossing impossible for turtles. Contact your DNR Regional Nongame Specialist for further information on wildlife tunnels.</td>
</tr>
<tr>
<td>Roads should be ditched, not curbed or below grade. If curbs must be used, 4 inch high curbs at a 3:1 slope are preferred (Blanding’s turtles have great difficulty climbing traditional curbs; curbs and below grade roads trap turtles on the road and can cause road kills).</td>
<td>Roads should be ditched, not curbed or below grade.</td>
</tr>
</tbody>
</table>
ROADS cont.

<table>
<thead>
<tr>
<th>Culverts between wetland areas, or between wetland areas and nesting areas, should be 36 inches or greater in diameter, and elliptical or flat-bottomed.</th>
<th>Road placement should avoid separating wetlands from adjacent upland nesting sites, or these roads should be fenced to prevent turtles from attempting to cross them (contact your DNR Nongame Specialist for details).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetland crossings should be bridged, or include raised roadways with culverts which are 36 in or greater in diameter and flat-bottomed or elliptical (raised roadways discourage turtles from leaving the wetland to bask on roads).</td>
<td>Road placement should avoid bisecting wetlands, or these roads should be fenced to prevent turtles from attempting to cross them (contact your DNR Nongame Specialist for details). This is especially important for roads with more than 2 lanes.</td>
</tr>
<tr>
<td>Culverts under roads crossing streams should be oversized (at least twice as wide as the normal width of open water) and flat-bottomed or elliptical.</td>
<td>Roads crossing streams should be bridged.</td>
</tr>
</tbody>
</table>

UTILITIES

| Utility access and maintenance roads should be kept to a minimum (this reduces road-kill potential). | Because trenches can trap turtles, trenches should be checked for turtles prior to being backfilled and the sites should be returned to original grade. |

LANDSCAPING AND VEGETATION MANAGEMENT

| Terrain should be left with as much natural contour as possible. | As much natural landscape as possible should be preserved (installation of sod or wood chips, paving, and planting of trees within nesting habitat can make that habitat unusable to nesting Blanding’s turtles). |
| Graded areas should be revegetated with native grasses and forbs (some non-natives form dense patches through which it is difficult for turtles to travel). | Open space should include some areas at higher elevations for nesting. These areas should be retained in native vegetation, and should be connected to wetlands by a wide corridor of native vegetation. |
| Vegetation management in infrequently mowed areas -- such as in ditches, along utility access roads, and under power lines -- should be done mechanically (chemicals should not be used). Work should occur fall through spring (after October 1st and before June 1st ). | Ditches and utility access roads should not be mowed or managed through use of chemicals. If vegetation management is required, it should be done mechanically, as infrequently as possible, and fall through spring (mowing can kill turtles present during mowing, and makes it easier for predators to locate turtles crossing roads). |

Protecting Blanding’s Turtle Nests: Most predation on turtle nests occurs within 48 hours after the eggs are laid. After this time, the scent is gone from the nest and it is more difficult for predators to locate the nest. Nests more than a week old probably do not need additional protection, unless they are in a particularly vulnerable spot, such as a yard where pets may disturb the nest. Turtle nests can be protected from predators and other disturbance by covering them with a piece of wire fencing (such as chicken wire), secured to the ground with stakes or rocks. The piece of fencing should measure at least 2 ft. x 2 ft., and should be of medium sized mesh (openings should be about 2 in. x 2 in.). It is very important that the fencing be removed before August 1st so the young turtles can escape from the nest when they hatch!

REFERENCES


REFERENCES (cont.)


CAUTION

BLANDING’S TURTLES MAY BE ENCOUNTERED IN THIS AREA

The unique and rare Blanding’s turtle has been found in this area. Blanding’s turtles are state-listed as Threatened and are protected under Minnesota Statute 84.095, Protection of Threatened and Endangered Species. Please be careful of turtles on roads and in construction sites. For additional information on turtles, or to report a Blanding’s turtle sighting, contact the DNR Nongame Specialist nearest you: Bemidji (218-308-2641); Grand Rapids (218-327-4518); New Ulm (507-359-6033); Rochester (507-206-2820); or St. Paul (651-259-5772).

DESCRIPTION: The Blanding’s turtle is a medium to large turtle (5 to 10 inches) with a black or dark blue, dome-shaped shell with muted yellow spots and bars. The bottom of the shell is hinged across the front third, enabling the turtle to pull the front edge of the lower shell firmly against the top shell to provide additional protection when threatened. The head, legs, and tail are dark brown or blue-gray with small dots of light brown or yellow. A distinctive field mark is the bright yellow chin and neck.

BLANDING’S TURTLES DO NOT MAKE GOOD PETS
IT IS ILLEGAL TO KEEP THIS THREATENED SPECIES IN CAPTIVITY
SUMMARY OF RECOMMENDATIONS FOR AVOIDING AND MINIMIZING IMPACTS TO BLANDING’S TURTLE POPULATIONS
(see Blanding’s Turtle Fact Sheet for full recommendations)

- This flyer should be given to all contractors working in the area. Homeowners should also be informed of the presence of Blanding’s turtles in the area.
- Turtles that are in imminent danger should be moved, by hand, out of harm’s way. Turtles that are not in imminent danger should be left undisturbed to continue their travel among wetlands and/or nest sites.
- If a Blanding’s turtle nests in your yard, do not disturb the nest and do not allow pets near the nest.
- Silt fencing should be set up to keep turtles out of construction areas. It is critical that silt fencing be removed after the area has been revegetated.
- Small, vegetated temporary wetlands should not be dredged, deepened, or filled.
- All wetlands should be protected from pollution; use of fertilizers and pesticides should be avoided, and run-off from lawns and streets should be controlled. Erosion should be prevented to keep sediment from reaching wetlands and lakes.
- Roads should be kept to minimum standards on widths and lanes.
- Roads should be ditched, not curbed or below grade. If curbs must be used, 4" high curbs at a 3:1 slope are preferred.
- Culverts under roads crossing wetland areas, between wetland areas, or between wetland and nesting areas should be at least 36 in. diameter and flat-bottomed or elliptical.
- Culverts under roads crossing streams should be oversized (at least twice as wide as the normal width of open water) and flat-bottomed or elliptical.
- Utility access and maintenance roads should be kept to a minimum.
- Because trenches can trap turtles, trenches should be checked for turtles prior to being backfilled and the sites should be returned to original grade.
- Terrain should be left with as much natural contour as possible.
- Graded areas should be revegetated with native grasses and forbs.
- Vegetation management in infrequently mowed areas -- such as in ditches, along utility access roads, and under power lines -- should be done mechanically (chemicals should not be used). Work should occur fall through spring (after October 1st and before June 1st).
The U.S. Fish and Wildlife Service listed the rusty patched bumble bee as endangered under the Endangered Species Act. Endangered species are animals and plants that are in danger of becoming extinct. Identifying, protecting and recovering endangered species is a primary objective of the U.S. Fish and Wildlife Service’s endangered species program.

What is a rusty patched bumble bee?
Appearance: Rusty patched bumble bees live in colonies that include a single queen and female workers. The colony produces males and new queens in late summer. Queens are the largest bees in the colony, and workers are the smallest. All rusty patched bumble bees have entirely black heads, but only workers and males have a rusty reddish patch centrally located on the back.

Habitat: Rusty patched bumble bees once occupied grasslands and tallgrass prairies of the Upper Midwest and Northeast, but most grasslands and prairies have been lost, degraded, or fragmented by conversion to other uses. Bumble bees need areas that provide nectar and pollen from flowers, nesting sites (underground and abandoned rodent cavities or clumps of grasses), and overwintering sites for hibernating queens (undisturbed soil).

Reproduction: Rusty patched bumble bee colonies have an annual cycle. In spring, solitary queens emerge and find nest sites, collect nectar and pollen from flowers and begin laying eggs, which are fertilized by sperm stored since mating the previous fall. Workers hatch from these first eggs and colonies grow as workers collect food, defend the colony, and care for young. Queens remain within the nests and continue laying eggs. In late summer, new queens and males also hatch from eggs. Males disperse to mate with new queens from other colonies. In fall, founding queens, workers and males die. Only new queens go into diapause (a form of hibernation) over winter - and the cycle begins again in spring.

Feeding Habits: Bumble bees gather pollen and nectar from a variety of flowering plants. The rusty patched emerges early in spring and is one of the last species to go into hibernation.

Why conserve rusty patched bumble bees?
As pollinators, rusty patched bumble bees contribute to our food security and the healthy functioning of our ecosystems. Bumble bees are keystone species in most ecosystems, necessary not only for native wildflower reproduction, but also for creating seeds and fruits that feed wildlife as diverse as songbirds and grizzly bears.

Bumble bees are among the most important pollinators of crops such as blueberries, cranberries, and clover and almost the only insect pollinators of tomatoes. Bumble bees are more effective pollinators than honey bees for some crops because of their ability to “buzz pollinate.” The economic value of pollination services provided by native insects (mostly bees) is estimated at $3 billion per year in the United States.
It needs a constant supply and diversity of flowers blooming throughout the colony’s long life, April through September.

**Range**: Historically, the rusty patched bumble bee was broadly distributed across the eastern United States and Upper Midwest, from Maine in the U.S. and southern Quebec and Ontario in Canada, south to the northeast corner of Georgia, reaching west to the eastern edges of North and South Dakota. Its range included 28 states, the District of Columbia and 2 provinces in Canada. Since 2000, this bumble bee has been reported from only 13 states and 1 province: Illinois, Indiana, Iowa, Maine, Maryland, Massachusetts, Minnesota, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, Wisconsin – and Ontario, Canada.

**Why is the rusty patched bumble bee declining?**

**Habitat loss and degradation**: Most prairies and grasslands of the Upper Midwest and Northeast have been converted to monoculture farms or developed areas, such as cities and roads. Grasslands that remain tend to be small and isolated.

**Intensive farming**: Increases in farm size and technology advances improved the operating efficiency of farms but have led to practices that harm bumble bees: increased use of pesticides, loss of crop diversity resulting in flowering crops being available for only a short time, loss of hedgerows with flowering plants, and loss of legume pastures.

**Disease**: Pathogens and parasites may pose a threat, although their prevalence and effects in North American bumble bees are not well understood.

**Pesticides**: The rusty patched bumble bee may be vulnerable to pesticides. Pesticides are used widely on farms and in cities and have both lethal and sublethal toxic effects.

Bumble bees can absorb toxins directly through their exoskeleton and through contaminated nectar and pollen. Rusty patched bumble bees nest in the ground and may be susceptible to pesticides that persist in agricultural soils, lawns and turf.

**Global climate change**: Climate changes that may harm bumble bees include increased temperature and precipitation extremes, increased drought, early snow melt and late frost events. These changes may lead to more exposure to or susceptibility to disease, fewer flowering plants, fewer places for queens to hibernate and nest, less time for foraging due to high temperatures, and asynchronous flowering plant and bumble bee spring emergence.

**What is being done to conserve rusty patched bumble bees?**

**U.S. Fish and Wildlife Service**: Several Service programs work to assess, protect, and restore pollinators and their habitats. Also, the Service works with partners to recover endangered and threatened pollinators and pollinator-dependent plants. Concern about pollinator declines prompted formation of the North American Pollinator Protection Campaign, a collaboration of people dedicated to pollinator conservation and education. The Service has a Memorandum of Understanding with the Pollinator Partnership to work together on those goals. The Service is a natural collaborator because our mission is to work with others to conserve, fish, wildlife, and plants and their habitats.

**Other Efforts**: Trusts, conservancies, restoration groups and partnerships are supporting pollinator initiatives and incorporating native plants that support bees and other pollinators into their current activities. For example, the USDA Natural Resource Conservation Service is working with landowners in Michigan, Minnesota, Montana, North Dakota, South Dakota, and Wisconsin to make bee-friendly conservation improvements to their land. Improvements include the practices of planting cover crops, wildflowers, or native grasses and improved management on grazing lands.

**Research**: Researchers are studying and monitoring the impacts of GMO crops and certain pesticides on pollinators. Efforts by citizen scientists and researchers to determine the status of declining bee species are underway throughout the United States.

**What can I do to help conserve the rusty patched bumble bee?**

**Garden**: Grow a garden or add a flowering tree or shrub to your yard. Even small areas or containers on patios can provide nectar and pollen for native bees.

**Native plants**: Use native plants in your yard such as lupines, asters, bee balm, native prairie plants and spring ephemerals. Don’t forget spring blooming shrubs like ninebark and pussy willow! Avoid invasive non-native plants and remove them if they invade your yard. For more information on attracting native pollinators, visit www.fws.gov/pollinators/pdfs/PollinatorBookletFinalrevWeb.pdf.

**Natural landscapes**: Provide natural areas - many bumble bees build nests in undisturbed soil, abandoned rodent burrows or grass clumps. Keep some unmowed, brushy areas and tolerate bumble bee nests if you find them. Reduce tilling soil and mowing where bumble bees might nest. Support natural areas in your community, county and state.

**Minimize**: Limit the use of pesticides and chemical fertilizer whenever possible or avoid them entirely. Pesticides cause lethal and sublethal effects to bees and other pollinators.

January 10, 2017
Appendix G – USDA NRCS Farmland Conversion Impact
Rating Form AD-1006
November 14th, 2017

R. Evan Barrett, AICP, Mead & Hunt, Inc
7900 West 78th St, Ste. 370
Minneapolis, MN 55439

Re: Farmland Conversion Impact Rating Form for Lake Elmo Airport

Dear Mr. Barrett,

The purpose of the Farmland Protection Policy Act (FPPA) as you are aware is to minimize the extent that federal programs contribute to the unnecessary and irreversible conversion of prime and important farmland to non-agricultural uses. The FPPA requires federal agencies involved in projects that may convert farmland to determine whether the proposed conversion is consistent with the FPPA.

Upon reviewing the area of this project, I found that there is Prime Farmland in the proposed project area. This project does not qualify for any exemptions. I contacted the national leader of the FPPA in D.C. questioning what level of conversion is considered a conversion under the FPPA. The map provided shows indirect conversion which is considered partial conversion as the area will no longer be used in row crop production, but will be used for hay production.

As per guidance, I am returning two AD1006’s. One considers the indirect sites as a conversion, and the other considers the indirect sites as not converted. Attached in the e-mail are shapefiles and below are maps showing the areas adapted from the ones that I received. Please take a look at them and ensure the change in footprint is accurate.

If you have any questions, please contact me via e-mail or at the above number.

DANIEL NATH

Dan Nath, CPSS
Resource Soil Scientist, USDA-NRCS
Rochester, MN
# U.S. Department of Agriculture

**FARMLAND CONVERSION IMPACT RATING**

**PART I** (To be completed by Federal Agency)

<table>
<thead>
<tr>
<th>Name of Project</th>
<th>Lake Elmo Airport</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal Agency Involved</td>
<td>Federal Aviation Administration</td>
</tr>
<tr>
<td>Proposed Land Use</td>
<td>Public Airport Runway, City/County Designation</td>
</tr>
<tr>
<td>County and State</td>
<td>Washington County, Minnesota</td>
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</tbody>
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**PART II** (To be completed by NRCS)

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<thead>
<tr>
<th>Does the site contain Prime, Unique, Statewide or Local Important Farmland?</th>
<th>YES</th>
<th>NO</th>
<th>Acres Irrigated</th>
<th>Average Farm Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>If no, the FPPA does not apply - do not complete additional parts of this form</td>
<td></td>
<td></td>
<td>50,372</td>
<td>246</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Major Crop(s)</th>
<th>Corn, Soybeans</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmable Land in Govt. Jurisdiction</td>
<td>66.32 % 179385</td>
</tr>
<tr>
<td>Acres</td>
<td>53.07 % 143548</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name of Land Evaluation System Used</th>
<th>LE part of LESA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of State or Local Site Assessment System</td>
<td>None</td>
</tr>
<tr>
<td>Date Land Evaluation Requested by NRCS</td>
<td>11/14/2017</td>
</tr>
</tbody>
</table>

**PART III** (To be completed by Federal Agency)

<table>
<thead>
<tr>
<th>Alternative Site Rating</th>
<th>Site A</th>
<th>Site B</th>
<th>Site C</th>
<th>Site D</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Total Acres To Be Converted Directly</td>
<td>46.45</td>
<td>42.28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Total Acres To Be Converted Indirectly</td>
<td>9.76</td>
<td>7.59</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Total Acres In Site</td>
<td>56.21</td>
<td>49.87</td>
<td></td>
<td></td>
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**PART IV** (To be completed by NRCS) Land Evaluation Information

<table>
<thead>
<tr>
<th>Land Evaluation Criterion</th>
<th>Relative Value of Farmland To Be Converted (Scale of 0 to 100 Points)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Total Acres Prime And Unique Farmland</td>
<td>50.86</td>
</tr>
<tr>
<td>B. Total Acres Statewide Important or Local Important Farmland</td>
<td>1.32</td>
</tr>
<tr>
<td>C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted</td>
<td>0.0291</td>
</tr>
<tr>
<td>D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value</td>
<td>33.63</td>
</tr>
</tbody>
</table>

**PART V** (To be completed by NRCS) Land Evaluation Information

<table>
<thead>
<tr>
<th>Maximum Points</th>
<th>Site A</th>
<th>Site B</th>
<th>Site C</th>
<th>Site D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Criteria are explained in 7 CFR 858.5b. For Corridor project use form NRCS-CPA-106</td>
<td>(15)</td>
<td>(10)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Area In Non-urban Use</td>
<td>4</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Perimeter In Non-urban Use</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Percent Of Site Being Farmed</td>
<td>20</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Protection Provided By State and Local Government</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Distance From Urban Built-up Area</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Distance To Urban Support Services</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Size Of Present Farm Unit Compared To Average</td>
<td>10</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Creation Of Non-farmable Farmland</td>
<td>5</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Availability Of Farm Support Services</td>
<td>5</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. On-Farm Investments</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Effects Of Conversion On Farm Support Services</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Compatibility With Existing Agricultural Use</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL SITE ASSESSMENT POINTS</td>
<td>160</td>
<td>160</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PART VI (To be completed by Federal Agency) Site Assessment Criteria</td>
<td>100</td>
<td>75</td>
<td>75</td>
<td>0</td>
</tr>
<tr>
<td>Relative Value Of Farmland (From Part V)</td>
<td>160</td>
<td>44</td>
<td>43</td>
<td>0</td>
</tr>
<tr>
<td>Total Site Assessment (From Part VI above or local site assessment)</td>
<td>260</td>
<td>119</td>
<td>120</td>
<td>0</td>
</tr>
</tbody>
</table>

**Site Selected:**

<table>
<thead>
<tr>
<th>Date Of Selection</th>
<th>Date</th>
</tr>
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**Reason For Selection:**

<table>
<thead>
<tr>
<th>Name of Federal agency representative completing this form</th>
<th>Date</th>
</tr>
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</table>

(See instructions on reverse side)
STEPS IN THE PROCESSING THE FARMLAND AND CONVERSION IMPACT RATING FORM

Step 1 - Federal agencies (or Federally funded projects) involved in proposed projects that may convert farmland, as defined in the Farmland Protection Policy Act (FPPA) to nonagricultural uses, will initially complete Parts I and III of the form. For corridor type projects, the Federal agency shall use form NRCS-CPA-106 in place of form AD-1006. The Land Evaluation and Site Assessment (LESA) process may also be accessed by visiting the FPPA website, http://fppa.nrcs.usda.gov/lesa/.

Step 2 - Originator (Federal Agency) will send one original copy of the form together with appropriate scaled maps indicating location(s) of project site(s), to the Natural Resources Conservation Service (NRCS) local Field Office or USDA Service Center and retain a copy for their files. (NRCS has offices in most counties in the U.S. The USDA Office Information Locator may be found at http://offices.usda.gov/scripts/ndISAPI.dll/isp_public/USA_map, or the offices can usually be found in the Phone Book under U.S. Government, Department of Agriculture. A list of field offices is available from the NRCS State Conservationist and State Office in each State.)

Step 3 - NRCS will, within 10 working days after receipt of the completed form, make a determination as to whether the site(s) of the proposed project contains prime, unique, state wide or local importance farmland. When a site visit or land evaluation system design is needed, NRCS will respond within 30 working days.

Step 4 - For sites where farmland covered by the FPPA will be converted by the proposed project, NRCS will complete Parts II, IV and V of the form.

Step 5 - NRCS will return the original copy of the form to the Federal agency involved in the project and retain a file copy for NRCS records.

Step 6 - The Federal agency involved in the proposed project will complete Parts VI and VII of the form and return the form with the final selected site to the servicing NRCS office.

Step 7 - The Federal agency providing financial or technical assistance to the proposed project will make a determination as to whether the proposed conversion is consistent with the FPPA.

INSTRUCTIONS FOR COMPLETING THE FARMLAND CONVERSION IMPACT RATING FORM
(For Federal Agency)

Part I: When completing the "County and State" questions, list all the local governments that are responsible for local land use controls where site(s) are to be evaluated.

Part III: When completing item B (Total Acres To Be Converted Indirectly), include the following:

1. Acres not being directly converted but that would no longer be capable of being farmed after the conversion, because the conversion would restrict access to them or other major change in the ability to use the land for agriculture.
2. Acres planned to receive services from an infrastructure project as indicated in the project justification (e.g. highways, utilities planned build out capacity) that will cause a direct conversion.

Part VI: Do not complete Part VI using the standard format if a State or Local site assessment is used. With local and NRCS assistance, use the local Land Evaluation and Site Assessment (LESA).

1. Assign the maximum points for each site assessment criterion as shown in § 658.5(b) of CFR. In cases of corridor-type project such as transportation, power line and flood control, criteria #5 and #6 will not apply and will, be weighted zero, however, criterion #8 will be weight a maximum of 25 points and criterion #11 a maximum of 25 points.

2. Federal agencies may assign relative weights among the 12 site assessment criteria other than those shown on the FPPA rule after submitting individual agency FPPA policy for review and comment to NRCS. In all cases where other weights are assigned, relative adjustments must be made to maintain the maximum total points at 160. For project sites where the total points equal or exceed 160, consider alternative actions, as appropriate, that could reduce adverse impacts (e.g. Alternative Sites, Modifications or Mitigation).

Part VII: In computing the "Total Site Assessment Points" where a State or local site assessment is used and the total maximum number of points is other than 160, convert the site assessment points to a base of 160.

Example: if the Site Assessment maximum is 200 points, and the alternative Site "A" is rated 180 points:

<table>
<thead>
<tr>
<th>Total points assigned Site A</th>
<th>180</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum points possible</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>$\frac{180}{200} \times 160 = 144$ points for Site A</td>
</tr>
</tbody>
</table>

For assistance in completing this form or FPPA process, contact the local NRCS Field Office or USDA Service Center.

NRCS employees, consult the FPPA Manual and/or policy for additional instructions to complete the AD-1006 form.
U.S. Department of Agriculture
FARMLAND CONVERSION IMPACT RATING

PART I (To be completed by Federal Agency)
Name of Project: Elmo Airport
Proposed Land Use: Public Airport Runway, City/County Designation

Date Of Land Evaluation Request: 10/19/2017
Federal Agency Involved: Federal Aviation Administration
County and State: Washington County, Minnesota

PART II (To be completed by NRCS)
Date Request Received By NRCS: 11/2/2017
Person Completing Form: D. Nath

Does the site contain Prime, Unique, Statewide or Local Important Farmland?
YES □ NO □
Acres Irrigated: 50,372
Average Farm Size: 246

Major Crop(s):
Corn, Soybeans
Farmable Land In Govt. Jurisdiction:
Acres: 66.32 % 179385

Amount of Farmland As Defined in FPPA:
Acres: 53.07 % 143548

Name of Land Evaluation System Used
None
Name of State or Local Site Assessment System

Date Land Evaluation Requested by NRCS: 11/14/2017

PART III (To be completed by Federal Agency)

<table>
<thead>
<tr>
<th>Alternative Site Rating</th>
<th>Site A</th>
<th>Site B</th>
<th>Site C</th>
<th>Site D</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Total Acres To Be Converted Directly</td>
<td>46.45</td>
<td>42.28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Total Acres To Be Converted Indirectly</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Total Acres In Site</td>
<td>46.45</td>
<td>42.28</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PART IV (To be completed by NRCS) Land Evaluation Information

<table>
<thead>
<tr>
<th></th>
<th>Site A</th>
<th>Site B</th>
<th>Site C</th>
<th>Site D</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Total Acres Prime And Unique Farmland</td>
<td>43.54</td>
<td>41.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Total Acres Statewide Important or Local Important Farmland</td>
<td>1.32</td>
<td>0.41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted</td>
<td>0.0250</td>
<td>0.0231</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value</td>
<td>31.63</td>
<td>23.16</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PART V (To be completed by Federal Agency) Land Evaluation Criteria

<table>
<thead>
<tr>
<th>Relative Value of Farmland To Be Converted (Scale of 0 to 100 Points)</th>
<th>Maximum Points</th>
<th>Site A</th>
<th>Site B</th>
<th>Site C</th>
<th>Site D</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Area In Non-urban Use</td>
<td>(15)</td>
<td>4</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Perimeter In Non-urban Use</td>
<td>(10)</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Percent Of Site Being Farmed</td>
<td>(20)</td>
<td>20</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Protection Provided By State and Local Government</td>
<td>(20)</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Distance From Urban Built-up Area</td>
<td>(15)</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Distance To Urban Support Services</td>
<td>(15)</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Size Of Present Farm Unit Compared To Average</td>
<td>(10)</td>
<td>10</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Creation Of Non-farmable Farmland</td>
<td>(10)</td>
<td>5</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Availability Of Farm Support Services</td>
<td>(5)</td>
<td>5</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. On-Farm Investments</td>
<td>(20)</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Effects Of Conversion On Farm Support Services</td>
<td>(10)</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Compatibility With Existing Agricultural Use</td>
<td>(10)</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL SITE ASSESSMENT POINTS</td>
<td></td>
<td>160</td>
<td>44</td>
<td>43</td>
<td>0</td>
</tr>
</tbody>
</table>

PART VII (To be completed by Federal Agency)

| Relative Value Of Farmland (From Part V) | 100 | 79 | 81 | 0 | 0 |
| Total Site Assessment (From Part VI above or local site assessment) | 160 | 44 | 43 | 0 | 0 |
| TOTAL POINTS (Total of above 2 lines) | 260 | 123 | 124 | 0 | 0 |

Was A Local Site Assessment Used? YES □ NO □

Reason For Selection:

Name of Federal agency representative completing this form: ____________________________ Date: ____________

(See Instructions on reverse side)

Form AD-1006 (03-02)
STEPS IN THE PROCESSING THE FARMLAND AND CONVERSION IMPACT RATING FORM

Step 1 - Federal agencies (or Federally funded projects) involved in proposed projects that may convert farmland, as defined in the Farmland Protection Policy Act (FPPA) to nonagricultural uses, will initially complete Parts I and III of the form. For Corridor type projects, the Federal agency shall use form NRCS-CPA-106 in place of form AD-1006. The Land Evaluation and Site Assessment (LESA) process may also be accessed by visiting the FPPA website, http://fppa.nrcs.usda.gov/leoa/

Step 2 - Originator (Federal Agency) will send one original copy of the form together with appropriate scaled maps indicating location(s) of project site(s), to the Natural Resources Conservation Service (NRCS) local Field Office or USDA Service Center and retain a copy for their files. NRCS has offices in most counties in the U.S. The USDA Office Information Locator may be found at http://offices.usda.gov/service/usiSAPI.dll/find_public/USA_map, or the offices can usually be found in the Phone Book under U.S. Government, Department of Agriculture. A list of field offices is available from the NRCS State Conservationist and State Office in each State.

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INSTRUCTIONS FOR COMPLETING THE FARMLAND CONVERSION IMPACT RATING FORM
(For Federal Agency)

Part I: When completing the "County and State" questions, list all the local governments that are responsible for local land use controls where site(s) are to be evaluated.

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1. Acres not being directly converted but that would no longer be capable of being farmed after the conversion, because the conversion would restrict access to them or other major change in the ability to use the land for agriculture.
2. Acres planned to receive services from an infrastructure project as indicated in the project justification (e.g. highways, utilities planned build out capacity) that will cause a direct conversion.

Part VI: Do not complete Part VI using the standard format if a State or Local site assessment is used. With local and NRCS assistance, use the local Land Evaluation and Site Assessment (LESA).

1. Assign the maximum points for each site assessment criterion as shown in § 658.5(b) of CFR. In cases of corridor-type project such as transportation, power line and flood control, criteria #5 and #6 will not apply and will, be weighted zero, however, criterion #8 will be weighted a maximum of 25 points and criterion #11 a maximum of 25 points.

2. Federal agencies may assign relative weights among the 12 site assessment criteria other than those shown on the FPPA rule after submitting individual agency FPPA policy for review and comment to NRCS. In all cases where other weights are assigned, relative adjustments must be made to maintain the maximum total points at 160. For project sites where the total points equal or exceed 160, consider alternative actions, as appropriate, that could reduce adverse impacts (e.g. Alternative Sites, Modifications or Mitigation).

Part VII: In computing the "Total Site Assessment Points" where a State or local site assessment is used and the total maximum number of points is other than 160, convert the site assessment points to a base of 160. Example: if the Site Assessment maximum is 200 points, and the alternative Site "A" is rated 180 points:

<table>
<thead>
<tr>
<th>Total points assigned Site A</th>
<th>Maximum points possible</th>
</tr>
</thead>
<tbody>
<tr>
<td>180</td>
<td>200</td>
</tr>
</tbody>
</table>

\[
\text{Total points assigned Site A} = \frac{180}{200} \times 160 = 144 \text{ points for Site A}
\]

For assistance in completing this form or FPPA process, contact the local NRCS Field Office or USDA Service Center.

NRCS employees, consult the FPPA Manual and/or policy for additional instructions to complete the AD-1006 form.
Appendix H – Phase I Environmental Site Assessment Report
Phase I
Environmental Site Assessment

Runway 14/32 Relocation and Associated Improvements

Lake Elmo Airport (21D)
3275 Manning Avenue, Box 2
Lake Elmo, MN 55042

Prepared for
Metropolitan Airports Commission
6040 28th Avenue South
Minneapolis, MN 55450-2799

Prepared by
Mead & Hunt
www.meadhunt.com

September 2017
# Table of Contents

## Summary .................................................................................................................. 1

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Proposed Project Activities</td>
<td>1</td>
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<tr>
<td>B. Findings</td>
<td>1</td>
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<tr>
<td>C. Recommendations</td>
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</table>

## 1. Introduction .................................................................................................... 1

<table>
<thead>
<tr>
<th>Section</th>
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<tbody>
<tr>
<td>A. Purpose</td>
<td>1</td>
</tr>
<tr>
<td>B. Detailed Scope of Services</td>
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<td>C. Proposed Project Actions</td>
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<tr>
<td>D. Significant Assumptions</td>
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<tr>
<td>E. Limitations and Exceptions</td>
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<td>F. Special Terms and Conditions</td>
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<td>G. User Reliance</td>
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## 2. Physical Setting ............................................................................................ 4

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<tr>
<td>A. Location</td>
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<tr>
<td>B. Current Ownership and Use of the Property</td>
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<tr>
<td>C. Site and Vicinity Description</td>
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<tr>
<td>D. Descriptions of Roads, Structures, and Other Improvements on the Site</td>
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<tr>
<td>E. Topography</td>
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<td>F. Hydrogeology and Geology</td>
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<tr>
<td>G. Soils Data</td>
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## 3. Site Reconnaissance ....................................................................................... 8

<table>
<thead>
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<th>Section</th>
<th>Page</th>
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<tbody>
<tr>
<td>A. Methodology and Limiting Conditions</td>
<td>8</td>
</tr>
<tr>
<td>B. Exterior Observations</td>
<td>8</td>
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<tr>
<td>C. Interior Observations</td>
<td>8</td>
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## 4. Records Review ............................................................................................. 9

<table>
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<th>Section</th>
<th>Page</th>
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</thead>
<tbody>
<tr>
<td>A. Historical Use Development of the Airport and Periphery</td>
<td>9</td>
</tr>
<tr>
<td>(1) Aerial Photographs</td>
<td>9</td>
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<tr>
<td>(2) Land Use</td>
<td>10</td>
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<tr>
<td>B. Standard Environmental Record Sources</td>
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## 5. Interviews ..................................................................................................... 13

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Interview with Owner</td>
<td>13</td>
</tr>
<tr>
<td>B. Interview with Occupants</td>
<td>13</td>
</tr>
</tbody>
</table>
Table of Contents

C. Interview with Local Government Officials ........................................ 13
D. Interviews with Others ....................................................................... 13

6. Evaluation .......................................................................................... 14
   A. Findings ............................................................................................. 14
   B. Data Gaps ........................................................................................ 17

7. Conclusions & Recommendations ....................................................... 18

Appendices

A. Project Location Map
B. Proposed Project Activities Exhibit
C. Area of Ground Disturbance Exhibit
D. Photographs of On-site Structures
E. Topography Map
F. FEMA Floodplain Map
G. NRCS Soils Data
H. Historic Aerials
I. Potentially Hazardous Materials Map
J. Database Search Results: Site Reports
K. Interview Memorandums

Tables

1. Summary of Soils Present ..................................................................... 6
2. Sites Located Within the Vicinity of Proposed Project Activities... 11
Summary

Mead & Hunt, Inc. (Mead & Hunt) has completed a Phase I Environmental Site Assessment (ESA), according to American Society for Testing and Materials (ASTM) E 1527-13, for the proposed relocation and extension of the primary runway (Runway 14/32) and associated improvements on Lake Elmo Airport (Airport) property. This ESA was completed as part of a Federal Environmental Assessment (EA) in compliance with the National Environmental Policy Act (NEPA). Mead & Hunt services are authorized by the Metropolitan Airports Commission (MAC), the project sponsor, under Contract No. 111-1-027, Authorization No. 37377 PS. This summary is intended as an overview of the Phase I ESA for the convenience of the reader. The complete report must be reviewed in its entirety prior to making decisions regarding the Airport property.

A. Proposed Project Activities

Owned and operated by the MAC, the Airport is located in Washington County, approximately 12 miles east of the downtown Saint Paul business district. The Airport encompasses approximately 640 acres of land on 14 separate parcels within Baytown and West Lakeland Townships and is roughly bounded by Manning Avenue on the west, the Union Pacific Railroad on the north, Neal Avenue on the east, and 30th Street on the south. The Airport has two paved runways: a 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. A location map illustrating the proposed project area is included in Appendix A.

The project proposes improvement of approximately 142 acres of existing airport property. Improvements include a new runway, extension of existing runways, relocation of 30th Street N., construction of a new connector road, and miscellaneous other airport improvements. Proposed improvements are depicted in Appendix B.

B. Findings

The following finding of an environmental nature associated with the existing Airport property were identified during the Phase I ESA:

- The Baytown Township groundwater, which exists below the Airport, is contaminated. The plume of contaminated groundwater is approximately 5 miles long and covers approximately 7 square miles. The area of the Site includes predominantly low-density residences and agricultural land, but also includes Lake Elmo Airport and parts of the cities of Lake Elmo and Bayport. The primary source of the contamination was a metal working facility that operated from 1940 to 1968 at 11325 Stillwater Boulevard N. in Lake Elmo, which is located within 1 mile to the west of the Airport.¹

This Site was listed on the State Superfund Permanent List of Priorities List in 1988 and added to the Federal National Priorities List in 1994. The site has been consistently monitored and regulated since the 1980s. Following an initial Remedial Investigation/Feasibility Study by the

MAC, the Minnesota Pollution Control Agency (MPCA) identified the primary source area and assumed responsibility for further work at the Site.

Groundwater is located more than 25 feet below the ground surface at the Airport. The dominant groundwater flow direction under the airport is east toward the St. Croix River. The contaminated groundwater plume is located primarily in the Prairie du Chien Aquifer, the Jordan Sandstone Aquifer and, in certain areas, the Tunnel City Aquifer, all located more than 50 feet below the ground surface. The proposed project is not expected to be impacted as a result.

C. Recommendations
Based on this Phase I ESA, Mead & Hunt recommends no additional investigation in regard to the proposed project.
1. Introduction

In 2016, the project sponsor completed a Long-Term Comprehensive Plan (LTCP) for the Airport, which identified key objectives to address failing infrastructure, enhance safety, and improve operational capacity at the Airport. Based on the nature of the proposed actions, implementation of the LTCP requires a Federal EA developed in accordance with Federal Aviation Administration (FAA) policies and procedures detailed in FAA Order 1050.1F (and related documents) for compliance with NEPA and Council on Environmental Quality (CEQ) regulations. Mead & Hunt conducted this Phase I ESA using ASTM E 1527-13, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process as part of the EA.

A. Purpose

The purpose of the Phase I ESA is to identify, pursuant to ASTM E 1527-13, recognized environmental conditions (RECs) in connection with the property.

ASTM defines the term recognized environmental condition as the presence or likely presence of hazardous substances or petroleum products on the property under conditions that are indicative of an existing release, a past release, or a material threat of a release of hazardous substances or petroleum products into the structures on the property or into the ground, groundwater, or surface water of the site. The term does not include de minimis conditions that generally do not present a material risk of harm to public health or the environment and that generally would not be the subject of enforcement action if brought to the attention of appropriate governmental agencies.

B. Detailed Scope of Services

This ESA was completed in accordance with ASTM International Standard E1527, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, and U.S. Environmental Protection Agency (USEPA) All Appropriate Inquiries (AAI) regulations under 40 CFR Part 312.

This report summarizes the results of Mead & Hunt’s investigation of the proposed project area, visual non-invasive reconnaissance of the project area and adjoining properties, federal and state database reviews, and interviews, as applicable. Limitations, deviations, and significant gaps (if identified) are evident from reviewing the applicable scope of services and the report text. No other environmental issues will be assessed beyond the scope of ASTM E1527 in connection with this ESA.

C. Proposed Project Actions

The 2016 LTCP recommends implementation of the following proposed project actions:

- Relocate Runway 14/32 by shifting it 615 feet to the northeast and extending it 3,500 feet, including all necessary grading, clearing, and runway lighting.

- Realign 30th Street North around the new Runway 32 Runway Protection Zone (RPZ) and reconnect it to the existing intersection with Neal Avenue.
• Construct a new cross-field taxiway to serve the new Runway 14 end, including taxiway lighting and/or reflectors.

• Convert existing Runway 14/32 to a partial parallel taxiway and construct other taxiways as needed to support the relocated runway, including taxiway lighting and/or reflectors.

• Reconstruct Runway 4/22 and extend it to 2,750 feet, including necessary lighting and taxiway connectors.

• Establish a new non-precision approach to Runway 14 end and upgrade existing Runway 4 approach to RNAV (GPS).

Appendix C illustrates areas of proposed ground-disturbing activities.

D. Significant Assumptions
A significant assumption used in evaluating potential impacts to the subject property is that information acquired from the public record and interviews is accurate and reliable.

E. Limitations and Exceptions
This Phase I ESA was conducted using ASTM E 1527-13. The findings of this report are applicable and representative of conditions encountered at the property on the date of this assessment, and may not represent conditions at a later date.

The review of public records was limited to that information that was available to Mead & Hunt at the time this report was prepared. Interviews with local and state government authorities were limited to those people that Mead & Hunt was able to contact during the preparation of this report. Information was derived from reasonably ascertainable and practically reviewable sources in compliance with Mead & Hunt’s understanding of the standards set forth by ASTM E 1527-13.

The history of the property could not consistently be documented at approximately five-year intervals because standard historical sources with that information were not reasonably ascertainable.

F. Special Terms and Conditions
This Phase I ESA was conducted in accordance with Work Authorization #37633 PS with the MAC, dated March 1, 2017.

G. User Reliance
The resulting report is provided for the sole use of the Airport and its assignees. Use of this report by any third parties will be at such party’s sole risk except when granted under written permission by Mead & Hunt. Any such authorized use or reliance by third parties will be subject to the same work authorization under which the work was conducted for the Airport.
Additional party's use and reliance on the report will be subject to the same rights, obligations, and limitations imposed on the MAC by our Work Authorization. However, the total liability of Mead & Hunt to all parties of the Phase I ESA shall be limited to the remedies and amounts as provided in the Work Authorization as a single contract. The additional party's use and reliance on the report shall signify the additional party's agreement to be bound by the proposal and contract that make up the Work Authorization between Mead & Hunt and the MAC.

According to standards set forth by ASTM 1527-13, components of the Phase I ESA will expire 180 days from the date of completion of that component and may therefore require updating if the date of property acquisition exceeds this time period. The dates of completion for pertinent components are as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Date of Completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Reconnaissance</td>
<td>May and June 2017</td>
</tr>
<tr>
<td>Environmental Database Search</td>
<td>August 2017</td>
</tr>
</tbody>
</table>
2. **Physical Setting**

This section summarizes the physical environment in which the Airport operates that may be useful in determining potential RECs or the potential hazard posed by identified RECs.

**A. Location**

Lake Elmo Airport is located in Washington County, approximately 12 miles east of the downtown Saint Paul business district. The Airport encompasses approximately 640 acres of land on 14 separate parcels within Baytown and West Lakeland Townships and is roughly bounded by Manning Avenue on the west, the Union Pacific Railroad on the north, Neal Avenue on the east, and 30th Street on the south.

**B. Current Ownership and Use of the Property**

The property is currently owned and operated by the MAC. In 2014 the Airport had over 200 based aircraft and accommodated approximately 26,000 total aircraft operations.²

**C. Site and Vicinity Description**

Residences, dating from the late nineteenth century to the 2000s, are adjacent to the airport along with a handful of late-nineteenth-century farmsteads. Three access roads provide entry to the airport: two from Manning Avenue and one from 30th Street. The main access road is located off Manning Avenue and is signed as 33rd Avenue N., in the approximate center of the airport property.

**D. Descriptions of Roads, Structures, and Other Improvements on the Site**

The airport features two runways: a primary runway (Runway 14-32) extending in a northwest-southeast orientation, and a cross wind runway (Runway 4-22) extending in a northeast-southwest orientation (see Figure 1). Taxiways, lights, and navigational aids are located along both runways.

The airport has approximately 128 hangars in three groups, identified as Hangar Areas 1-3 in Figure 1. Hangar Areas 1 and 2, which consist of historic-age and modern hangars, are located adjacent to Manning Avenue and are separated by 33rd Avenue N. Hangar Area 3 consists of modern hangars, constructed from 1990 to the present, and is located in the northwest quadrant adjacent to the Union Pacific rail line.

Valters Aviation serves as the airport's fixed-base operator (FBO) and is located in a one-story building at the north end of the property near the railroad corridor. The Lake Elmo MAC maintenance building is located at the east end of the airport's main access road, off Manning Avenue. An irregularly shaped one-story building is located southwest of the maintenance building. A one-story maintenance building is located near the southern end of the property and is accessed via 30th Street. Appendix D includes photographs of on-site structures.

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E. Topography

Portions of the Airport property are under row-crop cultivation east of Runway 4/22. Scattered woodlands and wetlands appear in this area. Undeveloped infield areas to the west of Runway 4/22 consist of grasses and forbs mown or hayed on a regular basis. The airfield is generally flat with little elevation change; the eastern side is somewhat higher at approximately 930 feet (NAVD 1988), gently sloping to the west and south to about 920 feet at the Airport entrance on Manning Avenue. See Appendix E for a detailed topographic map.

F. Hydrogeology and Geology

Surface drainage flows generally from northeast to southwest as it moves under 30th Street and Manning Avenue via numerous culverts, and toward Lake Elmo, approximately 1 mile west of the Airport. Within Airport property, the main southerly drainage conveys flows to a depressional shallow marsh wetland and
seasonally flooded basin near the Runway 32 end north of 30th Street. This wetland is connected hydrologically to a larger depressional shallow marsh south of 30th Street via a culvert. The area south of 30th Street is cultivated; however, prior to construction of the road these two wetlands were likely physically connected. A Federal Emergency Management Agency (FEMA) Firmette map indicating the floodplain is included in Appendix F.

Airport lands not in agricultural production are actively managed by regular mowing or periodic haying. On the west side (uncultivated areas) of the Airport most vegetation is dominated by a mix of grasses and forbs consisting of Kentucky blue grass, orchard grass, red clover, common yarrow, milkweed, and Canada thistle. Farm fields on the east side of Runway 4/22 and south of 30th Street were under cultivation. Isolated woodlands and depressional areas appeared undisturbed.

G. Soils Data

Most of the Airport is covered by three soils: well drained Antigo silt loams (0 to 2 percent slopes and 2 to 6 percent slopes) and moderately well drained Crystal Lake silt loam (1 to 3 percent slopes). Typical soil profiles for Antigo silt loams (49 and 49B) show a dark grayish brown (10YR 4/2) silt loam over a brown (10YR 5/3) silt loam. Crystal Lake silt loam (449) also shows a dark grayish brown (10YR 4/2) silt loam in the A horizon; however, underlying this is a light brownish gray (10YR 6/2) silt loam with few fine prominent yellowish red (5YR 4/6) masses of iron accumulation. Antigo silt loams and their minor components are non-hydric while Crystal Lake silt loam contains a minor component, Barronett silt loam at three percent, which is hydric.

Depressional areas are generally covered by hydric soils from the poorly drained Auburndale series and by ponded, very poorly drained Aquolls and Histosols. A very dark grayish brown (10YR 3/2) silt loam covers a grayish brown (10YR 5/2) silt loam with many medium prominent strong brown (7.5YR 5/8) masses of iron accumulation in a typical soil profile for the Auburndale series. Areas mapped as Aquolls and Histosols are rated as hydric.

Soils present in the project area are summarized in Table 1 and soils mapping is presented in Appendix G.

Table 1. Summary of Soils Present

<table>
<thead>
<tr>
<th>Map unit symbol</th>
<th>Map unit name</th>
<th>Soil Unit Component Percentage</th>
<th>Landform</th>
<th>Hydric Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>49</td>
<td>Antigo silt loam, 0 to 2 percent slopes</td>
<td>Antigo/ minor comp. 80/20</td>
<td>Terraces, flats</td>
<td>No</td>
</tr>
<tr>
<td>49B</td>
<td>Antigo silt loam, 2 to 6 percent slopes</td>
<td>Antigo/ minor comp. 80/20</td>
<td>Terraces, flats, hillslopes</td>
<td>No</td>
</tr>
<tr>
<td>153B</td>
<td>Santiago silt loam, 2 to 6 percent slopes</td>
<td>Santiago/ minor comp. 90/10</td>
<td>Moraines</td>
<td>No</td>
</tr>
<tr>
<td>155B</td>
<td>Chetek sandy loam, 0 to 6 percent slopes</td>
<td>Chetek/ minor comp. 90/10</td>
<td>Outwash plains</td>
<td>No</td>
</tr>
<tr>
<td>155C</td>
<td>Chetek sandy loam, 6 to 12 percent slopes</td>
<td>Chetek/ minor comp. 90/10</td>
<td>Pitted outwash plains</td>
<td>No</td>
</tr>
</tbody>
</table>
### Table 1. Summary of Soils Present

<table>
<thead>
<tr>
<th>Map unit symbol</th>
<th>Map unit name</th>
<th>Soil Unit Component Percentage</th>
<th>Landform</th>
<th>Hydric Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>155D</td>
<td>Chetek sandy loam, 12 to 25 percent slopes</td>
<td>Chetek/ minor comp. 90/10</td>
<td>Pitted outwash plains</td>
<td>No</td>
</tr>
<tr>
<td>189</td>
<td>Auburndale silt loam, 0 to 2 percent slopes</td>
<td>Auburndale/ minor comp. 85/15</td>
<td>Ground moraines</td>
<td>Yes</td>
</tr>
<tr>
<td>266</td>
<td>Freer silt loam</td>
<td>Freer/ minor comp. 90/10</td>
<td>Moraines</td>
<td>No</td>
</tr>
<tr>
<td>367B</td>
<td>Campia silt loam, 0 to 8 percent slopes</td>
<td>Campia/ minor comp. 90/10</td>
<td>Lake plains</td>
<td>No</td>
</tr>
<tr>
<td>449</td>
<td>Crystal Lake silt loam, 1 to 3 percent slopes</td>
<td>Crystal Lake/ minor comp. 90/10</td>
<td>Lake plains</td>
<td>No</td>
</tr>
<tr>
<td>452</td>
<td>Comstock silt loam</td>
<td>Comstock/ minor comp. 90/10</td>
<td>Lake plains</td>
<td>No</td>
</tr>
<tr>
<td>1055</td>
<td>Aquolls and Histosols, ponded</td>
<td>Histosols/Aquolls 50/50</td>
<td>Depressions on moraines</td>
<td>Yes</td>
</tr>
</tbody>
</table>
3. Site Reconnaissance

Environmental Professionals with Mead & Hunt conducted site reconnaissance in May and June 2017 to observe the current uses of the site, adjoining properties, and properties in the surrounding area, as well as the geologic, hydrogeologic, and topographic conditions of the site and the surrounding area. Photographs were taken of various portions of the subject site to document existing conditions (see Appendix D).

A. Methodology and Limiting Conditions

The property was observed by walking the perimeter and by systematically traversing the project area to provide an overlapping field of view where accessible.

A vehicular tour of the area was made to confirm the nearby land use. The tour involved viewing nearby properties from publicly accessible areas. Observation was limited to areas visible in the line of sight from the subject property or public roadways. Mead & Hunt did not enter adjacent properties.

B. Perimeter Observations

Land south of 30th Street is a mixture of agricultural land and wetland. Some farmsteads existing since at least the 1930s and some rural residential homes built between 1994 and 2003 are present along Manning Avenue south of 30th Street. Similar conditions exist east of Neal Avenue, where cultivated agricultural area and some wetland exists. Rural residential and agrarian land uses are present further east. North of the rail line, rural residences exist both north and south of 40th Street and some light manufacturing and warehousing exist to the northwest. West of Manning Avenue, a new single-family residential development is under construction. Very little to no commercial or non-residential or agricultural land uses exist within one-half mile of the airport property.

No evidence of underground storage tanks (USTs), aboveground storage tanks (ASTs), stained soils, stressed vegetation, landfilling, or foul odors were noted. No pits were identified on the property or immediate vicinity. No monitoring wells were found on the property.

C. On-Site Observations

On-site observations revealed two active fuel locations: one at the MAC maintenance building and one at the Valters Aviation building (see Appendix D for photos of on-site structures). Additionally, several monitoring wells and a used oil facility were located adjacent to the MAC maintenance building. The 1970s maintenance building, located off 30th Street, appears to have once had a fueling operation. Other observations include miscellaneous propane tanks associated with individual hangars, as well as miscellaneous septic tanks associated with individual buildings and hangars.
4. Records Review

A. Historical Use Development of the Airport and Periphery

In 1949 the MAC purchased 160 acres of farmland for development as the Lake Elmo Airport. At its officially opening in 1951, the Airport had two runways: a northwest-southeast 2,300-foot-long paved runway (Runway 13-31, which became Runway 14-32 in 1999), and a northeast-southwest 2,400-foot-long sod runway (Runway 3-21, which became Runway 04-22 in 1999). Not long after its construction, private individuals and small companies began developing hangars and support buildings on-site. Hangars, including the nine original T-hangars, were constructed in Hangar Area 1, off of Manning Avenue (see Figure 1 in Section 2.D).

In 1966 the MAC expanded the Airport by purchasing an additional 470 acres of farmland in Baytown and West Lakeland Townships. The following year it lengthened Runway 13-31 to 2,600 feet and relocated, extended, and paved Runway 3-21 to 2,500 feet. In the coming decade the MAC constructed support buildings, including a maintenance facility and navigational aids. Private hangar and FBO development continued on the west side of the Airport.

By the 1990s development shifted to the northern quadrant of the Airport (Hangar Area 3). Several modern box hangars were built in this area at that time to accommodate growing demand for aircraft storage. Former FBOs dissolved, leaving Mayer Aviation as the sole FBO. The company was subsequently replaced by the current FBO, Valters Aviation, in 2003. The most recent MAC-initiated Airport improvements came in in the early 1990s, when it extended Runway 13-31 to its current length of 2,849 feet.

Today the Airport is one of two airports within Washington County, the other being the Daniel A. DePonti Memorial Airport. The Lake Elmo Airport is used by local businesses, private pilots, and the Civil Air Patrol. It supports 150 buildings and houses 189 aircraft as of October 2016.

(1) Aerial Photographs

Aerial photography taken between 1938 and 2015 was reviewed to observe previous conditions and development of the property, as well as immediately adjacent properties. Images are included in Appendix H.

The earliest photograph of the area, taken in 1938, shows the general vicinity of the Airport mostly under cultivation, with Manning Avenue, 30th Street, and the railroad in their current configuration. Several farmsteads are located around the perimeter of present-day Airport property, located primarily south of 30th Street or north of the railroad. Two farmsteads were present at the northwest corner of the 30th Street and Neal Avenue intersection in 1938. These farmsteads were present in 1964 but abandoned by 1992, and reversion to forest had nearly closed the tree canopy in these locations.

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The Airport was constructed around 1951-1952 and, with the exception of the airfield area (located near the intersection of Manning Avenue and 30th Street), the surrounding lands remained largely in agricultural production in 1953. By 1957 hangars were being developed on the west side of the Airport with further hangar development seen in 1964, at which point the current configuration of runways and taxiways was all but set.

Between 1964 and 1992 development occurred to the north of 40th Street and south of 30th Street. The north side hangar development was well under way by the early 1990s and largely built out by 1992.

The pattern of agricultural use, both row cropping and forage production, in areas east of the airfield and south of 30th Street within Airport property, observed since the airport’s construction, continues to the present and reflects conditions encountered at the time of field work in 2017.

(2) Land Use
Washington County has adopted an overlay district for the Airport to control the type and extent of land development adjacent to and near the Airport. In general, the surrounding land uses are compatible with the Airport. Historical and existing land use is primarily agricultural. There has been residential development in recent years that is getting closer to Airport property, most recently the development of the agricultural property directly to the west of the airport with approximately 320 single-family residential homes at a density of approximately 2 to 2.5 units per acre. Other developing areas are primarily single-family estate (residential) with 16 dwelling units per 40 acres.5

By 1992 development north of 40th Street included some light manufacturing and warehousing as well as a gas station on the corner of Stillwater Boulevard and Manning Avenue. Little to no other types of land use development (e.g., commercial, industrial, office) have been observed around the immediate vicinity of the airport.

B. Standard Environmental Record Sources
Previously reported hazardous materials sites were identified based on a review of federal and state agency records and online databases for potential hazardous materials contamination sites in accordance with ASTM standards. The following databases were searched:

- Minnesota Pollution Control Agency
  - Closed Landfill Program
    - https://www.pca.state.mn.us/waste/closed-landfill-program
  - Storage tanks
    - https://www.pca.state.mn.us/waste/storage-tanks
  - Wastewater data browser
    - https://www.pca.state.mn.us/data/wastewater-data-browser
  - What’s in My Neighborhood
    - https://www.pca.state.mn.us/data/whats-my-neighborhood

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The following findings are based on data obtained from regulatory database searches and reviews of other available information. Federal and state database searches returned 14 records associated with parcels located on or within one-quarter mile of the Airport. Records for sites within one-quarter mile include registered ASTs and USTs, hazardous waste generators, brownfield sites, and stormwater permit sites. An additional three records within one mile of the Airport were determined to be outside of the project area and, based on the type of record, are not expected to be of significance for this report. A list of sites identified is included in Table 2. A corresponding map is included in Appendix I. Available site reports are provided in Appendix J.

### Table 2. Sites Located Within the Vicinity of Proposed Project Activities

<table>
<thead>
<tr>
<th>Site Number</th>
<th>Type</th>
<th>Status</th>
<th>Search Radius</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sewage Treatment Facility – Municipal SDS Permit</td>
<td>Active</td>
<td>0.5 mi</td>
<td>Bay-Lake Reserve WWTP</td>
</tr>
<tr>
<td>2</td>
<td>Construction Stormwater Permit</td>
<td>Active</td>
<td>0.25 mi</td>
<td>Heritage Farm</td>
</tr>
<tr>
<td>3</td>
<td>Hazardous Waste</td>
<td>Inactive</td>
<td>Target Property</td>
<td>MAC – Lake Elmo Airport</td>
</tr>
<tr>
<td></td>
<td>Industrial Stormwater Permit</td>
<td>Inactive</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Industrial Stormwater Permit</td>
<td>Active</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aboveground Storage Tanks</td>
<td>Active</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Underground Storage Tanks</td>
<td>Active</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Hazardous Waste</td>
<td>Inactive</td>
<td>Target Property</td>
<td>Valters Aviation Inc.</td>
</tr>
<tr>
<td></td>
<td>Petroleum Leak Site</td>
<td>Inactive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Underground Storage Tanks</td>
<td>Inactive</td>
<td>Target Property</td>
<td>Valters Aviation</td>
</tr>
<tr>
<td>6</td>
<td>Brownfield Investigation and Cleanup</td>
<td>Active</td>
<td>0.25 mi</td>
<td>Village Park Preserve</td>
</tr>
<tr>
<td>7</td>
<td>Construction Stormwater Permit</td>
<td>Inactive</td>
<td>Target Property</td>
<td>2009 Lake Elmo Airport Pavement Rehab</td>
</tr>
<tr>
<td>8</td>
<td>Industrial Stormwater Permit</td>
<td>Inactive</td>
<td>Target Property</td>
<td>Lake Elmo Airport</td>
</tr>
<tr>
<td>9</td>
<td>Hazardous Waste</td>
<td>Inactive</td>
<td>Target Property</td>
<td>Hangar 27E at Lake Elmo</td>
</tr>
<tr>
<td>10</td>
<td>Industrial Stormwater Permit</td>
<td>Active</td>
<td>Target Property</td>
<td>Valters Aviation Service Station Inc.</td>
</tr>
<tr>
<td>11</td>
<td>Hazardous Waste</td>
<td>Active</td>
<td>Target Property</td>
<td>Walters Aviation</td>
</tr>
<tr>
<td>12</td>
<td>Petroleum Brownfield Investigation and Cleanup</td>
<td>Inactive</td>
<td>0.25 mi</td>
<td>River Country Coop Holiday</td>
</tr>
<tr>
<td></td>
<td>Petroleum Remediation Leak Site</td>
<td>Inactive</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 2. Sites Located Within the Vicinity of Proposed Project Activities

<table>
<thead>
<tr>
<th>Site Number</th>
<th>Type</th>
<th>Status</th>
<th>Search Radius</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Underground Storage Tanks</td>
<td>Active</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Underground Storage Tanks</td>
<td>Inactive</td>
<td>0.25 mi</td>
<td>Abandoned Service Station</td>
</tr>
<tr>
<td>15</td>
<td>Brownfield Investigation and Cleanup</td>
<td>Inactive</td>
<td>0.5 mi</td>
<td>Bruggeman</td>
</tr>
<tr>
<td>15</td>
<td>Brownfield Investigation and Cleanup</td>
<td>Active</td>
<td>0.5 mi</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Stormwater Construction (Closed Landfill)</td>
<td>Inactive</td>
<td>1 mi</td>
<td>Washington County Landfill</td>
</tr>
<tr>
<td>17</td>
<td>Groundwater Contamination</td>
<td>Active</td>
<td>Target Property</td>
<td>Baytown Township GW Contamination Site</td>
</tr>
</tbody>
</table>
5. Interviews

A. Interview with Owner
An interview was conducted with the Airport maintenance manager. He confirmed the source of groundwater contamination to be known to be off-site. He also provided a history of some of the previous FBO’s on site but did not identify any other potentially hazardous materials concerns associated with those FBO’s or other sites. An interview memorandum is provided in Appendix K.

B. Interview with Occupants
The owner of Site 9 was interviewed regarding their hazardous waste permit. According to the owner, the permit was required when they purchased the site, which contained several barrels of used aluminum surface materials they were required to dispose of. The site was thus listed as a one-time generator. See Section 6.A for more information.

C. Interview with Local Government Officials
No individual local government officials were interviewed as no record results were determined to warrant additional information from local officials.

D. Interviews with Others
Interviews with individuals at the MPCA were conducted relating to individual site records. Aside from brief information provided on Site 4 (see Section 6), no information other than that readily obtainable through the online database was provided, so interview memorandums are not included in Appendix K.
6. Evaluation

A. Findings

The Phase I ESA was completed in accordance with ASTM International Standard E1527, Standard Practice for *Environmental Site Assessments: Phase I Environmental Site Assessment Process* and USEPA AAI regulations under 40 CFR Part 312. This report summarizes the results of Mead & Hunt’s investigation of the subject property and database review. No other environmental issues are assessed beyond the scope of ASTM E1527 in connection with this Phase I ESA.

Findings are listed below by site. Each site listed is an individual database record. Multiple records may exist for one location, for instance the general Airport property. However, each site was evaluated individually.

**Site 1**, Bay-Lake Reserve WWTP, is a domestic influent waste monitoring station with a State Disposal System permit. The site location is more than one-half mile from any proposed project activities. While this site is regulated, it has no records of previously reported hazardous materials incidents. No evidence of contamination from the site was identified. Therefore, no additional investigations are warranted at this location.

**Site 2** is listed as an active construction stormwater permit site for agricultural operations. The permit was issued in the late 1990s for creation of a pond on-site. Stormwater permits are required to control erosion and limit pollution (e.g., runoff of sediment) during and after construction. While this site is regulated, it has no records of previously reported hazardous materials incidents and is not expected to be impacted by proposed project activities. No evidence of contamination from the site was identified. Therefore, no additional investigations are warranted at this location.

**Site 3** is the MAC – Lake Elmo Airport. The site is listed for hazardous waste generation (inactive), an inactive industrial stormwater permit, an active stormwater permit, and both inactive and active ASTs and USTs. The inactive tanks were removed in the 1980s. The active tanks are a 2,500-gallon underground diesel tank and a 250-gallon aboveground used oil tank. Locations of these tanks can be seen in the photos in Appendix D. Monitoring stations surrounding these tank locations are also visible in the photos. This site is regulated and has no records of previously reported hazardous materials incidents. It is not expected to be impacted by proposed project activities. No evidence of contamination from the site was identified. Therefore, no additional investigations are warranted at this location.

**Site 4**, Valters Aviation, is listed as inactive for hazardous waste and an inactive petroleum remediation leak site. According to an interview with Stacy VanPatten with the MPCA, this site was closed in 1993 after remediation consisting of soil extraction and thermal treatment. The exact location could not be determined. This site has been closed and cleanup of the leak was completed. Residual contamination is not expected at this site, so no additional investigations are warranted at this location.

**Site 5**, Valters Aviation, is listed with USTs. The record indicates that two 4,000-gallon underground gasoline tanks were removed in 1995 and one 10,000-gallon underground tank containing aviation
gasoline remains active on site. It is assumed this tank is located on the terminal ramp adjacent to the Valters Aviation building, as seen in the site photos in Appendix D. This site is regulated and has no records of previously reported hazardous materials incidents. It is not expected to be impacted by proposed project activities. No evidence of contamination from the site was identified. Therefore, no additional investigations are warranted at this location.

**Site 6** is the active Village Park Preserve Voluntary Brownfield Investigation and Cleanup site located within one-quarter mile to the west of the Airport. Voluntary sites are non-petroleum sites. This site was investigated and closed in 2014 for the purposes of sale, financing, or redevelopment. This site is regulated and has no records of previously reported hazardous materials incidents. It is not expected to be impacted by proposed project activities. No evidence of contamination from the site was identified. Therefore, no additional investigations are warranted at this location.

**Site 7** is listed for a Construction Stormwater Permit for the 2009 pavement rehabilitation project at the Airport. The site is currently inactive. No additional investigations are warranted for this site.

**Site 8** is the Lake Elmo Airport, which is listed as an Inactive Industrial Stormwater Permit for monitoring effluent from airport maintenance activities (e.g., runoff of de-icing materials). This site is regulated and no specific evidence of contamination from the site was identified. Therefore, no additional investigations are warranted for this site.

**Site 9** is listed as an inactive hazardous waste site for Hanger 27E. A permit was obtained at the time of sale in regard to disposal of used surfacing materials containing aluminum. The permit was required and listed the site as a one-time generator. No additional hazardous materials concerns are associated with this site, and no evidence of contamination from the site was identified. Therefore, no additional investigations are warranted for this site.

**Site 10** is Valters Aviation and corresponds with Sites 4 and 5. This site is listed as both active and inactive Industrial Stormwater Permits. The active permit is for monitoring effluent from airport maintenance activities (e.g., runoff of de-icing materials). This site is regulated and no specific evidence of contamination from the site was identified. Therefore, no additional investigations are warranted for this site.

**Site 11** contains an active Hazardous Waste Generator, listed as Walters Aviation. Hazardous waste includes substances that are corrosive, explosive, toxic, and-or fire hazards. Very Small Quantity Generators produce 220 pounds or less of hazardous waste, and less than 2.2 pounds of acute hazardous waste per month. Businesses in this classification require a license. This site is regulated and no specific evidence of contamination from the site was identified. Therefore, no additional investigations are warranted for this site.

**Sites 12 – 14** are associated with an active gas station located within one-quarter mile to the northwest of the Airport. This site contains six active USTs containing gasoline and diesel. No issues associated with the active tanks has been reported. This site also contains records for an inactive Petroleum Remediation Leak Site and a Petroleum Brownfield Investigation and Cleanup from a previous UST leak.
The previous leak was closed in 2001 after more than 10 years of remediation and investigation. The record of the leak, associated with sites 12-14, is located more than one-quarter mile from any proposed project activities. While it may be a potential source of contamination, there is no evidence that contamination from the site has extended beyond the parcel boundary. Based on the current project activities, no additional work is warranted.

Site 15, Bruggeman, is a Brownfield Investigation and Cleanup site located within one-half mile west of the Airport. Brownfields are potentially contaminated sites where the MPCA is helping buyers, sellers, developers, or local governments to voluntarily investigate and clean up land for sale, financing, or redevelopment. Bruggeman is a non-petroleum brownfield site associated with current and future residential development. No additional hazardous materials concerns are associated with this site, and no evidence of contamination from the site was identified. Therefore, no additional investigations are warranted for this site.

Site 16 is associated with the closed Washington County Landfill site located more than 2 miles west of the Airport. This site is monitored for residual groundwater contamination which extends to within one mile of the Airport. Due to the depth of groundwater at the Airport, this site is not expected to pose a concern for proposed project activities. Therefore, no additional investigations are warranted for this site.

Site 17 is listed as the Baytown Groundwater Contamination site, which covers the Airport. The site federally regulated Superfund Site consists of a contaminated groundwater plume covering about 7 square miles, including the Airport. A former metal working facility located more than a mile west of the Airport, in the city of Lake Elmo, is the primary source of the site’s contamination. Treatment of private and public drinking water, source area treatment, and groundwater monitoring are ongoing.

According to the USEPA’s Third Five-Year Review Report (see Appendix J) dated March 2017, Trichloroethylene (TCE) was found in groundwater in the area of the Lake Elmo Airport at concentrations up to 138 micrograms per liter (µg/L) in the Prairie du Chien Dolomite aquifer and up to 62 µg/L in the Jordan Sandstone aquifer. TCE was also found in residential drinking water wells, including at concentrations up to 86 µg/L in a residential well located approximately 700 feet east of the Airport. These levels exceeded the State drinking water standards and the Federal Maximum Contaminant Level (MCL) and present an unacceptable risk to those using groundwater as a source of drinking water. The Record of Decision (ROD) also documented the presence of low levels of carbon tetrachloride (CCl₄) in groundwater at the Site.

In 2015 the MPCA investigated potential vapor intrusion risk of the site with the most potential for vapor intrusion risk. Two soil gas surveys, one located in the city of Bayport and one area located near the Airport, found very low levels of several volatile contaminants, which is common in many developed areas. However, the sampling confirmed that none exceeded MPCA or USEPA health-based screening levels for residential properties.

The Airport is located at approximately elevation 920 to 930. According to the USEPA’s report, groundwater is located at approximately elevation 875 to 885 in the area of the Airport. Furthermore, the Prairie du Chien Aquifer, the highest elevation of the contaminated aquifers, is located at a depth of
approximately elevation 850. Proposed project activities are not expected to reach a depth that would encounter groundwater. While the site poses potentially hazardous materials concerns for vapor intrusion, the site is regulated and monitored and recent sampling has confirmed that no volatile contaminants have exceeded State or Federal health-based screening levels. Previous Airport development has not been precluded as a result of known contamination. Therefore, no additional investigation is warranted.

B. Data Gaps
Historical sources were not reviewed in five-year intervals because the sources to achieve that level of documentation were not readily available. However, given the consistent land use between the available sources, this data gap is not considered to be significant.
7. Conclusions & Recommendations

Mead & Hunt has performed a Phase I ESA of the Lake Elmo Airport property located in Washington County, Minnesota, in conformance with our understanding of the scope and limitations of ASTM Practice E 1527-13. Any exceptions to, or deletions from, this practice are described in Section 1.D of this report. This assessment has revealed evidence of RECs in connection with the subject property.

Based upon information provided, and proposed project activities, Mead & Hunt recommends that no further environmental assessments are warranted.
Appendix A.  Project Location Map
LAKE ELMO AIRPORT
Proposed Runway 14/32 Relocation and Associated Improvements

Project Location

T29N, R20W, S18 and S19
Baytown and West Lakeland Townships
Washington County, MN
LRR Subregion: K
USACE Regional Supplement: NC/NE
Area = 130.1 acres
Appendix B. Proposed Project Activities Exhibit
Appendix C.     Area of Ground Disturbance Exhibit
AREAS OF GROUND DISTURBANCE

LAKE ELMO AIRPORT

CONSTRUCT PROP RWY 14-32 3500' X 75'
RELOCATE 30TH ST N
CONVERT RWY 14-32 TO TWY
AREAS OF GROUND DISTURBANCE = 188 Ac.
Appendix D. Photographs of On-site Structures
Union Pacific Railroad at intersection with Manning Avenue N.

Union Pacific Railroad at intersection with 40th Street N.
Valters Aviation Building, view facing northeast.

UST and fuel pump at Valters Aviation Building.
c.1980 Lake Elmo MAC maintenance building, view facing southeast.

Diesel fuel pump and UST at MAC Maintenance Building.
Monitoring wells adjacent to MAC maintenance building and Diesel UST.

Used Oil Facility adjacent to MAC Maintenance Building.
c.1960 irregularly shaped building, possibly a former FBO building, view facing west.

c.1970 south maintenance building, view facing southwest.
Historic-age T-hangar, view facing south.

Historic-age Box and Quonset hangars, view facing south.
Historic-age Quonset hangars, view facing southwest.

Large c.1970 Quonset Hangar, view facing north.
Modern box hangars, view facing southeast.

Modern box hangar, view facing southwest.
Appendix E. Topography Map
Detailed Topography Map
LAKE ELMO AIRPORT
Proposed Runway 14-32 Runway Shift

Project Information
- T29N, R20W, S18 and S19
- City of Lake Elmo
- Washington County, MN
- Area of Interest: 130.1 acres
- Field work conducted: June 5 - 9, 2017

Image Source: MnGEO WMS Image Service, Washington County (2016 color 7-county)
Contour Source: Minnesota Geospatial Commons, Minnesota Elevation Mapping Project
Twin Cities Metro Region 2011

Legend
- Area of Interest
- Airport Property Boundary
- Contour Elevation
  - Index Contour
  - Intermediate Contour

Note: Contour interval is 2 feet.
Appendix F.     FEMA Floodplain Map
FEMA's National Flood Hazard Layer (Official)

Data from Flood Insurance Rate Maps (FIRMs) where available digitally. New NFHL FIRMette Print app available:
http://tinyurl.com/j4xwp5e
Appendix G. NRCS Soils Data
The soil surveys that comprise your AOI were mapped at 1:15,800.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: 
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Washington County, Minnesota
Survey Area Data: Version 11, Sep 19, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 16, 2012—Apr 26, 2012

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.
# Hydric Rating by Map Unit

## Hydric Rating by Map Unit— Summary by Map Unit — Washington County, Minnesota (MN163)

<table>
<thead>
<tr>
<th>Map unit symbol</th>
<th>Map unit name</th>
<th>Rating</th>
<th>Acres in AOI</th>
<th>Percent of AOI</th>
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<tbody>
<tr>
<td>49</td>
<td>Antigo silt loam, 0 to 2 percent slopes</td>
<td>0</td>
<td>166.4</td>
<td>17.8%</td>
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<tr>
<td>49B</td>
<td>Antigo silt loam, 2 to 6 percent slopes</td>
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<td>49C</td>
<td>Antigo silt loam, 6 to 15 percent slopes</td>
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<tr>
<td>120</td>
<td>Brill silt loam</td>
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<td>5.4</td>
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<td>153B</td>
<td>Santiago silt loam, 2 to 6 percent slopes</td>
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<td>155C</td>
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<td>155D</td>
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<td>264</td>
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<td>266</td>
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<tr>
<td>302C</td>
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<td>449</td>
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<td>456</td>
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<td>1055</td>
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<td>100</td>
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<td>Barronett silt loam, sandy substratum</td>
<td>90</td>
<td>1.7</td>
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**Totals for Area of Interest**

|                  | 935.5 | 100.0% |

---

Natural Resources Conservation Service
Web Soil Survey
National Cooperative Soil Survey

8/1/2017
Page 3 of 5
Description

This rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

The thematic map is color coded based on the composition of hydric components. The five color classes are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components.

In Web Soil Survey, the Summary by Map Unit table that is displayed below the map pane contains a column named 'Rating'. In this column the percentage of each map unit that is classified as hydric is displayed.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

References:


Rating Options

Aggregation Method: Percent Present
Component Percent Cutoff: None Specified
Tie-break Rule: Lower
Appendix H. Historic Aerials
Appendix I. Potentially Hazardous Materials Sites Map
Potentially Hazardous Materials Site Locations

LAKE ELMO AIRPORT
Proposed Runway 14/32 Relocation and Associated Improvements

Project Location
T29N, R20W, S18 and S19
Baytown and West Lakeland Townships
Washington County, MN
LRR Subregion: K
USACE Regional Supplement: NC/NE
Area = 130.1 acres
Appendix J. Database Search Results: Site Reports
Site 1
Bay Lake Reserve WWTP

**Location:**
3280 Norman Ave N  
Stillwater, MN 55082  
Washington County

**Watershed:**
Lower St. Croix River (07030005)

**Latitude:**
44.99895

**Longitude:**
-92.83670

**Coordinate Collection Method:**
Address Matching House Number

**Currently Active?**
Yes

**Industry Classification:**
Sewage Treatment Facilities

**Institutional controls:**
No

Activity Overview
Wastewater - MN0067164 - Municipal SDS Permit

Bay Lake Reserve WWTP

**Status: Active**

Municipal wastewater facilities primarily process wastewater from sewage. These include city wastewater treatment, sanitary districts, wayside rest areas, national or state parks, mobile home parks, and resorts. Facilities that discharge directly to surface water require a NPDES/SDS permit, whereas those that do not may require an SDS permit.

### Events

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<td>Administrative Change</td>
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<td>12/31/2023</td>
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<td>09/30/2015</td>
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### Inspections

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<tr>
<td>WW Compliance Evaluation Inspection</td>
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### Enforcement Activities

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<tr>
<td>Letter of Warning</td>
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<td>03/07/2014</td>
<td>03/01/2016</td>
<td>04/15/2016</td>
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</tbody>
</table>

### Links to Additional Data Sources

- Wastewater data browser

---

Contact
Records managers

Records managers are MPCA staff that will help you to access files relating to this site. To request their help, visit our information request page to learn about the process or simply fill out an information request form.

Program contacts

Contact these MPCA staff if you have more specific questions about these activities.

<table>
<thead>
<tr>
<th>Contact</th>
<th>Phone</th>
<th>Contact Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kaitlin Jamieson</td>
<td>651-757-2306</td>
<td>Wastewater Compliance Staff</td>
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</table>

Alternate Name

<table>
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<tr>
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<th>Description</th>
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<tbody>
<tr>
<td>95803</td>
<td>MPCA Agency Interest ID</td>
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<tr>
<td>MN0067164</td>
<td>Wastewater Permit Number</td>
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Owners

Owner or Primary Contact:
Bay Lake Reserve Homeowner’s Association
Tony Grosso

Former Owner or Primary Contact:
Bay Lake Baytown LLC

Documents

These files do not necessarily represent the MPCA’s full set of public records for this site.

To request more records, visit our information request page to learn about the process or simply fill out an information request form.
Site 2
Heritage Farm

**Location:** 30th St N & Manning Ave
Lake Elmo, MN 55042
Washington County

**Watershed:** Lower St. Croix River (07030005)

**Latitude:** 44.99210

**Longitude:** -92.86289

**Coordinate Collection Method:** Address Matching House Number

**Currently Active?** Yes

**Institutional controls:** No

Activity Overview
Stormwater

Construction Stormwater - C00004457

Heritage Farm

**Status: Active**

When stormwater drains off a construction site, it can carry sediment and pollutants that harm lakes, streams and wetlands. Stormwater permit requirements are designed to control erosion and limit pollution during and after construction.

---

**Events**

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<thead>
<tr>
<th>Event</th>
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<tr>
<td>Coverage Issuance</td>
<td>07/08/1997</td>
<td>08/01/2018</td>
</tr>
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---

**Links to Additional Data Sources**

- CSW Online Permit Data - CSC00004457

---

**Contact**

**Records managers**

Records managers are MPCA staff that will help you to access files relating to this site. To request their help, visit our information request page to learn about the process or simply fill out an information request form.

**Program contacts**

*Contact these MPCA staff if you have more specific questions about these activities.*

<table>
<thead>
<tr>
<th>Contact</th>
<th>Phone</th>
<th>Contact Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rachel Parlin</td>
<td>651-757-2118</td>
<td>Const Stormwater Data Management</td>
</tr>
</tbody>
</table>

---

**Alternate Name**

https://cf.pca.state.mn.us/wimn/siteInfo_print.cfm?siteid=5768
Owners

Owner or Primary Contact:
Donna Herzfeld
Herzfeld Inc

Former Owner or Primary Contact:
There are no records of former owner or primary contact names.

Documents

These files do not necessarily represent the MPCA’s full set of public records for this site.

To request more records, visit our information request page to learn about the process or simply fill out an information request form.
The Heritage Farm Protection CSW project has been granted coverage by the Minnesota Pollution Control Agency (MPCA) under the National Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS) Stormwater Permit (Permit) for Construction Activity. Permit coverage is effective for this project on Fri Sep 04, 1998.

You are required to comply with the terms of the Permit to prevent erosion and control sediment from your site with the procedures established in your Stormwater Pollution Prevention Plan (SWPPP). You are also required to upgrade your SWPPP and erosion prevention and sediment control Best Management Practices (BMPs) as site and weather conditions dictate throughout the entire term of the project.

Once all construction activity has been completed at this project, you must submit a Notice of Termination (NOT) form to the MPCA within 30 days of meeting the conditions outlined in Part II (C) of the permit. Please check the MPCA website (http://www.pca.state.mn.us/water/stormwater) or call to request an NOT form and fact sheet.

Please save this letter for your records. If you have any questions about permit coverage for this project, please contact the Construction Stormwater Program at 651-757-2119 or toll free at 800-657-3804.
Site 3
METROPOLITAN AIRPORT COMMISSION
3275 MANNING AVE N
LAKE ELMO, MN 55042-9681

*You can navigate within the map with your mouse.

EPA Facility Information
This query was executed on AUG-18-2017

RCRAInfo

HANDLER ID: MN0000448662

LIST OF NAICS CODES AND DESCRIPTIONS

<table>
<thead>
<tr>
<th>NAICS CODE</th>
<th>NAICS DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>481111</td>
<td>SCHEDULED PASSENGER AIR TRANSPORTATION</td>
</tr>
</tbody>
</table>

HANDLER / FACILITY CLASSIFICATION

<table>
<thead>
<tr>
<th>HANDLER TYPE</th>
<th>LAND DISPOSAL</th>
<th>INCINERATOR</th>
<th>BOILER AND OR INDUSTRIAL FURNACE</th>
<th>STORAGE</th>
<th>TREATMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>HANDLER TYPE</td>
<td>Not in a universe</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

No Process Information is available for the facility listed above.

Additional Information can be obtained from Resource Conservation and Recovery Information | RCRAInfo | Search.
# MAC - Lake Elmo Airport

| **Location:** | 3275 Manning Ave N  
| | Lake Elmo, MN 55042  
| | Washington County  |
| **Watershed:** | Lower St. Croix River (07030005) |
| **Latitude:** | 44.99599 |
| **Longitude:** | -92.86326 |
| **Coordinate Collection Method:** | Address Matching House Number |
| **Currently Active?** | Yes |
| **Industry Classification:** | Scheduled Passenger Air Transportation |
| **Institutional controls:** | No |

## Activity Overview
Hazardous Waste

Hazardous Waste - MN0000448662
MAC - Lake Elmo Airport
Status: Inactive

Events

<table>
<thead>
<tr>
<th>Event</th>
<th>Start</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notif of Regulated Waste</td>
<td>05/18/2017</td>
<td></td>
</tr>
</tbody>
</table>

Links to Additional Data Sources

- HW Generator License Application Data - MN0000448662

---

Stormwater

Industrial Stormwater - A00000138
MAC - Lake Elmo Airport
Status: Inactive

At industrial sites, stormwater may come into contact with harmful pollutants such as toxic metals, oil, grease and de-icing salts. Industrial stormwater permits are designed to limit the contaminants that reach surface and groundwater.

Events

<table>
<thead>
<tr>
<th>Event</th>
<th>Start</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coverage Reissuance</td>
<td>05/08/2002</td>
<td>04/05/2010</td>
</tr>
<tr>
<td>Coverage Issuance</td>
<td>06/11/1999</td>
<td>04/05/2010</td>
</tr>
</tbody>
</table>

Links to Additional Data Sources

- ISW Online Permit Data - A00000138

Industrial Stormwater - MNR0539X5
MAC - Lake Elmo Airport
Status: Active
At industrial sites, stormwater may come into contact with harmful pollutants such as toxic metals, oil, grease and de-icing salts. Industrial stormwater permits are designed to limit the contaminants that reach surface and groundwater.

Events

<table>
<thead>
<tr>
<th>Event</th>
<th>Start</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative Change</td>
<td>12/09/2015</td>
<td>04/05/2020</td>
</tr>
<tr>
<td>Coverage Issuance</td>
<td>04/05/2015</td>
<td>12/08/2015</td>
</tr>
</tbody>
</table>

Links to Additional Data Sources

- ISW Online Permit Data - MNR0539X5

Tanks

Aboveground Tanks - TS0004289
MAC - Lake Elmo Airport
Status: Active
An aboveground storage tank site has at least one tank of a certain size on the premises. A tank site may have multiple tanks and these tanks may contain food products, petroleum products or other substances.
Events

<table>
<thead>
<tr>
<th>Event</th>
<th>Start</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration Received</td>
<td>02/08/1993</td>
<td>02/08/1993</td>
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</tbody>
</table>

Inspections

<table>
<thead>
<tr>
<th>Inspection Type</th>
<th>Inspection Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT Inspection</td>
<td>12/19/2012</td>
</tr>
<tr>
<td>AT Inspection</td>
<td>12/22/2009</td>
</tr>
<tr>
<td>AT Inspection</td>
<td>08/21/2006</td>
</tr>
</tbody>
</table>

Links to Additional Data Sources

There are no links for this activity. Contact the file manager or program contact to determine if additional information is available.

Underground Tanks - TS0004289

MAC - Lake Elmo Airport

Status: Active

An underground storage tank site has at least one tank of a certain size on the premises. A tank site may have multiple tanks and these tanks may contain food products, petroleum products or other substances.
Events

<table>
<thead>
<tr>
<th>Event</th>
<th>Start</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>UST Ten-Day Adv Notice</td>
<td>05/04/2000</td>
<td></td>
</tr>
<tr>
<td>Registration Received</td>
<td>09/11/1991</td>
<td>09/11/1991</td>
</tr>
<tr>
<td>Registration Received</td>
<td>05/07/1986</td>
<td>05/07/1986</td>
</tr>
</tbody>
</table>

Inspections

<table>
<thead>
<tr>
<th>Inspection Type</th>
<th>Inspection Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>UT Inspection</td>
<td>04/27/2016</td>
</tr>
<tr>
<td>UT Inspection</td>
<td>12/19/2012</td>
</tr>
<tr>
<td>UT Inspection</td>
<td>12/22/2009</td>
</tr>
<tr>
<td>UT Inspection</td>
<td>08/21/2006</td>
</tr>
</tbody>
</table>

Links to Additional Data Sources

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Contact

Records managers

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Program contacts

Contact these MPCA staff if you have more specific questions about these activities.

<table>
<thead>
<tr>
<th>Contact</th>
<th>Phone</th>
<th>Contact Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chris Bashor</td>
<td>651-757-2215</td>
<td>Aboveground Tanks Compliance Staff</td>
</tr>
<tr>
<td>Regina Small</td>
<td>651-757-2382</td>
<td>Hazardous Waste Data Management</td>
</tr>
<tr>
<td>Melissa Wenzel</td>
<td>651-757-2816</td>
<td>Ind Stormwater Compliance Staff</td>
</tr>
<tr>
<td>Rachel Parlin</td>
<td>651-757-2118</td>
<td>Ind Stormwater Data Management</td>
</tr>
<tr>
<td>Jacob Mueller</td>
<td>651-757-2862</td>
<td>Underground Tanks Compliance Staff</td>
</tr>
</tbody>
</table>
### Alternate Name

<table>
<thead>
<tr>
<th>Alternate Name or ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MN0000448662</td>
<td>Hazardous Waste Preferred ID</td>
</tr>
<tr>
<td>A000000138</td>
<td>Industrial Stormwater Preferred ID</td>
</tr>
<tr>
<td>MNR0539X5</td>
<td>Industrial Stormwater Preferred ID</td>
</tr>
<tr>
<td>8039</td>
<td>MPCA Agency Interest ID</td>
</tr>
<tr>
<td>TS0004289</td>
<td>Underground Tanks Preferred ID</td>
</tr>
</tbody>
</table>

### Owners

**Owner or Primary Contact:**
Met Council Environmental Services  
Metropolitan Airports Commission

**Former Owner or Primary Contact:**
Dick Keinz

### Documents

These files do not necessarily represent the MPCA's full set of public records for this site.

To request more records, visit our information request page to learn about the process or simply fill out an information request form.
Related Topics: Envirofacts
FRS
FRS Facility Detail Report

**METROPOLITAN AIRPORT COMMISSION**

**EPA Registry Id:**
110008823880
3275 MANNING AVE N
LAKE ELMO, MN
55042-9681

**Facility Registry Service Links:**
- Facility Registry Service (FRS) Overview
- FRS Facility Query
- FRS Organization Query
- EZ Query
- FRS Physical Data Model
- FRS Geospatial Model

The facility locations displayed come from the FRS Spatial Coordinates tables. They are the best representative locations for the displayed facilities based on the accuracy of the collection method and quality assurance checks performed against each location. The North American Datum of 1983 is used to display all coordinates.

**Environmental Interests**

<table>
<thead>
<tr>
<th>Information System</th>
<th>System Facility Name</th>
<th>Information System Id/Report Link</th>
<th>Environmental Interest Type</th>
<th>Data Source</th>
<th>Last Update Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESOURCE CONSERVATION AND RECOVERY ACT INFORMATION SYSTEM</td>
<td>MAC LAKE ELMO AIRPORT</td>
<td>MN0000448662</td>
<td>UNSPECIFIED UNIVERSE (N)</td>
<td>RCRAINFO10</td>
<td></td>
</tr>
<tr>
<td>MINNESOTA - PERMITTING, COMPLIANCE, AND ENFORCEMENT INFORMATION MANAGEMENT SYSTEM</td>
<td>MAC - LAKE ELMO AIRPORT</td>
<td>8039</td>
<td>STATE MASTER</td>
<td>MN-TEMPO</td>
<td></td>
</tr>
</tbody>
</table>

Additional EPA Reports: MyEnvironment Enforcement and Compliance Site Demographics Facility Coordinates Viewer Environmental Justice Map Viewer Watershed R
### Standard Industrial Classification Codes (SIC)

<table>
<thead>
<tr>
<th>SIC Code</th>
<th>Description</th>
<th>Primary</th>
</tr>
</thead>
<tbody>
<tr>
<td>4512</td>
<td>AIR TRANSPORTATION, SCHEDULED</td>
<td></td>
</tr>
</tbody>
</table>

### Facility Codes and Flags

- **EPA Region:** 05
- **Duns Number:** -
- **Congressional District Number:** 04
- **Legislative District Number:** 56
- **HUC Code/Watershed:** 07030005 / LOWER ST. CROIX
- **US Mexico Border Indicator:** NO
- **Federal Facility:** NO
- **Tribal Land:** NO

### Alternative Names

- **MAC LAKE ELMO AIRPORT**

### Organizations

No Organizations returned.

---

**Query executed on:** AUG-18-2017

---

**Last updated on:** September 24, 2015
RE: NPDES/SDS Industrial Stormwater General Permit Application
Permit ID Number: MNR0539X5
Facility Name: MAC - Lake Elmo Airport
Facility Address: 3275 Manning Ave N Lake Elmo, MN 55042

Dear ,

The Minnesota Pollution Control Agency (MPCA) has received and approved your application for permit authorization for industrial stormwater.

### Industrial Activities authorized under this permit

<table>
<thead>
<tr>
<th>Industrial Activity</th>
<th>Industrial Subsector</th>
<th>Industrial Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>4581 Airports, Flying Fields, and Airport Terminal Services</td>
<td>S2 Airports using &lt; 100,000 gal. glycol-based de/anti-icing chemicals and/or annual. Avg.of &lt; 100 tons urea.</td>
<td>S Air Transportation Facilities</td>
</tr>
<tr>
<td>4581 Airports, Flying Fields, and Airport Terminal Services (S2)</td>
<td>S2 Airports using &lt; 100,000 gal. glycol-based de/anti-icing chemicals and/or annual. Avg.of &lt; 100 tons urea.</td>
<td>S Air Transportation Facilities</td>
</tr>
</tbody>
</table>

Read and follow all applicable permit requirements. For a copy of the permit in its entirety go to: [www.pca.state.mn.us/industrialstormwater/](http://www.pca.state.mn.us/industrialstormwater/). There is also additional information about the Industrial Stormwater Multi-Sector General Permit including Frequently Asked Questions, a SWPPP template and checklist, the BMP Guidebook, the Sampling Guidance Manual, and many more guidance materials there.

If you have questions contact the Industrial Stormwater Program by email: iswprogram.pca@state.mn.us or call the Stormwater Hotline at 651-757-2119 or 800-657-3804 (non-metro only).
### MAC - Lake Elmo Airport

<table>
<thead>
<tr>
<th>Site ID</th>
<th>TS0004289</th>
</tr>
</thead>
</table>
| Location  | 3275 Manning Ave N  
Lake Elmo, Minnesota 55042  
Washington County |
| Site ID   | TS0004289 |
| Location  | 3275 Manning Ave N  
Lake Elmo, Minnesota 55042  
Washington County |
| Site ID   | TS0004289 |
| Location  | 3275 Manning Ave N  
Lake Elmo, Minnesota 55042  
Washington County |
| Site ID   | TS0004289 |
| Location  | 3275 Manning Ave N  
Lake Elmo, Minnesota 55042  
Washington County |

**Tank Count**

4 tanks are (or were) located at this site.

<table>
<thead>
<tr>
<th>Tank number</th>
<th>Install date</th>
<th>Registration date</th>
<th>Tank capacity</th>
<th>Tank status</th>
<th>Stored product</th>
<th>Above or underground</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>01/01/1976</td>
<td>05/07/1986</td>
<td>2000</td>
<td>Removed</td>
<td>Diesel</td>
<td>Underground</td>
</tr>
<tr>
<td>002</td>
<td>01/01/1976</td>
<td>05/07/1986</td>
<td>2000</td>
<td>Removed</td>
<td>Gasoline</td>
<td>Underground</td>
</tr>
<tr>
<td>1001</td>
<td>11/01/1992</td>
<td>02/08/1993</td>
<td>250</td>
<td>Active</td>
<td>Used Oil</td>
<td>Aboveground</td>
</tr>
</tbody>
</table>
Site 4
Valters Aviation Inc

| Location:       | 3275 Manning Ave N  
|                | Lake Elmo, MN 55042  
|                | Washington County |
| Watershed:     | Lower St. Croix River (07030005) |
| Latitude:      | 44.99599 |
| Longitude:     | -92.86328 |
| Coordinate Collection Method: | Address Matching House Number |
| Currently Active? | No |
| Industry Classification: | Other Support Activities for Air Transportation |
| Institutional controls: | No |

Activity Overview
Hazardous Waste

Hazardous Waste - MND077629509
Valters Aviation Inc
**Status:** Inactive

---

**Events**

<table>
<thead>
<tr>
<th>Event</th>
<th>Start</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notif of Regulated Waste</td>
<td>05/18/2017</td>
<td></td>
</tr>
</tbody>
</table>

---

**Links to Additional Data Sources**

- HW Generator License Application Data - MND077629509

---

Investigation and Cleanup

Petroleum Remediation - LS0004513 - Leak Site
Valters Aviation Inc
**Status:** Inactive

Leak sites are locations where a release of petroleum products has occurred from a tank system. Leak sites can occur from aboveground or underground tank systems as well as from spills at tank facilities.
Events

<table>
<thead>
<tr>
<th>Event</th>
<th>Start</th>
<th>End</th>
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</thead>
<tbody>
<tr>
<td>General Information Reviewed</td>
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<td>01/15/1993</td>
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<tr>
<td>Site Closed</td>
<td>01/13/1993</td>
<td>01/15/1993</td>
</tr>
<tr>
<td>Thermal Treatment Soil Batch Approved</td>
<td>09/16/1992</td>
<td>09/16/1992</td>
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<tr>
<td>Excavation Report Reviewed</td>
<td>03/12/1992</td>
<td>03/13/1992</td>
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<tr>
<td>Soil Corrective Action Plan Reviewed</td>
<td>03/12/1992</td>
<td>03/13/1992</td>
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<tr>
<td>Responsible Party Determined</td>
<td>09/19/1991</td>
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<td>Leak Discovered</td>
<td>09/10/1991</td>
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Inspections

<table>
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<tr>
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<td>09/17/2014</td>
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</table>

Links to Additional Data Sources

There are no links for this activity. Contact the file manager or program contact to determine if additional information is available.

Contact

Records managers

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Program contacts

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<table>
<thead>
<tr>
<th>Contact</th>
<th>Phone</th>
<th>Contact Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regina Small</td>
<td>651-757-2382</td>
<td>Hazardous Waste Data Management</td>
</tr>
</tbody>
</table>
### Alternate Name

<table>
<thead>
<tr>
<th>Alternate Name or ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4513</td>
<td>Former Leak Site Preferred ID</td>
</tr>
<tr>
<td>MND077629509</td>
<td>Hazardous Waste Preferred ID</td>
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<tr>
<td>LS0004513</td>
<td>Leak Site Preferred ID</td>
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<tr>
<td>38032</td>
<td>MPCA Agency Interest ID</td>
</tr>
<tr>
<td>MND077629509</td>
<td>Previous Name</td>
</tr>
</tbody>
</table>

### Owners

**Owner or Primary Contact:**
There are no records of owner or primary contact names.

**Former Owner or Primary Contact:**
Valters Aviation Inc

### Documents

These files do not necessarily represent the MPCA’s full set of public records for this site.

To request more records, visit our information request page to learn about the process or simply fill out an information request form.
Site 5
Valters Aviation

| Location:                  | 3275 Manning Ave N  
|                           | Lake Elmo Airport  
|                           | Lake Elmo, MN 55042  
|                           | Washington County  
| Watershed:                | Lower St. Croix River (07030005)  
| Latitude:                 | 45.00225  
| Longitude:                | -92.86273  
| Coordinate Collection Method: | Address Matching House Number  
| Currently Active?:        | No  
| Institutional controls:   | No  

Activity Overview
Tanks

Underground Tanks - TS0019223

Valters Aviation

Status: Inactive

An underground storage tank site has at least one tank of a certain size on the premises. A tank site may have multiple tanks and these tanks may contain food products, petroleum products or other substances.

Events

<table>
<thead>
<tr>
<th>Event</th>
<th>Start</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>UST Ten-Day Adv Notice</td>
<td>05/04/2007</td>
<td>05/04/2007</td>
</tr>
<tr>
<td>Registration Received</td>
<td>05/01/1997</td>
<td>05/01/1997</td>
</tr>
<tr>
<td>Registration Received</td>
<td>04/17/1995</td>
<td>04/17/1995</td>
</tr>
<tr>
<td>Registration Received</td>
<td>06/01/1988</td>
<td>06/01/1988</td>
</tr>
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</table>

Inspections

<table>
<thead>
<tr>
<th>Inspection Type</th>
<th>Inspection Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>UT Inspection</td>
<td>06/02/2016</td>
</tr>
<tr>
<td>UT Inspection</td>
<td>05/31/2013</td>
</tr>
<tr>
<td>UT Inspection</td>
<td>06/02/2010</td>
</tr>
<tr>
<td>UT Inspection</td>
<td>05/23/2007</td>
</tr>
<tr>
<td>UT Inspection</td>
<td>08/21/2006</td>
</tr>
<tr>
<td>UT Inspection</td>
<td>03/11/1998</td>
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</tbody>
</table>

Enforcement Activities

<table>
<thead>
<tr>
<th>Case Type</th>
<th>Net Penalty</th>
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<th>Action Date</th>
<th>Closure Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citation Warning</td>
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<td>06/02/2010</td>
<td>06/09/2010</td>
<td>07/15/2010</td>
</tr>
<tr>
<td>APO - Combination</td>
<td>$6,750</td>
<td>08/21/2006</td>
<td>12/08/2006</td>
<td>06/14/2007</td>
</tr>
</tbody>
</table>

Links to Additional Data Sources

There are no links for this activity. Contact the file manager or program contact to determine if additional information is available.
Contact

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<thead>
<tr>
<th>Contact</th>
<th>Phone</th>
<th>Contact Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jacob Mueller</td>
<td>651-757-2862</td>
<td>Underground Tanks Compliance Staff</td>
</tr>
</tbody>
</table>

Alternate Name

<table>
<thead>
<tr>
<th>Alternate Name or ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>111969</td>
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<tr>
<td>19223</td>
<td>Previous Name</td>
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<td>19223</td>
<td>Previous Name</td>
</tr>
<tr>
<td>TS0019223</td>
<td>Underground Tanks Preferred ID</td>
</tr>
</tbody>
</table>

Owners

Owner or Primary Contact:

Gatis Valters
Kurt A. Nowacki
Mayer Aviation
Valters Aviation

Former Owner or Primary Contact:

Edward Myer
Kurt A. Nowacki
Mayer Aviation

Documents
These files do not necessarily represent the MPCA’s full set of public records for this site.

To request more records, visit our information request page to learn about the process or simply fill out an information request form.
Leaks and tanks site dashboard

Valters Aviation

<table>
<thead>
<tr>
<th>Site ID</th>
<th>TS0019223</th>
</tr>
</thead>
</table>
| Location     | 3275 Manning Ave N  
Lake Elmo, Minnesota 55042  
Washington County |
| Tank Count   | 4 tanks are (or were) located at this site. |

<table>
<thead>
<tr>
<th>Tank number</th>
<th>Install date</th>
<th>Registration date</th>
<th>Tank capacity</th>
<th>Tank status</th>
<th>Stored product</th>
<th>Above or underground</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>07/01/1978</td>
<td>04/17/1995</td>
<td>4000</td>
<td>Removed</td>
<td>Gasoline</td>
<td>Underground</td>
</tr>
<tr>
<td>002</td>
<td>07/01/1978</td>
<td>04/17/1995</td>
<td>4000</td>
<td>Removed</td>
<td>Gasoline</td>
<td>Underground</td>
</tr>
<tr>
<td>003</td>
<td>06/01/1988</td>
<td>06/01/1988</td>
<td>10000</td>
<td>Active</td>
<td>Aviation gasoline</td>
<td>Underground</td>
</tr>
<tr>
<td>004</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Site 6
## Village Park Preserve

| **Location:** | See location description  
Lake Elmo, MN 55042  
Washington County |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Watershed:</strong></td>
<td>Lower St. Croix River (07030005)</td>
</tr>
<tr>
<td><strong>Latitude:</strong></td>
<td>44.99443</td>
</tr>
<tr>
<td><strong>Longitude:</strong></td>
<td>-92.86596</td>
</tr>
<tr>
<td><strong>Coordinate Collection Method:</strong></td>
<td>Digitized - MPCA internal mapping application</td>
</tr>
<tr>
<td><strong>Currently Active?</strong></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Institutional controls:</strong></td>
<td>No</td>
</tr>
</tbody>
</table>

### Activity Overview
Investigation and Cleanup

Brownfields - VP32130 - Voluntary Investigation and Cleanup

Village Park Preserve

Status: Active

Brownfields are potentially contaminated sites where the MPCA is helping buyers, sellers, developers or local governments to voluntarily investigate and clean up land for sale, financing or redevelopment. Sites may be petroleum brownfields, non-petroleum brownfields, or both. Non-petroleum brownfields are called Voluntary Investigation and Cleanup sites.

Events

<table>
<thead>
<tr>
<th>Event</th>
<th>Start</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Closed</td>
<td>12/18/2014</td>
<td>12/18/2014</td>
</tr>
<tr>
<td>Technical Assistance Letter Issued</td>
<td>12/10/2014</td>
<td>12/18/2014</td>
</tr>
<tr>
<td>Application/Notification/Registration Received</td>
<td>12/10/2014</td>
<td>12/10/2014</td>
</tr>
<tr>
<td>Completeness Determined</td>
<td>12/10/2014</td>
<td>12/10/2014</td>
</tr>
</tbody>
</table>

Links to Additional Data Sources

There are no links for this activity. Contact the file manager or program contact to determine if additional information is available.

Contact

Records managers

Records managers are MPCA staff that will help you to access files relating to this site. To request their help, visit our information request page to learn about the process or simply fill out an information request form.

Program contacts

*Contact these MPCA staff if you have more specific questions about these activities.*

No program contact has been designated for this site.
Alternate Name

<table>
<thead>
<tr>
<th>Alternate Name or ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VP32130</td>
<td>Brownfields Preferred ID</td>
</tr>
<tr>
<td>VP32130</td>
<td>Former Brownfields VIC Preferred ID</td>
</tr>
<tr>
<td>188829</td>
<td>MPCA Agency Interest ID</td>
</tr>
</tbody>
</table>

Owners

**Owner or Primary Contact:**
Village Park Preserve

**Former Owner or Primary Contact:**
There are no records of former owner or primary contact names.

Documents

These files do not necessarily represent the MPCA’s full set of public records for this site.

To request more records, visit our information request page to learn about the process or simply fill out an information request form.
Site 7
### 2009 Lake Elmo Airport Pavement Rehab

| **Location:** | 3275 Manning Ave N  
|              | Lake Elmo Airport  
|              | Lake Elmo, MN 55042  
|              | Washington County |
| **Watershed:** | Lower St. Croix River (07030005) |
| **Latitude:** | 44.99667 |
| **Longitude:** | -92.86028 |
| **Coordinate Collection Method:** | GPS - Other |
| **Currently Active:** | No |
| **Institutional controls:** | No |

## Activity Overview
Stormwater

Construction Stormwater - C00027652

2009 Lake Elmo Airport Pavement Rehab

**Status:** Inactive

When stormwater drains off a construction site, it can carry sediment and pollutants that harm lakes, streams and wetlands. Stormwater permit requirements are designed to control erosion and limit pollution during and after construction.

---

### Events

<table>
<thead>
<tr>
<th>Event</th>
<th>Start</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coverage Issuance</td>
<td>05/25/2009</td>
<td>04/02/2010</td>
</tr>
<tr>
<td>Coverage Termination</td>
<td>05/25/2009</td>
<td>04/02/2010</td>
</tr>
</tbody>
</table>

---

### Links to Additional Data Sources

- CSW Online Permit Data - CSC00027652

---

### Contact

**Records managers**

Records managers are MPCA staff that will help you to access files relating to this site. To request their help, visit our information request page to learn about the process or simply fill out an information request form.

**Program contacts**

*Contact these MPCA staff if you have more specific questions about these activities.*

<table>
<thead>
<tr>
<th>Contact</th>
<th>Phone</th>
<th>Contact Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rachel Parlin</td>
<td>651-757-2118</td>
<td>Const Stormwater Data Management</td>
</tr>
</tbody>
</table>

---

### Alternate Name

https://cf.pca.state.mn.us/wimn/siteInfo_print.cfm?siteid=131822
<table>
<thead>
<tr>
<th>Alternate Name or ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C00027652</td>
<td>Construction Stormwater Preferred ID</td>
</tr>
<tr>
<td>131822</td>
<td>MPCA Agency Interest ID</td>
</tr>
</tbody>
</table>

**Owners**

**Owner or Primary Contact:**
There are no records of owner or primary contact names.

**Former Owner or Primary Contact:**
Metropolitan Airports Commission

**Documents**

These files do not necessarily represent the MPCA's full set of public records for this site.

To request more records, visit our information request page to learn about the process or simply fill out an information request form.
Site 8
### Lake Elmo Airport

| Location: | 3275 Manning Ave Box 2  
|           | Lake Elmo, MN 55042  
|           | Washington County |
| Watershed: | Lower St. Croix River (07030005) |
| Latitude: | 44.99976 |
| Longitude: | -92.85682 |
| Coordinate Collection Method: | Digitized - Permit Application Map |
| Currently Active? | Yes |
| Institutional controls: | No |

### Activity Overview
At industrial sites, stormwater may come into contact with harmful pollutants such as toxic metals, oil, grease and de-icing salts. Industrial stormwater permits are designed to limit the contaminants that reach surface and groundwater.

Events

<table>
<thead>
<tr>
<th>Event</th>
<th>Start</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coverage Issuance</td>
<td>08/06/2010</td>
<td>08/27/2017</td>
</tr>
</tbody>
</table>

Links to Additional Data Sources

- ISW Online Permit Data - MNR0534YY

Contact

Records managers

Records managers are MPCA staff that will help you to access files relating to this site. To request their help, visit our information request page to learn about the process or simply fill out an information request form.

Program contacts

Contact these MPCA staff if you have more specific questions about these activities.

<table>
<thead>
<tr>
<th>Contact</th>
<th>Phone</th>
<th>Contact Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melissa Wenzel</td>
<td>651-757-2816</td>
<td>Ind Stormwater Compliance Staff</td>
</tr>
<tr>
<td>Rachel Parlin</td>
<td>651-757-2118</td>
<td>Ind Stormwater Data Management</td>
</tr>
</tbody>
</table>

Alternate Name

https://cf.pca.state.mn.us/wimn/siteInfo_print.cfm?siteid=138059
### Alternate Name or ID
- MNR0534YY
- 138059

### Description
- Industrial Stormwater Preferred ID
- MPCA Agency Interest ID

---

## Owners

**Owner or Primary Contact:**
Metropolitan Airports Commission

**Former Owner or Primary Contact:**
There are no records of former owner or primary contact names.

---

## Documents

These files do not necessarily represent the MPCA’s full set of public records for this site.

To request more records, visit our information request page to learn about the process or simply fill out an information request form.
08/06/2010

Mike Harder
6040 28th Ave S
Minneapolis, MN 55450

RE: NPDES/SDS Industrial Stormwater General Permit Application
    Permit ID Number: MNR0534YY
    Facility Name: Lake Elmo Airport
    Facility Address: 3275 Manning Ave Box 2 Lake Elmo, MN 55042

Dear ,

The Minnesota Pollution Control Agency (MPCA) has received and approved your application for permit authorization for industrial stormwater.

### Industrial Activities authorized under this permit

<table>
<thead>
<tr>
<th>Industrial Activity</th>
<th>Industrial Subsector</th>
<th>Industrial Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>4581 Airports, Flying Fields, and Airport Terminal Services</td>
<td>S2 Airports using &lt; 100,000 gal. glycol-based de/anti-icing chemicals and/or annual. Avg.of &lt; 100 tons urea.</td>
<td>S Air Transportation Facilities</td>
</tr>
</tbody>
</table>

Read and follow all applicable permit requirements. For a copy of the permit in its entirety go to: [www.pca.state.mn.us/industrialstormwater/](http://www.pca.state.mn.us/industrialstormwater/). There is also additional information about the Industrial Stormwater Multi-Sector General Permit including Frequently Asked Questions, a SWPPP template and checklist, the BMP Guidebook, the Sampling Guidance Manual, and many more guidance materials there.

If you have questions contact the Industrial Stormwater Program by email: [iswprogram.pca@state.mn.us](mailto:iswprogram.pca@state.mn.us) or call the Stormwater Hotline at 651-757-2119 or 800-657-3804 (non-metro only).
Site 9
Envirofacts
Search Results

HANGAR 27 E AT LAKE ELMO
3275 MANNING AVE N HANGAR 27E
LAKE ELMO, MN 55042

*You can navigate within the map with your mouse.

EPA Facility Information
This query was executed on AUG-18-2017

RCRAInfo

HANDLER ID: MNS000305248

LIST OF NAICS CODES AND DESCRIPTIONS

<table>
<thead>
<tr>
<th>NAICS CODE</th>
<th>NAICS DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>336413</td>
<td>OTHER AIRCRAFT PARTS AND AUXILIARY EQUIPMENT MANUFACTURING</td>
</tr>
<tr>
<td>336411</td>
<td>AIRCRAFT MANUFACTURING</td>
</tr>
</tbody>
</table>

HANDLER / FACILITY CLASSIFICATION

HANDLER TYPE: LAND DISPOSAL| INCINERATOR| BOILER AND OR INDUSTRIAL FURNACE| STORAGE| TREATMENT

HANDLER TYPE
Conditionally Exempt Small Generator

No Process Information is available for the facility listed above.

Additional Information can be obtained from Resource Conservation and Recovery Information RCRAInfo Search.
## Hangar 27E @ Lake Elmo

| Location          | 3275 Manning Ave N Hangar 27E  
|                  | Lake Elmo, MN 55042           
|                  | Washington County             |
| Watershed:       | Lower St. Croix River (07030005) |
| Latitude:        | 45.00276                      |
| Longitude:       | -92.85410                     |
| Coordinate Collection Method: | Digitized - Permit Application Map |
| Currently Active?| Yes                           |
| Industry Classification: | Aircraft Manufacturing  
|                      | Other Aircraft Parts and Auxiliary Equipment Manufacturing |
| Institutional controls: | No                           |

### Activity Overview
Hazardous Waste

Hazardous Waste - MNS000305248
Hangar 27E @ Lake Elmo
Status: Inactive

Events

<table>
<thead>
<tr>
<th>Event</th>
<th>Start</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application/Notification/Registration Received</td>
<td>02/16/2017</td>
<td>02/16/2017</td>
</tr>
<tr>
<td>Application/Notification/Registration Received</td>
<td>07/08/2016</td>
<td>07/08/2016</td>
</tr>
</tbody>
</table>

Links to Additional Data Sources

- HW Generator License Application Data - MNS000305248

Contact

Records managers

Records managers are MPCA staff that will help you to access files relating to this site. To request their help, visit our information request page to learn about the process or simply fill out an information request form.

Program contacts

Contact these MPCA staff if you have more specific questions about these activities.

<table>
<thead>
<tr>
<th>Contact</th>
<th>Phone</th>
<th>Contact Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regina Small</td>
<td>651-757-2382</td>
<td>Hazardous Waste Data Management</td>
</tr>
</tbody>
</table>

Alternate Name
Alternate Name or ID
MNS000305248
213338

Description
Hazardous Waste Preferred ID
MPCA Agency Interest ID

Owners

Owner or Primary Contact:
Nicholas P Krueger

Former Owner or Primary Contact:
There are no records of former owner or primary contact names.

Documents

These files do not necessarily represent the MPCA's full set of public records for this site.
To request more records, visit our information request page to learn about the process or simply fill out an information request form.
FRS Facility Detail Report

HANGAR 27 E AT LAKE ELMO

EPA Registry Id:
110069462021
3275 MANNING AVE
N HANGAR 27E
LAKE ELMO, MN
55042

Facility Registry Service Links:
- Facility Registry Service (FRS) Overview
- FRS Facility Query
- FRS Organization Query
- EZ Query
- FRS Physical Data Model
- FRS Geospatial Model

Legend
- Selected Facility
- EPA Facility of Interest
- State/Tribe Facility of Interest

The facility locations displayed come from the FRS Spatial Coordinates tables. They are the best representative locations for the displayed facilities based on the accuracy of the collection method and quality assurance checks performed against each location. The North American Datum of 1983 is used to display all coordinates.

Environmental Interests

<table>
<thead>
<tr>
<th>Information System</th>
<th>System Facility Name</th>
<th>Information System Id/Report Link</th>
<th>Environmental Interest Type</th>
<th>Data Source</th>
<th>Last Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESOURCE CONSERVATION AND RECOVERY ACT INFORMATION SYSTEM</td>
<td>HANGAR 27 E AT LAKE ELMO</td>
<td>MNS000305248</td>
<td>CESQG (Y)</td>
<td>RCRAINFO</td>
<td>10/05/2016</td>
</tr>
</tbody>
</table>

Additional EPA Reports: MyEnvironment Enforcement and Compliance Site Demographics Facility Coordinates Viewer Environmental Justice Map Viewer Watershed R...
Standard Industrial Classification Codes (SIC)

No SIC Codes returned.

Facility Codes and Flags

<table>
<thead>
<tr>
<th>Data Source</th>
<th>NAICS Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCRAINFO336411</td>
<td>336411</td>
<td>AIRCRAFT MANUFACTURING</td>
</tr>
<tr>
<td>RCRAINFO336413</td>
<td>336413</td>
<td>OTHER AIRCRAFT PARTS AND AUXILIARY MANUFACTURING</td>
</tr>
</tbody>
</table>

National Industry Classification System (NAICS)

<table>
<thead>
<tr>
<th>NAICS Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>336411</td>
<td>AIRCRAFT MANUFACTURING</td>
</tr>
<tr>
<td>336413</td>
<td>OTHER AIRCRAFT PARTS AND AUXILIARY MANUFACTURING</td>
</tr>
</tbody>
</table>

Alternative Names

No Alternative Names returned.

Organizations

No Organizations returned.

Contacts

<table>
<thead>
<tr>
<th>Affiliation Type</th>
<th>Full Name</th>
<th>Office Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>REGULATORY CONTACT</td>
<td>NICHOLAS P KRUEGER</td>
<td>651-255-</td>
</tr>
</tbody>
</table>

Query executed on: AUG-18-2017

Last updated on September 24, 2015
Site 10
# Valters Aviation Service Station Inc.

| **Location:** | 3275 Manning Ave N  
|              | Lake Elmo, MN 55042  
|              | Washington County |
| **Watershed:** | Lower St. Croix River (07030005) |
| **Latitude:** | 45.00211 |
| **Longitude:** | -92.85785 |
| **Coordinate Collection Method:** | Digitized - Permit Application Map |
| **Currently Active?** | Yes |
| **Institutional controls:** | No |

## Activity Overview
Stormwater

Industrial Stormwater - MNR053C3J
Valters Aviation Service Station Inc.

Status: Active
At industrial sites, stormwater may come into contact with harmful pollutants such as toxic metals, oil, grease and de-icing salts. Industrial stormwater permits are designed to limit the contaminants that reach surface and groundwater.

Events

<table>
<thead>
<tr>
<th>Event</th>
<th>Start</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coverage Issuance</td>
<td>04/05/2015</td>
<td>04/05/2020</td>
</tr>
</tbody>
</table>

Links to Additional Data Sources

- ISW Online Permit Data - MNR053C3J

Industrial Stormwater - MNR0537TK
Valters Aviation Service Station Inc.

Status: Inactive
At industrial sites, stormwater may come into contact with harmful pollutants such as toxic metals, oil, grease and de-icing salts. Industrial stormwater permits are designed to limit the contaminants that reach surface and groundwater.
Events

<table>
<thead>
<tr>
<th>Event</th>
<th>Start</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coverage Issuance</td>
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<td>04/05/2015</td>
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</tbody>
</table>

Inspections

<table>
<thead>
<tr>
<th>Inspection Type</th>
<th>Inspection Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW Facility Inspection</td>
<td>08/09/2013</td>
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<tr>
<td>ISW On Site Compliance Inspection</td>
<td>08/09/2013</td>
</tr>
</tbody>
</table>

Enforcement Activities

<table>
<thead>
<tr>
<th>Case Type</th>
<th>Net Penalty</th>
<th>Discovery Date</th>
<th>Action Date</th>
<th>Closure Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>APO - Combination</td>
<td>$4,700</td>
<td>08/09/2013</td>
<td>10/18/2013</td>
<td>02/14/2014</td>
</tr>
</tbody>
</table>

Links to Additional Data Sources

- ISW Online Permit Data - MNR0537TK

Contact

Records managers

Records managers are MPCA staff that will help you to access files relating to this site. To request their help, visit our information request page to learn about the process or simply fill out an information request form.

Program contacts

Contact these MPCA staff if you have more specific questions about these activities.

<table>
<thead>
<tr>
<th>Contact</th>
<th>Phone</th>
<th>Contact Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melissa Wenzel</td>
<td>651-757-2816</td>
<td>Ind Stormwater Compliance Staff</td>
</tr>
<tr>
<td>Rachel Parlin</td>
<td>651-757-2118</td>
<td>Ind Stormwater Data Management</td>
</tr>
</tbody>
</table>
Alternate Name

<table>
<thead>
<tr>
<th>Alternate Name or ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MNR0537TK</td>
<td>Industrial Stormwater Preferred ID</td>
</tr>
<tr>
<td>MNR053C3J</td>
<td>Industrial Stormwater Preferred ID</td>
</tr>
<tr>
<td>144980</td>
<td>MPCA Agency Interest ID</td>
</tr>
<tr>
<td>MNU000944</td>
<td>Project Number</td>
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</tbody>
</table>

Owners

**Owner or Primary Contact:**
Gatis Valters

**Former Owner or Primary Contact:**
There are no records of former owner or primary contact names.

Documents

These files do not necessarily represent the MPCA's full set of public records for this site.

To request more records, visit our information request page to learn about the process or simply fill out an information request form.
10/24/2013

Gatis Valters
3275 Manning Ave N
Lake Elmo, MN 55042

RE: NPDES/SDS Industrial Stormwater General Permit Application
   Permit ID Number: MNR0537TK
   Facility Name: Valters Aviation Service Station Inc.
   Facility Address: 3275 Manning Ave N Lake Elmo, MN 55042

Dear ,

The Minnesota Pollution Control Agency (MPCA) has received and approved your application for permit authorization for industrial stormwater.

Read and follow all applicable permit requirements. For a copy of the permit in its entirety go to: www.pca.state.mn.us/industrialstormwater/. There is also additional information about the Industrial Stormwater Multi-Sector General Permit including Frequently Asked Questions, a SWPPP template and checklist, the BMP Guidebook, the Sampling Guidance Manual, and many more guidance materials there.

If you have questions contact the Industrial Stormwater Program by email: iswprogram.pca@state.mn.us or call the Stormwater Hotline at 651-757-2119 or 800-657-3804 (non-metro only).
Site 11
Walters Aviation

| Location:                | 3275 Manning Ave N Lot 33  
                | Lake Elmo, MN 55042-9681  
                | Washington County        |
|--------------------------|---------------------------|
| Watershed:               | Lower St. Croix River (07030005) |
| Latitude:                | 44.99599                  |
| Longitude:               | -92.86328                 |
| Coordinate Collection Method: | Address Matching House Number |
| Currently Active?        | Yes                       |
| Industry Classification: | Other Airport Operations   |
| Institutional controls:  | No                        |

Activity Overview
Hazardous Waste

Hazardous Waste - MNR000100388 - Very small quantity generator

Walters Aviation

**Status: Active**

Hazardous waste includes substances that are corrosive, explosive, toxic and/or fire hazards. Very Small Quantity Generators produce 220 pounds or less of hazardous waste, and less than 2.2 pounds of acute hazardous waste per month. Businesses in this classification require a license.

Events

<table>
<thead>
<tr>
<th>Event</th>
<th>Start</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notif of Regulated Waste</td>
<td>05/18/2017</td>
<td></td>
</tr>
<tr>
<td>Annual Gen License Report</td>
<td>12/16/2013</td>
<td></td>
</tr>
<tr>
<td>Annual Gen License Report</td>
<td>01/28/2008</td>
<td></td>
</tr>
</tbody>
</table>

Links to Additional Data Sources

- HW Generator License Application Data - MNR000100388

Contact

Records managers

Records managers are MPCA staff that will help you to access files relating to this site. To request their help, visit our information request page to learn about the process or simply fill out an information request form.

Program contacts

*Contact these MPCA staff if you have more specific questions about these activities.*

<table>
<thead>
<tr>
<th>Contact</th>
<th>Phone</th>
<th>Contact Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regina Small</td>
<td>651-757-2382</td>
<td>Hazardous Waste Data Management</td>
</tr>
</tbody>
</table>
Alternate Name

<table>
<thead>
<tr>
<th>Alternate Name or ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MNR000100388</td>
<td>Hazardous Waste Preferred ID</td>
</tr>
<tr>
<td>57922</td>
<td>MPCA Agency Interest ID</td>
</tr>
</tbody>
</table>

Owners

Owner or Primary Contact:
Metropolitan Airports Commission

Former Owner or Primary Contact:
There are no records of former owner or primary contact names.

Documents

These files do not necessarily represent the MPCA’s full set of public records for this site.

To request more records, visit our information request page to learn about the process or simply fill out an information request form.
WALTERS AVIATION
3275 MANNING AVE
LAKE ELMO, MN 55042-9681

*You can navigate within the map with your mouse.

EPA Facility Information
This query was executed on AUG-18-2017

RCRAInfo

HANDLER ID: MND077629509

LIST OF NAICS CODES AND DESCRIPTIONS

<table>
<thead>
<tr>
<th>NAICS CODE</th>
<th>NAICS DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>48819</td>
<td>OTHER SUPPORT ACTIVITIES FOR AIR TRANSPORTATION</td>
</tr>
</tbody>
</table>

HANDLER / FACILITY CLASSIFICATION

<table>
<thead>
<tr>
<th>HANDLER TYPE</th>
<th>LAND DISPOSAL</th>
<th>INCINERATOR</th>
<th>BOILER AND OR INDUSTRIAL FURNACE</th>
<th>STORAGE</th>
<th>TREATMENT</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>HANDLER TYPE</th>
<th>Conditionally Exempt Small Generator</th>
</tr>
</thead>
</table>

No Process Information is available for the facility listed above.

Additional Information can be obtained from Resource Conservation and Recovery Information Search.
No NAICS Codes are available for the facility listed above.

**HANDLER ID:** MNR000100388

**HANDLER / FACILITY CLASSIFICATION**

<table>
<thead>
<tr>
<th>HANDLER TYPE</th>
<th>LAND DISPOSAL</th>
<th>INCINERATOR</th>
<th>BOILER AND OR INDUSTRIAL FURNACE</th>
<th>STORAGE</th>
<th>TREATMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>HANDLER TYPE</td>
<td>Conditionally Exempt Small Generator</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

No Process Information is available for the facility listed above.

Additional Information can be obtained from Resource Conservation and Recovery Information Search.
Facility Registry Service Links:

- Facility Registry Service (FRS) Overview
- FRS Facility Query
- FRS Organization Query
- EZ Query
- FRS Physical Data Model
- FRS Geospatial Model

Legend

- Selected Facility
- EPA Facility of Interest
- State/Tribe Facility of Interest

The facility locations displayed come from the FRS Spatial Coordinates tables. They are the best representative locations for the displayed facilities based on the accuracy of the collection method and quality assurance checks performed against each location. The North American Datum of 1983 is used to display all coordinates.

Environmental Interests

<table>
<thead>
<tr>
<th>Information System</th>
<th>System Facility Name</th>
<th>Information System Id/Report Link</th>
<th>Environmental Interest Type</th>
<th>Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>MINNESOTA - PERMITTING, COMPLIANCE, AND ENFORCEMENT INFORMATION MANAGEMENT SYSTEM</td>
<td>WALTERS AVIATION INC</td>
<td>38632</td>
<td>STATE MASTER</td>
<td>MIN-TEMPO</td>
</tr>
<tr>
<td>RESOURCE CONSERVATION AND RECOVERY ACT INFORMATION SYSTEM</td>
<td>WALTERS AVIATION INC</td>
<td>MND077626959</td>
<td>CESQG (Y)</td>
<td>RCRAINFCE</td>
</tr>
<tr>
<td>RESOURCE CONSERVATION AND RECOVERY ACT INFORMATION SYSTEM</td>
<td>WALTERS AVIATION</td>
<td>MNR000100388</td>
<td>CESQG (Y)</td>
<td>RCRAINFCE</td>
</tr>
<tr>
<td>MINNESOTA - PERMITTING, COMPLIANCE, AND ENFORCEMENT INFORMATION MANAGEMENT SYSTEM</td>
<td>WALTERS AVIATION</td>
<td>57922</td>
<td>STATE MASTER</td>
<td>MIN-TEMPO</td>
</tr>
</tbody>
</table>

Additional EPA Reports: MyEnvironment, Enforcement and Compliance, Site Demographics, Facility Coordinates Viewer, Environmental Justice Map Viewer, Watershed R
### Standard Industrial Classification Codes (SIC)

<table>
<thead>
<tr>
<th>Data Source</th>
<th>SIC Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MN-TEMPO</td>
<td>4581</td>
<td>AIRPORTS, FLYING FIELDS, AND AIRPORT TERMINAL SERVICES</td>
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</table>

### Facility Codes and Flags

<table>
<thead>
<tr>
<th>EPA Region:</th>
<th>05</th>
</tr>
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<tbody>
<tr>
<td>Date Number:</td>
<td>04</td>
</tr>
<tr>
<td>Congressional District Number:</td>
<td>04</td>
</tr>
<tr>
<td>Legislative District Number:</td>
<td>39</td>
</tr>
<tr>
<td>HUC Code/Watershed:</td>
<td>07030005 / LOWER ST. CROIX</td>
</tr>
<tr>
<td>US Mexico Border Indicator:</td>
<td>NO</td>
</tr>
<tr>
<td>Federal Facility:</td>
<td>NO</td>
</tr>
<tr>
<td>Tribal Land:</td>
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</tbody>
</table>

### Alternative Names

<table>
<thead>
<tr>
<th>Alternative Name</th>
<th>Source of Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAYER AVIATION</td>
<td>RCRAINFO</td>
</tr>
<tr>
<td>VALTERS AVIATION</td>
<td>NOTIFICATION (RCRA)</td>
</tr>
</tbody>
</table>

### Organizations

<table>
<thead>
<tr>
<th>Affiliation Type</th>
<th>Name</th>
<th>DUNS Number</th>
<th>Information System</th>
<th>Mailing Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>OWNER</td>
<td>METROPOLITAN AIRPORTS COMMISSION</td>
<td>RCRAINFO</td>
<td>FACILITY MAILING ADDRESS</td>
<td></td>
</tr>
<tr>
<td>OWNER</td>
<td>VALTERS AVIATION INC</td>
<td>RCRAINFO</td>
<td>FACILITY MAILING ADDRESS</td>
<td></td>
</tr>
<tr>
<td>OWNER</td>
<td>MAYER EDWARD W</td>
<td>RCRAINFO</td>
<td>FACILITY MAILING ADDRESS</td>
<td></td>
</tr>
<tr>
<td>OWNER</td>
<td>METROPOLITAN AIRPORTS COMMISSION</td>
<td>RCRAINFO</td>
<td>FACILITY MAILING ADDRESS</td>
<td></td>
</tr>
</tbody>
</table>

### National Industry Classification Sysytems

<table>
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<tr>
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<th>NAICS Code</th>
<th>Description</th>
</tr>
</thead>
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<td>048819</td>
<td>OTHER AIRPORT OPERATIONS</td>
</tr>
<tr>
<td>MN-TEMPO</td>
<td>488119</td>
<td>OTHER AIRPORT OPERATIONS</td>
</tr>
</tbody>
</table>

### Facility Mailing Addresses

<table>
<thead>
<tr>
<th>Affiliation Type</th>
<th>Delivery Point</th>
<th>City Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>FACILITY MAILING ADDRESS</td>
<td>3275 MANNING AVE N LOT 33</td>
<td>LA ELMO</td>
</tr>
<tr>
<td>FACILITY MAILING ADDRESS</td>
<td>3275 MANNING AVE N</td>
<td>LA ELMO</td>
</tr>
</tbody>
</table>

### Contacts

<table>
<thead>
<tr>
<th>Affiliation Type</th>
<th>Full Name</th>
<th>Office Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>REGULATORY CONTACT</td>
<td>GAITIS WALTERS</td>
<td>6517771399</td>
</tr>
<tr>
<td>REGULATORY CONTACT</td>
<td>GAITIS VALTERS</td>
<td>9999999999</td>
</tr>
</tbody>
</table>

*Query executed on: AUG-18-2017*

*Last updated on September 24, 2015*
Site 12
River Country Coop Holiday

Site ID | TS0119761
---|---
Location | 4201 Manning Ave N
| Lake Elmo, Minnesota 55042
| Washington County
Tank Count | 4 tanks are (or were) located at this site.

<table>
<thead>
<tr>
<th>Tank number</th>
<th>Install date</th>
<th>Registration date</th>
<th>Tank capacity</th>
<th>Tank status</th>
<th>Stored product</th>
<th>Above or underground</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>05/23/2000</td>
<td>01/16/2001</td>
<td>12000</td>
<td>Active</td>
<td>Gasoline</td>
<td>Underground</td>
</tr>
<tr>
<td>002</td>
<td>05/23/2000</td>
<td>01/16/2001</td>
<td>7000</td>
<td>Active</td>
<td>Gasoline</td>
<td>Underground</td>
</tr>
<tr>
<td>002-2</td>
<td>05/23/2000</td>
<td>01/16/2001</td>
<td>5000</td>
<td>Active</td>
<td>Gasoline</td>
<td>Underground</td>
</tr>
<tr>
<td>003</td>
<td>05/23/2000</td>
<td>01/16/2001</td>
<td>7000</td>
<td>Active</td>
<td>Diesel</td>
<td>Underground</td>
</tr>
<tr>
<td>003-2</td>
<td>05/23/2000</td>
<td>01/16/2001</td>
<td>5000</td>
<td>Active</td>
<td>Diesel</td>
<td>Underground</td>
</tr>
<tr>
<td>004</td>
<td>05/23/2000</td>
<td>01/16/2001</td>
<td>2000</td>
<td>Active</td>
<td>Diesel, Off Road</td>
<td>Underground</td>
</tr>
</tbody>
</table>
River Country Coop Holiday

| Location:          | 4201 Manning Ave N  
|                   | 4201 Stillwater Blvd  
|                   | Lake Elmo, MN 55042  
|                   | Washington County |
| Watershed:        | Lower St. Croix River (07030005) |
| Latitude:         | 45.00989 |
| Longitude:        | -92.86446 |
| Coordinate Collection Method: | Address Matching House Number |
| Currently Active? | Yes |
| Institutional controls: | No |

Activity Overview
Investigation and Cleanup

Brownfields - PB2356 - Petroleum Brownfield

River Country Coop Holiday

**Status:** Inactive

Brownfields are potentially contaminated sites where the MPCA is helping buyers, sellers, developers or local governments to voluntarily investigate and clean up land for sale, financing or redevelopment. Sites may be petroleum brownfields, non-petroleum brownfields, or both.

### Events

<table>
<thead>
<tr>
<th>Event</th>
<th>Start</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Closed</td>
<td>01/01/2007</td>
<td>01/01/2007</td>
</tr>
</tbody>
</table>

### Links to Additional Data Sources

There are no links for this activity. Contact the file manager or program contact to determine if additional information is available.

Petroleum Remediation - LS0000947 - Leak Site

River Country Coop Holiday

**Status:** Inactive

Leak sites are locations where a release of petroleum products has occurred from a tank system. Leak sites can occur from aboveground or underground tank systems as well as from spills at tank facilities.
<table>
<thead>
<tr>
<th>Event</th>
<th>Start</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closure Request Reviewed</td>
<td>05/04/2001</td>
<td>06/27/2001</td>
</tr>
<tr>
<td>Site Closed</td>
<td>05/04/2001</td>
<td>06/27/2001</td>
</tr>
<tr>
<td>Technical Review of Closure Request Completed</td>
<td>05/04/2001</td>
<td>06/21/2001</td>
</tr>
<tr>
<td>Other Report Type Not Listed Reviewed</td>
<td>12/01/1999</td>
<td>12/01/1999</td>
</tr>
<tr>
<td>File Reviewed No Report Received</td>
<td>11/05/1999</td>
<td>11/12/1999</td>
</tr>
<tr>
<td>Wakeup Request Issued</td>
<td>11/05/1999</td>
<td>11/12/1999</td>
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<tr>
<td>Invoiced</td>
<td>05/29/1997</td>
<td>05/29/1997</td>
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<tr>
<td>Annual or Semi Annual Report Reviewed</td>
<td>04/03/1997</td>
<td>04/23/1997</td>
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<tr>
<td>Non-Corrective Action Design Approved</td>
<td>04/03/1997</td>
<td>04/23/1997</td>
</tr>
<tr>
<td>More Work Requested</td>
<td>02/29/1996</td>
<td>03/27/1996</td>
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<tr>
<td>General Information Reviewed</td>
<td>01/17/1996</td>
<td>03/08/1996</td>
</tr>
<tr>
<td>CSR Reviewed by Project Manager - Adequate</td>
<td>09/17/1993</td>
<td>09/21/1993</td>
</tr>
<tr>
<td>Petrofund Application from Commerce Received</td>
<td>09/17/1993</td>
<td>09/21/1993</td>
</tr>
<tr>
<td>CSR Reviewed by Project Manager - Adequate</td>
<td>09/16/1993</td>
<td>09/20/1993</td>
</tr>
<tr>
<td>Petrofund Application from Commerce Received</td>
<td>09/16/1993</td>
<td>09/20/1993</td>
</tr>
<tr>
<td>Non-Corrective Action Design Approved</td>
<td>02/12/1993</td>
<td>09/14/1993</td>
</tr>
<tr>
<td>Status Report Reviewed</td>
<td>02/12/1993</td>
<td>09/14/1993</td>
</tr>
<tr>
<td>Monitoring Report Reviewed</td>
<td>01/19/1993</td>
<td>09/14/1993</td>
</tr>
<tr>
<td>Non-Corrective Action Design Approved</td>
<td>01/19/1993</td>
<td>09/14/1993</td>
</tr>
<tr>
<td>Corrective Action Design (CAD) Reviewed</td>
<td>12/06/1990</td>
<td>02/21/1991</td>
</tr>
<tr>
<td>Corrective Action Design Approved</td>
<td>12/06/1990</td>
<td>02/21/1991</td>
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<tr>
<td>Remedial Investigation Report Reviewed</td>
<td>12/06/1990</td>
<td>02/21/1991</td>
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</table>
Thermal Treatment Soil Batch Approved 07/26/1990 07/26/1990
Responsible Party Determined 02/16/1989 02/16/1989
Standard Letter Issued 02/16/1989 02/16/1989
Leak Reported 02/01/1989 02/01/1989

Links to Additional Data Sources

There are no links for this activity. Contact the file manager or program contact to determine if additional information is available.

Tanks

Underground Tanks - TS0119761
River Country Coop Holiday

Status: Active
An underground storage tank site has at least one tank of a certain size on the premises. A tank site may have multiple tanks and these tanks may contain food products, petroleum products or other substances.
Events

<table>
<thead>
<tr>
<th>Event</th>
<th>Start</th>
<th>End</th>
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<tbody>
<tr>
<td>Notice Received</td>
<td>12/07/2016</td>
<td>12/07/2016</td>
</tr>
<tr>
<td>Notice Received</td>
<td>09/27/2016</td>
<td>09/27/2016</td>
</tr>
<tr>
<td>Registration Received</td>
<td>11/07/2005</td>
<td>11/07/2005</td>
</tr>
<tr>
<td>Registration Received</td>
<td>06/06/2001</td>
<td>06/06/2001</td>
</tr>
<tr>
<td>Registration Received</td>
<td>01/16/2001</td>
<td>01/16/2001</td>
</tr>
<tr>
<td>UST Ten-Day Adv Notice</td>
<td>05/17/2000</td>
<td></td>
</tr>
<tr>
<td>Registration Received</td>
<td>01/10/1990</td>
<td>01/10/1990</td>
</tr>
<tr>
<td>Registration Received</td>
<td>12/13/1989</td>
<td>12/13/1989</td>
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Inspections

<table>
<thead>
<tr>
<th>Inspection Type</th>
<th>Inspection Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>UT inspection</td>
<td>05/02/2014</td>
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<tr>
<td>UT inspection</td>
<td>05/04/2011</td>
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<tr>
<td>UT inspection</td>
<td>03/17/2008</td>
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</table>

Links to Additional Data Sources

There are no links for this activity. Contact the file manager or program contact to determine if additional information is available.

Contact

Records managers

Records managers are MPCA staff that will help you to access files relating to this site. To request their help, visit our information request page to learn about the process or simply fill out an information request form.

Program contacts

*Contact these MPCA staff if you have more specific questions about these activities.*

<table>
<thead>
<tr>
<th>Contact</th>
<th>Phone</th>
<th>Contact Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jacob Mueller</td>
<td>651-757-2862</td>
<td>Underground Tanks Compliance Staff</td>
</tr>
</tbody>
</table>
### Alternate Name

<table>
<thead>
<tr>
<th>Alternate Name or ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PB2356</td>
<td>Brownfields Preferred ID</td>
</tr>
<tr>
<td>2356</td>
<td>Former Brownfields PBP Preferred ID</td>
</tr>
<tr>
<td>947</td>
<td>Former Leak Site Preferred ID</td>
</tr>
<tr>
<td>LS0000947</td>
<td>Leak Site Preferred ID</td>
</tr>
<tr>
<td>116220</td>
<td>MPCA Agency Interest ID</td>
</tr>
<tr>
<td>119761</td>
<td>Previous Name</td>
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<tr>
<td>119761</td>
<td>Previous Name</td>
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<tr>
<td>119761</td>
<td>Previous Name</td>
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<td>TS0014771</td>
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<tr>
<td>TS0119761</td>
<td>Underground Tanks Preferred ID</td>
</tr>
</tbody>
</table>

### Owners

**Owner or Primary Contact:**
- Kunz Oil Co
- River Country Cooperative
- Tom Boland
- Walter Kunz II

**Former Owner or Primary Contact:**
- River Country Coop
- River Country Cooperative

### Documents

These files do not necessarily represent the MPCA’s full set of public records for this site.

To request more records, visit our information request page to learn about the process or simply fill out an information request form.
Site 13
Abandoned Gas Station

Location: 40th St N & Stillwater Blvd
          Lake Elmo, MN 55042
          Washington County

Watershed: Lower St. Croix River (07030005)

Latitude: 45.00987
Longitude: -92.86462

Coordinate Collection Method: Address Matching House Number

Currently Active?: No
Institutional controls: No

Activity Overview
Underground Tanks - TS0020466
Abandoned Gas Station

**Status:** Inactive

An underground storage tank site has at least one tank of a certain size on the premises. A tank site may have multiple tanks and these tanks may contain food products, petroleum products or other substances.

### Inspections

<table>
<thead>
<tr>
<th>Inspection Type</th>
<th>Inspection Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>UT Inspection</td>
<td>02/24/1998</td>
</tr>
</tbody>
</table>

### Links to Additional Data Sources

There are no links for this activity. Contact the file manager or program contact to determine if additional information is available.

### Contact

**Records managers**

Records managers are MPCA staff that will help you to access files relating to this site. To request their help, visit our information request page to learn about the process or simply fill out an information request form.

**Program contacts**

*Contact these MPCA staff if you have more specific questions about these activities.*

<table>
<thead>
<tr>
<th>Contact</th>
<th>Phone</th>
<th>Contact Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jacob Mueller</td>
<td>651-757-2862</td>
<td>Underground Tanks Compliance Staff</td>
</tr>
</tbody>
</table>

### Alternate Name

WIMN: What's In My Neighborhood
### Alternate Name or ID

146624  
TS0020466

### Description

MPCA Agency Interest ID  
Underground Tanks Preferred ID

### Owners

**Owner or Primary Contact:**
Owner Unknown

**Former Owner or Primary Contact:**
There are no records of former owner or primary contact names.

### Documents

These files do not necessarily represent the MPCA’s full set of public records for this site.

To request more records, visit our information request page to learn about the process or simply fill out an information request form.
Site 14
Abandoned Service Station

**Location:** Highway 5 & Manning Ave
Lake Elmo, MN 55042
Washington County

**Watershed:** Lower St. Croix River (07030005)

**Latitude:** 45.00989

**Longitude:** -92.86472

**Coordinate Collection Method:** Address Matching House Number

**Currently Active?** No

**Institutional controls:** No

Activity Overview
Tanks

Underground Tanks - TS0020472
Abandoned Service Station

**Status:** Inactive

An underground storage tank site has at least one tank of a certain size on the premises. A tank site may have multiple tanks and these tanks may contain food products, petroleum products or other substances.

---

**Inspections**

<table>
<thead>
<tr>
<th>Inspection Type</th>
<th>Inspection Date</th>
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</thead>
<tbody>
<tr>
<td>UT Inspection</td>
<td>05/31/2013</td>
</tr>
<tr>
<td>UT Inspection</td>
<td>06/02/2010</td>
</tr>
</tbody>
</table>

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**Links to Additional Data Sources**

There are no links for this activity. Contact the file manager or program contact to determine if additional information is available.

---

**Contact**

**Records managers**

Records managers are MPCA staff that will help you to access files relating to this site. To request their help, visit our information request page to learn about the process or simply fill out an information request form.

---

**Program contacts**

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<tr>
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<th>Phone</th>
<th>Contact Description</th>
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</thead>
<tbody>
<tr>
<td>Jacob Mueller</td>
<td>651-757-2862</td>
<td>Underground Tanks Compliance Staff</td>
</tr>
</tbody>
</table>
**Alternate Name**

<table>
<thead>
<tr>
<th>Alternate Name or ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>146625</td>
<td>MPCA Agency Interest ID</td>
</tr>
<tr>
<td>TS0020472</td>
<td>Underground Tanks Preferred ID</td>
</tr>
</tbody>
</table>

**Owners**

**Owner or Primary Contact:**
Owner Unknown

**Former Owner or Primary Contact:**
There are no records of former owner or primary contact names.

**Documents**

These files do not necessarily represent the MPCA's full set of public records for this site.

To request more records, visit our information request page to learn about the process or simply fill out an information request form.
Site 15
Bruggeman - Lake Elmo

**Location:**
- See location description
- Lake Elmo, MN 55042
- Washington County

**Watershed:**
- Lower St. Croix River (07030005)

**Latitude:**
- 45.00155

**Longitude:**
- -92.87046

**Coordinate Collection Method:**
- Public Land Survey-Two Quarter

**Currently Active?:**
- Yes

**Institutional controls:**
- Yes

---

**Activity Overview**
Investigation and Cleanup

Brownfields - VP19780 - Voluntary Investigation and Cleanup

Bruggeman - Lake Elmo

**Status:** Inactive

Brownfields are potentially contaminated sites where the MPCA is helping buyers, sellers, developers or local governments to voluntarily investigate and clean up land for sale, financing or redevelopment. Sites may be petroleum brownfields, non-petroleum brownfields, or both. Non-petroleum brownfields are called Voluntary Investigation and Cleanup sites.
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### Links to Additional Data Sources

There are no links for this activity. Contact the file manager or program contact to determine if additional information is available.

### Brownfields - VP19782 - Voluntary Investigation and Cleanup

**Bruggeman - Lake Elmo**

**Status: Active**

Brownfields are potentially contaminated sites where the MPCA is helping buyers, sellers, developers or local governments to voluntarily investigate and clean up land for sale, financing or redevelopment. Sites may be petroleum brownfields, non-petroleum brownfields, or both. Non-petroleum brownfields are called Voluntary Investigation and Cleanup sites.
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### Links to Additional Data Sources

There are no links for this activity. Contact the file manager or program contact to determine if additional information is available.

#### Brownfields - VP19781 - Voluntary Investigation and Cleanup

Bruggeman - Lake Elmo

**Status: Active**

Brownfields are potentially contaminated sites where the MPCA is helping buyers, sellers, developers or local governments to voluntarily investigate and clean up land for sale, financing or redevelopment. Sites may be petroleum brownfields, non-petroleum brownfields, or both. Non-petroleum brownfields are called Voluntary Investigation and Cleanup sites.
### Events

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### Links to Additional Data Sources

There are no links for this activity. Contact the file manager or program contact to determine if additional information is available.

### Contact

**Records managers**

Records managers are MPCA staff that will help you to access files relating to this site. To request their help, visit our information request page to learn about the process or simply fill out an information request form.

**Program contacts**

*Contact these MPCA staff if you have more specific questions about these activities.*

<table>
<thead>
<tr>
<th>Contact</th>
<th>Phone</th>
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<tr>
<td>John Betcher</td>
<td>651-757-2226</td>
<td>Brownfields Hydrologist</td>
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<tr>
<td>Patrice Jensen</td>
<td>651-757-2465</td>
<td>Brownfields Project Manager</td>
</tr>
<tr>
<td>John Betcher</td>
<td>651-757-2226</td>
<td>Brownfields Project Manager</td>
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### Alternate Name
Owners

Owner or Primary Contact:
Anchor Bank NA
Bruce Hutchinson
Bruggeman Properties Representing Lake Elmo Develo
Elizabeth Sauve
Unknown

Former Owner or Primary Contact:
There are no records of former owner or primary contact names.

Documents

These files do not necessarily represent the MPCA’s full set of public records for this site.

To request more records, visit our information request page to learn about the process or simply fill out an information request form.
Site 16
Washington County Landfill Reconstruction

**Location:**
See location description
Lake Elmo, MN 55042
Washington County

**Watershed:**
Lower St. Croix River (07030005)

**Latitude:**
45.00778

**Longitude:**
-92.92111

**Coordinate Collection Method:**
GPS - Other

**Currently Active?**
No

**Institutional controls:**
No

Activity Overview
Stormwater

Construction Stormwater - C00027729

Washington County Landfill Reconstruction

Status: Inactive

When stormwater drains off a construction site, it can carry sediment and pollutants that harm lakes, streams and wetlands. Stormwater permit requirements are designed to control erosion and limit pollution during and after construction.

Events

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Links to Additional Data Sources

- CSW Online Permit Data - CSC00027729

Contact

Records managers

Records managers are MPCA staff that will help you to access files relating to this site. To request their help, visit our information request page to learn about the process or simply fill out an information request form.

Program contacts

Contact these MPCA staff if you have more specific questions about these activities.

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<tr>
<th>Contact</th>
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<tr>
<td>Rachel Parlin</td>
<td>651-757-2118</td>
<td>Const Stormwater Data Management</td>
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Alternate Name

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Owners

Owner or Primary Contact:
There are no records of owner or primary contact names.

Former Owner or Primary Contact:
Minnesota Pollution Control Agency

Documents

These files do not necessarily represent the MPCA’s full set of public records for this site.

To request more records, visit our information request page to learn about the process or simply fill out an information request form.
Site 17
SITE BACKGROUND

The Baytown Township Ground Water Plume site is located in Washington County, Minnesota. It includes parts of Baytown Township, West Lakeland Township, the City of Bayport, and the City of Lake Elmo. The site consists of a contaminated groundwater plume located primarily in the Prairie du Chien Aquifer, the Jordan Sandstone Aquifer and, in certain areas, the Tunnel City Aquifer. The contaminated plume covers about seven square miles. A former metal working facility in Lake Elmo is the primary source of the site’s contamination. Treatment of private and public drinking water, source area treatment, and groundwater monitoring are ongoing.

The Minnesota Department of Health (MDH) first detected trichloroethylene (TCE) in private wells in 1987 and created a Special Well Construction Area to protect residents. The site was listed on the state's Permanent List of Priorities in 1988 and multiple state and local agencies collected thousands of samples from private wells. The site was listed on the National Priorities List (NPL) in 1994. Minnesota Pollution Control Agency (MPCA) leads cleanup of the site, with oversight by EPA.

In 2000, MPCA and EPA selected a remedy for the groundwater plume and private wells which requires plume monitoring and installation and maintenance of granular activated carbon (GAC) treatment units for
private wells. In 2007, MPCA and EPA amended the remedy to add drinking water treatment for the City of Bayport Municipal Well #2 and treatment for the area that was the source of the contamination. These remedies have been operating since 2008. In 2015, MPCA and EPA amended the remedy to add an additional City of Bayport municipal well to the treatment system.

- EPA's Involvement at this Site
- Site Status
- Work to Protect Human Health and the Environment
- Site Risks

- Institutional Controls
- Redevelopment

Site Reports and Documents

No published Administrative Records currently available.

Information Repositories

Site Contacts

EPA Contacts

Community Involvement Coordinator (CIC)
Teresa Jones
(312) 886-0725

Remedial Project Manager (RPM)
Leah Evison
(651) 757-2898
Stay Updated

Public Participation Opportunities

Please contact Teresa Jones, Community Involvement Coordinator, at 312-886-0725 or jones.teresa@epa.gov.

Site Facts

NPL Status: Final
Street Address: 35TH STREET N, BAYTOWN TOWNSHIP, MN 55042
Congressional District: 04
EPA ID: MND982425209

Other Site Names
Site Contaminants
Operable Units (OU)
Performance Measures

AUGUST 21, 2017
Baytown TWP Groundwater Contamination

Location: 11325 Stillwater Blvd N
Lake Elmo, MN 55042
Washington County

Watershed: Lower St. Croix River (07030005)

Latitude: 45.00342
Longitude: -92.87614

Coordinate Collection Method: Digitized - Permit Application Map

Currently Active?: Yes

Industry Classification: Remediation and Other Waste Management Services

Institutional controls: No

Activity Overview

Hazardous Waste

Hazardous Waste - MNS000105718 - Small quantity generator
Baytown TWP Groundwater Contamination

Status: Active
Hazardous waste includes substances that are corrosive, explosive, toxic and/or fire hazards. Small Quantity Generators produce between 220 and 2,200 pounds of hazardous waste per month, and less than 2.2 pounds of waste classified as acute hazardous waste. Businesses in this classification require a license.

Events

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Links to Additional Data Sources

- HW Generator License Application Data - MNS000105718

Investigation and Cleanup

Brownfields - BF0000418 - Voluntary Investigation and Cleanup
Baytown TWP Groundwater Contamination
Status: Active
Brownfields are potentially contaminated sites where the MPCA is helping buyers, sellers, developers or local governments to voluntarily investigate and clean up land for sale, financing or redevelopment. Sites may be petroleum brownfields, non-petroleum brownfields, or both. Non-petroleum brownfields are called Voluntary Investigation and Cleanup sites.

Events

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Links to Additional Data Sources

- EPA CERCLIS Project Data - 0505340

CERCLIS Site - MND982425209
Baytown TWP Groundwater Contamination

Status: Active
CERCLIS sites are places that are listed in the federal Comprehensive Environmental Response, Compensation and Liability Information System. This means that they are or were suspected of being contaminated. After CERCLIS sites are investigated, they may be elevated to state or federal Superfund lists, or it may be determined that no action is necessary.

Events

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Links to Additional Data Sources

- EPA CERCLIS Project Data - 0505340

Superfund - SR00000084 - Federal Superfund project and State Superfund project
Baytown TWP Groundwater Contamination

Status: Active
Superfund projects occur where known or suspected environmental contamination is or was a risk to public health or the environment. The Superfund program identifies, investigates and determines appropriate cleanup measures. Federal Superfund sites are on the US EPA's National Priority List (NPL), while State Superfund sites are on the Minnesota Permanent List of Priorities (PLP). Sites are delisted when contamination is cleaned up and risks to human and environmental health have been mitigated.

Events

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Other Report Type Not Listed Reviewed 02/10/2016 02/25/2016
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Site Visit Conducted 09/16/2014 09/16/2014
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Links to Additional Data Sources

- EPA CERCLIS Project Data - 0505340

Water Quality

Wastewater - MNG790156 - Industrial NPDES/SDS Permit

Baytown TWP Groundwater Contamination

**Status: Active**

Industrial wastewater facilities may include factories, mines and other privately owned facilities, as well as drinking water treatment plants and city pesticide application activities. Facilities that discharge directly to surface water require a NPDES/SDS permit, whereas those that do not may require an SDS permit.
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Links to Additional Data Sources

- Wastewater data browser

Contact

Records managers

Records managers are MPCA staff that will help you to access files relating to this site. To request their help, visit our information request page to learn about the process or simply fill out an information request form.

Program contacts

*Contact these MPCA staff if you have more specific questions about these activities.*

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<th>Contact Description</th>
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<tr>
<td>Eric Pederson</td>
<td>651-757-2645</td>
<td>Brownfields Project Manager</td>
</tr>
<tr>
<td>Regina Small</td>
<td>651-757-2382</td>
<td>Hazardous Waste Data Management</td>
</tr>
<tr>
<td>Mark Elliott</td>
<td>218-302-6649</td>
<td>Superfund Hydrologist</td>
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<tr>
<td>Eric Pederson</td>
<td>651-757-2645</td>
<td>Superfund Project Manager</td>
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<tr>
<td>Kaitlin Jamieson</td>
<td>651-757-2306</td>
<td>Wastewater Compliance Staff</td>
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Owners

Owner or Primary Contact:
Craig Dawson
MPCA
Mark C Elliott
Minnesota Pollution Control Agency
Unknown

Former Owner or Primary Contact:
Bill Hagberg
The Hand Spa

Documents

These files do not necessarily represent the MPCA's full set of public records for this site.

To request more records, visit our information request page to learn about the process or simply fill out an information request form.
Envirofacts
Search Results

RCRAInfo Facility Information

BAYTOWN TOWNSHIP GW CONTAMINATION SITE
Handler ID: MNS000105718
SEE LOCATION DESCRIPTION
LAKE ELMO, MN 55042

County Name: WASHINGTON

Latitude: 44.996163
Longitude: -92.857842

Hazardous Waste Generator:

Owner Name: MINNESOTA POLLUTION CONTROL AGENCY

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LIST OF FACILITY CONTACTS

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HANDLER / FACILITY CLASSIFICATION

Unspecified Universe for the facility listed above.

HANDLER TYPE

Not in a universe

No PROCESS INFORMATION is available for the facility listed above.

No NAICS Codes are available for the facility listed above.

No Waste Codes are available for the facility listed above.
THIRD FIVE-YEAR REVIEW REPORT FOR
BAYTOWN TOWNSHIP GROUNDWATER PLUME
SUPERFUND SITE
WASHINGTON COUNTY, MINNESOTA

Prepared by

U.S. Environmental Protection Agency
Region 5
Chicago, Illinois

Margaret M. Guerriero, Acting Director
Superfund Division
U.S. Environmental Protection Agency

3/28/2017
Date
# Table of Contents

<table>
<thead>
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<th>Section</th>
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<tbody>
<tr>
<td>LIST OF ABBREVIATIONS &amp; ACRONYMS</td>
<td>4</td>
</tr>
<tr>
<td>I. INTRODUCTION</td>
<td>5</td>
</tr>
<tr>
<td>FIVE-YEAR REVIEW SUMMARY FORM</td>
<td>6</td>
</tr>
<tr>
<td>II. RESPONSE ACTION SUMMARY</td>
<td>6</td>
</tr>
<tr>
<td>Basis for Taking Action</td>
<td>6</td>
</tr>
<tr>
<td>Response Actions</td>
<td>7</td>
</tr>
<tr>
<td>Status of Implementation</td>
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<td>Systems Operations/Operation &amp; Maintenance</td>
<td>17</td>
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<tr>
<td>III. PROGRESS SINCE THE LAST REVIEW</td>
<td>18</td>
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<td>IV. FIVE-YEAR REVIEW PROCESS</td>
<td>21</td>
</tr>
<tr>
<td>Community Notification and Involvement</td>
<td>21</td>
</tr>
<tr>
<td>Data Review</td>
<td>22</td>
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<tr>
<td>Site Inspection</td>
<td>25</td>
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<tr>
<td>V. TECHNICAL ASSESSMENT</td>
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<td>QUESTION A: Is the remedy functioning as intended by the decision documents?</td>
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<td>VI. ISSUES/RECOMMENDATIONS</td>
<td>27</td>
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<td>VII. PROTECTIVENESS STATEMENT</td>
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<td>CCl₄</td>
<td>Carbon Tetrachloride</td>
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<td>CFR</td>
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<td>Unlimited Use and Unrestricted Exposure</td>
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I. INTRODUCTION

The purpose of a Five-Year Review (FYR) is to evaluate the implementation and performance of a remedy in order to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in FYR reports such as this one. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The United States Environmental Protection Agency (EPA) is preparing this FYR pursuant to Section 121 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), consistent with the National Contingency Plan (NCP)(40 C.F.R. Section 300.430(i)(4)(ii)), and considering EPA policy.

This is the third FYR for the Baytown Township Groundwater Plume Superfund Site (Site).1 The triggering action for this statutory review is the completion date of the previous FYR. The FYR has been prepared due to the fact that hazardous substances, pollutants, or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure (UU/UE).

The Site was originally managed as one operable unit (OU) but currently consists of three OUs, all of which are addressed in this FYR. OU1 concerns groundwater. OU2 concerns the City of Bayport municipal wells. OU3 concerns the source area. The Minnesota Pollution Control Agency (MPCA) is the lead agency managing cleanup of the Site. MPCA requested that EPA lead the FYR.

This FYR was led by Leah Evison, EPA Remedial Project Manager. Participants included Teresa Jones, EPA Community Involvement Coordinator, Eric Pederson, MPCA Project Leader and Kurt Schroeder and Mark Elliott, MPCA Hydrogeologists. The review began on September 12, 2016.

MPCA concurs with the findings of this FYR, including the recommendations and protectiveness statements.

Site Background

The Site is located in central Washington County, Minnesota and extends from the eastern portion of the City of Lake Elmo through Baytown Township, West Lakeland Township and parts of the City of Bayport to the St. Croix River. The plume of contaminated groundwater is approximately five miles long and covers approximately seven square miles (Figure 1). The area of the Site includes predominantly low-density residences and agricultural land, but also includes the general aviation Lake Elmo Airport and parts of the cities of Lake Elmo and Bayport. The primary source of the contamination was a metal working facility that operated from 1940 to 1968 at 11325 Stillwater Boulevard N in Lake Elmo. The property is currently occupied by a convenience store and meat market (Hagberg’s Country Market), a gasoline filling station, and other small businesses.

Groundwater at the Site is currently used as a drinking water source for rural residences and commercial buildings in the area and by the City of Bayport. The dominant groundwater flow direction is to the east toward the St. Croix River. A public water supply is available in portions of the cities of Lake Elmo and Bayport, but most of the plume area is served by private wells. The Site affects a large number of private wells and several public wells in the City of Bayport. The City of Lake Elmo drinking water wells are upgradient of the Site and not affected.

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1 This Site is tracked by MPCA as the Baytown Township Groundwater Contamination Site.
MPCA is the lead agency for remedial action at the Site and EPA is the support agency. The Site was previously included in the Enforcement Deferral Pilot Project described in a June 20, 1995, agreement between EPA and MPCA. EPA and MPCA subsequently agreed to remove the Site from the Project and to proceed under a State Superfund Contract dated March 26, 2008 and amended December 11, 2014.

**FIVE-YEAR REVIEW SUMMARY FORM**

<table>
<thead>
<tr>
<th>Site Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Name: Baytown Township Groundwater Plume</td>
</tr>
<tr>
<td>EPA ID: MND982425209</td>
</tr>
<tr>
<td>Region: 5</td>
</tr>
</tbody>
</table>

**SITE STATUS**

| NPL Status: Final |
| Multiple OUs? | Has the site achieved construction completion? |
| Yes | No |

**REVIEW STATUS**

| Lead agency: EPA |
| [If “Other Federal Agency”, enter Agency name]: |
| Author name (Federal or State Project Manager): Leah Evison |
| Author affiliation: US EPA |
| Review period: 9/12/2016 – 2/15/2017 |
| Date of site inspection: 1/4/2017 |
| Type of review: Statutory |
| Review number: 3 |
| Triggering action date: 3/29/2012 |
| Due date (five years after triggering action date): 3/29/2017 |

**II. RESPONSE ACTION SUMMARY**

**Basis for Taking Action**

Trichloroethylene (TCE) was found in groundwater in the area of the Lake Elmo Airport at concentrations up to 138 micrograms per liter (µg/L) in the Prairie du Chien Dolomite aquifer and up to 62 µg/L in the Jordan Sandstone aquifer. TCE was also found in residential drinking water wells, including at concentrations up to 86 µg/L in a residential well located approximately 700 feet east of the Lake Elmo Airport. These levels exceeded the State drinking water standards.
and the Federal Maximum Contaminant Level (MCL) and presented an unacceptable risk to those using groundwater as a source of drinking water. The Record of Decision (ROD) also documented the presence of low levels of carbon tetrachloride (CCl₄) in groundwater at the Site.

Response Actions

In 1988, the Minnesota Department of Health (MDH) created a Special Well Construction Area (now known as a Special Well and Boring Construction Area or SWBCA) for the Site to inform well owners and drillers about the potential for contaminated groundwater in the area, to prevent further degradation of the aquifers and to place special restrictions on the construction of new wells in the area. The Site was listed on the State Superfund Permanent List of Priorities List in 1988 and added to the Federal National Priorities List in 1994. MPCA assumed responsibility for regulatory oversight of the Site in 1995 through the MPCA Enforcement Deferral Pilot Project, under which the EPA deferred on-site decisions to the MPCA. Following an initial Remedial Investigation/Feasibility Study by the Metropolitan Airport Commission (MAC), MPCA identified the primary source area, that had no viable potentially responsible party, and assumed responsibility for further work at the Site. In 2008, the Site was removed from the Enforcement Deferral Pilot Project and became eligible for Fund-financing under a State Superfund Contract. MPCA remains the lead agency managing cleanup at the Site.

ROD

On May 25, 2000, MPCA signed a Site-wide ROD. EPA concurred with the ROD on March 3, 2008, following removal of the Site from the Enforcement Deferral Pilot Project. The Declaration section of the ROD describes the Remedial Action Objectives (RAOs) as follows:

- Prevent the use of groundwater that has concentrations exceeding the MDH Health Risk Limit (HRL); and
- Prevent further degradation of the aquifer.

The State of Minnesota drinking water standards applicable to private wells (HRLs) are cited by the ROD as an Applicable or Relevant and Appropriate Requirement (ARAR). At the time of the ROD, the HRL for TCE was 30 μg/L and the MCL for TCE was 5 μg/L. MPCA did not consider Federal drinking water standards (MCLs) as an ARAR to their action for treatment of private wells. Instead, in its response to comments, MPCA indicated that private well owners may choose privately to install treatment to meet MCLs. The trigger for treatment under the ROD was lowered in a later ROD Amendment and Explanation of Significant Difference (ESD), discussed further below.

The declaration section of the ROD describes the major remedial components as follows:

To implement the selected remedy, the MAC shall:

- Install and maintain granular activated carbon (GAC) units on private wells that have TCE and/or CCl₄ concentrations that exceed MDH HRLs or the HRL additivity index. Provide GAC unit maintenance procedures and carbon change out when TCE or CCl₄ is detected in GAC effluent. GAC unit maintenance and effluent sampling schedules shall be specified in a Response Action Plan prepared by MAC and approved by MPCA;
- Conduct long-term monitoring of private water supply wells and monitoring wells to evaluate the need for treatment, and clearly define the north and south
edges of the plume. Provide groundwater monitoring to evaluate how the plume responds to any new residential and municipal demand. The monitoring locations and frequency shall be specified in a Remedial Action Plan (RAP) prepared by MAC and approved by the MPCA;

- Conduct long-term monitoring of private water supply wells and monitoring wells to record TCE/CCl₄ plume behavior, and prepare an annual report to discuss the results, including whether the plume has migrated vertically or horizontally. If the plume has migrated, the report will discuss the impacts of the migration and what actions, if any, are required to control migration. If additional measures are required, the MAC will implement them upon MPCA approval;

- Continue to closely monitor wells with increasing TCE concentrations approaching the HRL, but not yet exceeding it, in anticipation of possible HRL exceedances, and be prepared to install GAC units on these wells. The monitoring schedule and GAC unit installation schedule pertaining to this item shall be specified in a RAP prepared by MAC and approved by the MPCA;

- Maintain ongoing evaluation of existing and emerging technologies that may provide source location and removal, or control. Provide annual summary reports evaluating the feasibility of these technologies in bringing about reduced remediation needs and/or expediting site delisting. Implement such technologies if they are feasible based on the criteria established in the April, 1999, Feasibility Study and the MPCA’s recommendation;

- Remove pump, inspect, sample and abandon the unused irrigation well located on the Schiltgen property. Details of the abandonment procedure will be presented in the RAP. The MPCA, MDH, and the Minnesota Geological Survey (MGS) shall be notified two weeks prior to this action so that arrangements may be made for logging the borehole prior to abandonment;

- Evaluate the need for, and install if necessary, down-gradient monitoring points. Details of this evaluation shall be specified in a RAP prepared by MAC and approved by the MPCA;

- Develop a groundwater model in cooperation with the MPCA and MDH or modify an existing groundwater model, as determined and approved by the MPCA, to evaluate future chemical fate and transport scenarios, especially the potential for further horizontal and vertical migration of the Baytown plume due to future local and regional groundwater supply demands. The results of this evaluation will be used by MPCA to identify the need for additional measures that may be necessary to mitigate future migration of contaminants. The criteria in the April, 1999, Feasibility Study and the MPCA Risk Based Guidance will be used to determine the need for additional measures. A schedule for completion of the groundwater model will be specified in the RAP prepared by MAC and approved by the MPCA;

- Maintain the MDH Special Well Construction Advisory. Provide driller standby fees when MDH and/or the MGS log selected pre-1990 wells during homeowner initiated pump maintenance/replacement procedures. In the
annual report, discuss the adequacy of the SWCA and whether or not additional measures are needed; and

- Remain current with the latest TCE health risk information, specifically EPA’s pending revisions of the toxicity values for TCE ingestion, inhalation and dermal exposure. If new information warrants it, MDH may consider a revision to the current TCE HRL. If the HRL is revised in a direction that results in additional private wells exceeding the revised HRL, MAC shall provide carbon filtration systems for these additional residences. If a pending downward revision to the HRL is drafted by the MDH, but not yet finalized, MAC shall identify the additional residences which will qualify for GAC units, and be prepared to have the new GAC units installed and operating no later than 30 days after the revised HRL is finalized.

The remedy was intended mainly to address TCE. Only two residential wells exceeded the HRL for CCl₄, both by small amounts, and these two wells also exceeded the HRL for TCE.

**ROD Amendment**

Between 2003 and 2006, MPCA conducted additional investigations at the Site and determined that the major source area lay upgradient of the airport. This led to a remedy modification and a change from MAC to State implementation of the remedy.

On July 13, 2007, MPCA signed a ROD Amendment modifying the remedy for the Site. In a letter dated March 3, 2008, EPA notified MPCA of its intention to remove the Site from the enforcement deferral pilot and proceed under a State Superfund Contract. In the same letter, EPA concurred with the ROD Amendment and the ROD.

The ROD Amendment addressed the entire Site and served to clarify the original remedy, in addition to documenting changes to the remedy. The ROD Amendment separates the Site into three OUs:

- **OU1** – Private wells and groundwater plume
- **OU2** – City of Bayport municipal wells
- **OU3** – Source area

RAOs stated in the ROD Amendment include:

- Minimize migration of the contaminant plume;
- Restore the aquifer to drinking water standards; and
- Reduce the time for down-gradient private wells to remain on GAC filters.

The ROD Amendment did not explicitly specify a change in ARARs, but did change the trigger for treatment of private drinking water to a new Interim Recommended Exposure Limit (IREL) issued by MDH that was the same value as the MCL for TCE (5 µg/L). The ROD Amendment also cited MCL exceedances as the trigger for adding additional treatment for a City of Bayport municipal well.

The Declaration section of the ROD Amendment describes the amended selected remedy as follows:

**OU1:** Continue monitoring of private wells, sampling of private water supply wells, and installation, change out, maintenance and removal of GAC filter systems as previously designated in the ROD. (In addition, the Site History
section of the ROD Amendment explains that the responsibility for implementing the OU1 remedy was transferred from the MAC to MPCA.)

OU2: Design and installation of an air stripping treatment system at Bayport Municipal Well #2. The City of Bayport is responsible for ongoing Operation and Maintenance (O&M) of the Municipal Well #2 air stripper as designated in the April 5, 2006, Grant Agreement and September 26, 2006, Grant Agreement Amendment.

OU3: Containment and treatment of the primary source area—a former metal working shop located at 11325 Stillwater Boulevard in Lake Elmo. A two prong approach will be implemented for OU3 as follows:

1. Containment (hydraulic barrier)

   The MPCA will install a hydraulic barrier to contain the TCE plume and prevent off-site migration. The MPCA has completed the final design of a hydraulic barrier near the eastern OU3 property boundary. This barrier controls the groundwater gradient such that high concentrations of contamination are unable to continue to migrate to the east. It will consist of four extraction wells which pump groundwater to an air stripper to remove TCE from the water phase. The MPCA is currently evaluating options for disposal of the treated groundwater. Two options merit further review: infiltration just below the surface and injection at depth. One of these options will be selected to manage the treated water based on additional pre-design studies.

2. Source treatment

   Groundwater beneath the source zone will be treated using a treatment train approach consisting of in-situ technologies such as: physically extracting the volatile TCE by venting (multiphase extraction); biologically degrading the TCE by injecting carbon substrates and nutrients; and/or chemically destroying the TCE by injecting additives (chemical oxidation). The optimal treatment method will be determined by pre-remedial design bench-scale lab studies and pilot tests. Further, vapor control mitigation may be necessary based on ongoing assessments.

For OU1, the ROD Amendment changed the trigger for installation of GAC treatment for residential wells from the HRL to the State’s newly-established IREL of 5 µg/L for TCE. The HRL continued to be an ARAR for the OU1 action.

For OU2, the ROD Amendment cited exceedances of the MCL for TCE (5 µg/L) as the trigger for treatment of City of Bayport municipal drinking water. The MCL is the regulatory standard for municipal drinking water.

For OU3, the ROD Amendment did not specify a groundwater cleanup level, although the RAO to return the aquifer to drinking water standards is a Site-wide RAO. Part I (F) of the ROD Amendment described the cleanup level for OU3 as follows:

   Cleanup levels at 11325 Stillwater Boulevard (source area) will be evaluated during the primary source area feasibility study. Residual concentrations of TCE in groundwater will be evaluated at 100; 1,000 and 10,000 µg/L, respectively. Allowing for natural attenuation, the goal is to achieve the IREL residential...
drinking water standard in the down-gradient dissolved-phase plume by Manning Avenue.

While the timeframe to treat the source area may be relatively short (months to five years), the MPCA anticipates the hydraulic barrier system will be operated for a longer period (5 to 15 years).

Part II (O) of the ROD Amendment documented the possible outcome of the source area remedy as follows:

Identification of the primary source area of the TCE contamination has made reduction and possibly complete elimination of the primary source area possible. Reduction of the primary source area could make restoration of the aquifer quality, with respect to TCE concentrations, possible. As a result, use of GAC filters and the SWCA may ultimately become obsolete.

Explanation of Significant Differences

On July 14, 2015, MPCA signed an ESD further modifying the remedy for the Site. EPA signed the ESD on July 21, 2015. As explained in the ESD, a modification of the OU2 remedy was needed in order to protect public drinking water in the City of Bayport by connecting Municipal Well #3 to the existing water treatment facility. The ESD also served to document selected treatment methods, disposal methods, and the interim remediation goal for OU3 (source area). The ESD did not change the remedy for OU1.

The ESD modified the OU2 (City of Bayport municipal wells) remedy to require connection of Bayport Municipal Well #3 to the existing air stripper treatment system at Bayport Municipal Well #2, including:

- A pipeline conveyance system of roughly 3,000 feet from Well #3 to the existing treatment system at Well #2;
- Upgrades at Well #3 to facilitate conveyance, including well pump modifications, chemical feed modifications, and associated piping;
- Modifications to the existing air stripper treatment system and chemical feed system to accommodate Well #3 into the treatment process; and
- Modifications to add a backup generator for the air stripper system or, if more cost-effective, an interconnection to alternate backup water supply from the deeper Corrections Facility well.

The ESD documented the City of Bayport’s agreement to maintain the new conveyance system and to continue to operate and maintain the treatment system.

The ESD modified the OU3 (source area) remedy to select the following discharge and treatment requirements:

- Treated water removed by the hydraulic barrier containment system is discharged on-site by infiltration through horizontal wells above the water table;
- Groundwater in the source zone, and, if present and to the extent technically practicable, dense non-aqueous phase liquid (DNAPL), is treated using in-situ chemical oxidation (ISCO) in the main source area and enhanced reductive dechlorination (ERD) in the southern source area;
- The interim remedial goal for treatment is 25 µg/L TCE in groundwater at the source zone property line, as determined by MPCA in a Focused Feasibility Study (FFS) dated June 2013. Reasonable efforts will be made to achieve the interim remedial goal, or, if practicable, drinking water standards; and

- If treatment does not achieve drinking water standards, as is likely, MPCA plans to propose a further remedy modification. If the modification includes a fundamental change to the remedy, for example a proposed waiver of drinking water standards for the source area based on technical impracticability, the public will be invited to comment on the proposed modification.

**Status of Implementation**

Remedy implementation is summarized by OU below:

**OU1**

OU1 consists of the private wells and the groundwater plume at the Site. Early phases of the remedy were implemented by MAC under agreements with MPCA, including installation of GAC treatment systems for down-gradient homes with private wells that exceeded a TCE concentration of 30 µg/L, as required by the ROD. With the ROD Amendment in 2000, MPCA changed the trigger for installation of GAC treatment for residential wells from 30 µg/L to 5 µg/L to meet a newly-established State IREL for TCE.

In 2003, Baytown Township and West Lakeland Township established ordinances that placed the responsibility for GAC installation and maintenance for homes platted after April 9, 2002, on the homeowner. Following discovery of a new primary source area not related to MAC in 2004, the responsibility for remedy implementation overall was shifted to the State, operating under a State Superfund Contract with EPA. The township ordinances placing responsibility for GAC installation and maintenance for homes platted after April 9, 2002, on the homeowner remain in place.

In 2013, MDH established a Health-Based Value (HBV) for TCE in drinking water of 0.4 µg/L. HBVs are non-promulgated advisory levels that MDH plans to promulgate as HRLs in the future. At that time, MPCA made a policy decision to begin installing GAC units for homes with drinking water wells that may exceed the HBV. In December 2015, the State of Minnesota promulgated the value of 0.4 µg/L TCE as a HRL.

Currently, MPCA (via a State contractor) samples private water supply wells, and installs, changes out, maintains, and removes GAC filter systems for private wells that exceed or may exceed the HRL. Current O&M procedures are documented in MPCA’s Sampling and GAC Management Plan dated August 18, 2015. As of December 2016, MPCA maintains GAC filters in approximately 332 homes. There are an additional 24 homes with GAC filters that homeowners are responsible for maintaining because their properties were platted or subdivided and approved after April 9, 2002. (Four additional homeowners have chosen to voluntarily install GAC filters and have had no detection of TCE.)

MPCA also regularly monitors a network of approximately 43 groundwater monitoring wells in multiple aquifers. Most monitoring wells are near the source area, with the down-gradient areas of the plume monitored mainly through residential well sampling. Groundwater trends are discussed in the Data Review section of this FYR.
OU2

OU2 consists of the City of Bayport municipal drinking water wells. The City currently owns three drinking water production wells, #2, #3 and #4. All three wells draw water from the Tunnel City aquifer. Through the early 2000’s, TCE was detected at low levels in several of the City's drinking water wells. Concentrations were rising most rapidly in Well #2 and by the mid-2000’s, were in danger of exceeding the MCL. Following a ROD Amendment in 2007, MPCA and the City added an air stripper to the water treatment plant to remove TCE from Well #2. The air stripper was designed to treat a maximum future TCE concentration of 10 µg/L, which is approximately the maximum measured TCE concentration in the aquifer upgradient of Well #2. MPCA conducted a new source evaluation of the projected air concentration at the maximum groundwater concentration and determined that the air stripper did not present a risk. Following construction of the air stripper, Well #2 became the primary water supply for the City.

In 2014, MPCA and EPA determined that water from Well #3 was also in danger of exceeding the MCL. In 2015, with the support of the City and funding from the State, MPCA added conveyance piping to connect Well #3 to the existing air stripper. Details are discussed in the Progress Since Last Review section of this FYR. Currently, wells #2 and #3 supply the City’s water, with Well #4 available for emergency backup. Currently Well #4 does not exceed the MCL for TCE, the regulatory level for municipal drinking water wells, although it does exceed the HRL.

OU3

OU3 consists of the source area at the Site, where higher concentrations of TCE are found in groundwater. DNAPL has not been found at the Site. In 2007, MPCA conducted a pilot study for treatment of source area groundwater using sodium permanganate injections for ISCO treatment. In 2008, MPCA installed and began operating a groundwater extraction and treatment system (hydraulic barrier) to contain source area groundwater. The hydraulic barrier system consists of four extraction wells, three located immediately downgradient of the source area and one located to the south, all at depths of approximately 80 feet. When the barrier is operating, the extracted groundwater is treated using a low-profile air stripper and solids filtration system and then discharged back to the ground using two horizontal infiltration pipes located at a depth of approximately 25 feet. The system treats extracted groundwater to a TCE concentration of 1 µg/L or less prior to discharge.

Between 2009 and 2014, MPCA conducted several rounds of additional soil probe sampling to better delineate the source area and installed five new monitoring wells in the source area. During this period, MPCA also conducted a FFS to evaluate additional in-situ treatment methods for the source area. In December 2014, MPCA shut down the hydraulic barrier system so that full-scale in-situ treatment of source area groundwater could be conducted without premature removal of the treatment materials. During shut-down, the wells were also rehabilitated.

MPCA began full-scale treatment of source area groundwater in 2015. MPCA conducted Phase 1 of source area treatment in January 2015 and Phase 2 treatment in May 2016. For Phase 1, MPCA tested two treatment methods, ISCO and ERD, and determined that ERD alone would be used for Phase 2. Results are discussed in the Data Review section of this FYR.

Prior to initiation of Phase 2 treatment, MPCA installed a vapor mitigation system for the commercial building overlying part of the source area. This was a precautionary measure to protect against potential contaminant vapors being released beneath the building during ERD treatment. Additional information about vapor intrusion investigations is available in the Data Review section of this FYR.
**Institutional Controls**

Institutional controls (ICs) are required by the ROD to restrict use of groundwater that exceeds the HRL and to assure the long-term protectiveness for groundwater which does not allow for UU/UE. ICs in place for the Site are listed in the table below. A map depicting the area of groundwater, which does not allow for UU/UE, is found in Figure 2.

**Table 1: Institutional Controls Summary Table**

<table>
<thead>
<tr>
<th>Media, engineered controls, and areas that do not support UU/UE based on current conditions</th>
<th>ICs Needed</th>
<th>ICs Called for in the Decision Document</th>
<th>Impacted Parcel(s)</th>
<th>IC Objective</th>
<th>Title of IC Instrument Implemented and Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groundwater - current area that exceeds 0.4 µg/L TCE (current HRL)</td>
<td>Yes</td>
<td>Yes</td>
<td>See Figure 2</td>
<td>Prevent exposure to contaminated groundwater from private wells and prevent spread of contaminated groundwater through improperly sealed wells</td>
<td>Baytown-West Lakeland Special Well and Boring Construction Area (SWBCA) (Minn. Rules, part 4725.3650) Modified March 30, 2005</td>
</tr>
<tr>
<td>Groundwater - area within the SWBCA that exceeds 0.1 µg/L TCE or 0.2 µg/L CCl₄</td>
<td>Yes</td>
<td>Yes</td>
<td>See Figure 2</td>
<td>Ensure GAC treatment is installed, monitored, and maintained for private wells in portion of Town of Baytown within the Baytown-West Lakeland SWBCA</td>
<td>Baytown Township Ordinance #52, enacted September 12, 2011 Modified November 2, 2015</td>
</tr>
<tr>
<td>Groundwater - area within the SWBCA that exceeds 0.1 µg/L TCE or 0.2 µg/L CCl₄</td>
<td>Yes</td>
<td>Yes</td>
<td>See Figure 2</td>
<td>Ensure GAC treatment is installed, monitored, and maintained for private wells in portion of Town of West Lakeland within the Baytown-West Lakeland SWBCA</td>
<td>West Lakeland Township Town Code Section 14, enacted October 4, 2011 Modified April 14, 2014</td>
</tr>
<tr>
<td>Groundwater - current area that exceeds 0.4 µg/L TCE (current HRL)</td>
<td>Yes</td>
<td>Yes</td>
<td>See Figure 2</td>
<td>Before signing an agreement to sell property in Washington County that is not served by a municipal water system, the seller must state in writing to the buyer whether the property is located within a special well construction area. If the disclosure under Section 1031.235 states that there is an unsealed well on the property, the disclosure required under this clause must be made regardless of whether the property is served by a municipal water system.</td>
<td>Minnesota Statutes Section 1031.236 dated 2016</td>
</tr>
</tbody>
</table>
As explained further in the Issues/Recommendations section of this FYR, the area of the plume immediately downgradient of the source area could be a source of vapor intrusion risk if it were developed. Currently this area of the plume is in agricultural use; however, it is zoned for Urban Low Density Residential use and is also included in the Lake Elmo Comprehensive Plan for Village Urban Low Density use. The comprehensive plan defines this use as single family housing serviced by public sewer and water. This issue was raised in the 2011 FYR and is included again as an issue in this FYR.

Current Compliance

During the period of this FYR, MPCA and MDH have not noted any compliance issues regarding the SWBCA. MDH notifies first-time owners of newly developed properties within the SWBCA of the presence of the SWBCA. MPCA and MDH have also noted any compliance issues regarding State regulations listed in Table 1 with the exception of the requirement under Minnesota Statutes Section 1031.236. This statute requires sellers of property in Washington County not served by a municipal water system or that has an unsealed well, to state in writing to the buyer, whether, to the seller’s knowledge, the property is located in a SWBCA. MDH and MPCA report that they receive approximately a half dozen calls each year from new homeowners that did not receive the required disclosure. When this occurs, MDH or MPCA explain the requirements of the SWBCA to the new homeowner.

Baytown Township and West Lakeland Township periodically update MDH regarding well sampling, GAC filter installation, and reminder notices for homeowners covered by the township ordinances. MDH has noted that updates during the period of this FYR have not been as regular as needed, and has noted some compliance issues. According to the most recent (2016) reports, approximately two dozen homes are affected in the townships. In Baytown Township, all affected homeowners have known TCE exceedances, and all have reported installation of GAC to the township; however, several appear to be more than one year behind in reporting required sampling and/or GAC changeout. In West Lakeland Township, MDH has recorded sample results for all known affected homes and none have detected TCE, so none have been required to install GAC. However, a significant percentage of homeowners (approximately one third) are more than one year late in reporting sampling. Both townships have sent reminder letters in the past, though not on a regular schedule. This has been added to the Issues and Recommendations section of this FYR.

IC Follow up Actions Needed

MPCA and MDH have discussed the issue of compliance with Minnesota Statutes Section 1031.236 and the township ordinances and plan to request follow-up meetings on both with the township boards. This is included in the Recommendations section of this FYR.

Long-term protectiveness requires continued compliance with the land and groundwater use restrictions to ensure that the remedy continues to function as intended. Long-term stewardship (LTS) will ensure that the ICs are maintained, monitored and enforced. Plans incorporating LTS procedures (for example, a LTS plan) should include the mechanisms and procedures for inspecting and monitoring compliance with the ICs as well as communications procedures. An annual letter report should be submitted to EPA to demonstrate: 1) that the Site was inspected to ensure no inconsistent uses have occurred; 2) that ICs remain in place and are effective; and 3) that any necessary contingency actions have been executed. Results of IC reviews should be provided to EPA in an annual ICs letter report and with a certification that the ICs remain in-place and are effective.
On May 6, 1988, MDH issued a Well Advisory, the SWBCA, for parts of Baytown Township and parts of the City of Bayport. The SWBCA was revised in 2002 to include parts of West Lakeland Township (extending the SWBCA south to 20th Street North), and revised again in March 2005 to include a part of the City of Lake Elmo that included the newly-discovered source area. Under the current SWBCA, a property owner and a licensed well contractor must submit a written request to construct or permanently seal a well in the SWBCA. Before permission to construct a well is granted by MDH, the well owner must agree to pay for a volatile organic compound (VOC) analysis on the water and abide by conditions of the approval. Except for certain locations, a new well in unconsolidated deposits is not allowed. The Prairie du Chien aquifer is not allowed for new potable water use in the SWBCA. In the areas of the SWBCA that the deeper Franconia aquifer is present, MDH generally requires new drinking water wells to be completed in that aquifer. Where it is not present, generally MDH allows new wells to be completed in the Jordan aquifer, with a requirement for installation of a GAC filter.

The Baytown Township and West Lakeland Township have established ordinances that require homeowners within the area covered by the SWBCA to install GAC systems if the water from newly installed wells exceeds 0.1 μg/L TCE or 0.2 μg/L CCl₄. Both action levels are below the HRL for these contaminants. The township ordinances apply to homes within the SWCBA on properties that were platted or subdivided after April 9, 2002. (For properties platted prior to this date, MPCA conducts GAC installation and maintenance.) The ordinances require all wells with GAC systems that are covered by the ordinance to be inspected by a licensed plumber or licensed water conditioning contractor and require that carbon filters be replaced every three years, with proof of replacement reported to the Township. The ordinances also require that wells that currently do not have a GAC filter be tested every two years. Washington County currently offers VOC sample collection for residents for a fee. The samples are analyzed by the MDH Public Health Laboratory and homeowners are notified of the results by letter from MDH.

Status of Access Restrictions and ICs

ICs for groundwater are currently in place for the Site. As described above, the township ordinances have been updated during the period of this FYR. The SWBCA was last updated in 2005 and has not been updated since that time because it encompassed the contaminant plume. However, the change in the HRL for TCE from 5 μg/L to 0.4 μg/L in 2015 led to an expansion in the area of the plume that exceeds the HRL. (The MCL remains at 5 μg/L.) The location of the current 0.4 μg/L plume boundary in relation to the boundary of the SWBCA is shown on Figure 2. At three locations it is likely that the current plume boundary extends slightly outside of the SWBCA. One location, on the south edge of the plume, is a known exceedance. The other two locations (on the south-western edge and on the north-eastern edge) are likely exceedances, but there is some uncertainty because the boundaries are based on extrapolations between wells. There is no current risk in these areas because MDH and MPCA are aware of the issue and have sampled additional wells to delineate the plume; however, MDH is evaluating whether expansion of the SWBCA is warranted. This has been added to the Issues and Recommendations section of this FYR.
**Long Term Stewardship**

Since compliance with ICs is necessary to ensure the protectiveness of the remedy, planning for LTS is required to ensure that the ICs are maintained, monitored and enforced so that the remedy continues to function as intended. MDH is responsible for maintaining, monitoring and enforcing the SWBCA, in coordination with MPCA. Baytown Township and West Lakeland Township are responsible for maintaining, monitoring and enforcing the township ordinances, with oversight by MDH. At the Site, LTS of ICs is assured by actions of the townships, MPCA and MDH; however, no written plan exists. This has been added to the Issues and Recommendations section of this FYR.

A LTS plan will be developed containing procedures for inspecting and monitoring compliance with the ICs, and requiring that an annual report be submitted to EPA to demonstrate that the Site was inspected, that no inconsistent uses have occurred, that ICs remain in place and are effective, and that any necessary contingency actions have been executed.

**Systems Operation/Operation & Maintenance**

**OU1**

For properties platted and approved prior to April 9, 2002, GAC units are installed and maintained by an MPCA contractor. The GAC systems generally consist of two 90-pound GAC canisters connected in series. O&M procedures for the GAC units are documented in periodic reports entitled *Program Review Residential Well Sampling and GAC Management*, most recently updated in 2015. GACs are changed-out according to a schedule based on TCE concentration of the well water and metered water usage. For systems sampled and maintained by MPCA, GAC is changed out every three and one half to six years. For systems maintained by homeowners, township ordinances require change-out every three years. Prior to change-out, samples are collected before the lead canister and between the lead and polishing canister. The samples are analyzed for VOCs to determine the effectiveness of the system. At change-out, the polishing canister is moved to the lead position and a new GAC canister is placed in the polishing position.

The MPCA contractor provides periodic reports of change-outs and sampling results during the year. MPCA maintains a database of sampling and maintenance results. Results indicate the GAC units are working effectively to protect water well users from TCE and confirm that O&M for OU1 is effective in maintaining the remedy.

**OU2**

The City of Bayport operates and maintains the City’s drinking water treatment system, including the air stripper installed as part of the Site’s remedy. Quarterly, the City monitors water quality in actively-used wells (Well #2 and #3) both before and after treatment. Annually, the City monitors the emergency well (Well #4) and reports results to MPCA and MDH. Sampling during the period of this FYR confirms that O&M for OU2 is effective in maintaining the remedy. The City’s current typical operation includes either Well #2 or Well #3; however, occasionally both wells will operate. The air stripper is designed to accommodate a maximum flow of 1,000 gallons per minute with both wells operating; however, maintenance issues are likely if that flow rate is sustained. The City of Bayport operates and maintains the treatment system, with oversight of sampling results by MPCA and MDH.
OU3

During most of the period of this FYR, MPCA operated two groundwater extraction wells (RW-2 and RW-3) downgradient of the source area, and the air stripper and discharge system. These two wells capture groundwater from the major source areas at the Site. Well RW-1 is held in standby if needed. In 2012, RW-4 was converted to a monitoring well. The extraction system was shut down during treatment phases and the wells rehabilitated for future use as needed. Sampling results continue to be entered into MPCA’s EQuIS database. Results during the period of this FYR are discussed in the Data Review section of this FYR and confirm that O&M for OU3 is effective in maintaining the remedy.

III. PROGRESS SINCE THE LAST REVIEW

This section includes the protectiveness determinations and statements from the last FYR as well as the recommendations from the last FYR and the current status of those recommendations.

Table 3: Protectiveness Determinations/Statements from the 2012 FYR

<table>
<thead>
<tr>
<th>OU #</th>
<th>Protectiveness Determination</th>
<th>Protectiveness Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>OU1</td>
<td>Short-term Protective</td>
<td>The remedy at OU1 currently protects human health and the environment in the short term because residential water wells are being treated at the point of use to acceptable levels and the plume does not cause a current vapor intrusion risk. However, in order for the remedy to be protective in the long-term, the following actions need to be taken: (1) Identify additional wells that will require treatment following the upcoming change in Minnesota HRL for TCE and assess need to provide for interim protective measures such as bottled water and (for the long-term) installation of GAC treatment units for additional residences; (2) Update vapor intrusion assessment if conditions change; (3) Assess whether source area remedy and natural attenuation are sufficient to return plume to drinking water standards in a reasonable timeframe considering site-specific circumstances; and (4) Evaluate existing ICs and assess whether additional ICs are needed to ensure long-term protection.</td>
</tr>
<tr>
<td>OU2</td>
<td>Short-term Protective</td>
<td>The remedy for OU 2 currently protects human health and the environment in the short-term because it treats TCE in the municipal drinking water well to acceptable levels. However, in order for the remedy to be protective in the long-term, the following actions need to be taken: (1) Monitor TCE concentrations in Municipal Wells #3 and #4 relative to MCL and develop action plan for future protection; and (2) Evaluate existing ICs and assess whether additional ICs are needed to ensure long-term protection.</td>
</tr>
</tbody>
</table>
The remedy for OU3 currently protects human health and the environment in the short-term because it contains groundwater that exceeds action levels and does not cause a vapor intrusion risk. However, in order for the remedy to be protective in the long-term, the following actions need to be taken: (1) When HRL is revised, modify containment compliance criteria as needed; (2) Complete FFS to further assess in-situ treatment options and consider need for ARARs waiver due to DNAPL; (3) Resample subslab and indoor air at Hagberg’s Country Market; and (4) Evaluate existing ICs and assess whether additional ICs are needed to ensure long-term protection.

Table 4: Status of Recommendations from the 2012 FYR

<table>
<thead>
<tr>
<th>OU #</th>
<th>Issue</th>
<th>Recommendations</th>
<th>Current Status</th>
<th>Current Implementation Status Description</th>
<th>Completion Date (if applicable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OU1</td>
<td>1. Insufficient tracking of new wells requiring GAC systems</td>
<td>Develop a tracking system for notification of MPCA/MDH for GAC system installation and system performance in post-2002 homes</td>
<td>Completed</td>
<td>MDH tracks sampling and GAC installation for new wells in a database created in 2006. Since the last FYR, MPCA has requested tracking results from MDH. (See additional detail in the ICs section of this FYR.)</td>
<td>10/30/2006</td>
</tr>
<tr>
<td>OU1</td>
<td>2. Additional private wells will need treatment if HRL is revised</td>
<td>Identify additional wells with TCE exceeding new HRL; assess need for interim protective measures; install GAC treatment; modify ROD as needed</td>
<td>Completed</td>
<td>MDH finalized the HRL revision in December 2015. MPCA completed installation of GAC for private wells that exceeded the new HRL on April 25, 2016.</td>
<td>4/25/2016</td>
</tr>
<tr>
<td>OU1</td>
<td>3. Current groundwater remedy has not been demonstrated as sufficient to reach MCLs throughout plume (e.g., Monitored Natural Attenuation)</td>
<td>Complete FFS; modify remedy as appropriate</td>
<td>Completed</td>
<td>MPCA completed a FFS for OU1 in June 2013 and determined that the current remedial approach remains the best alternative. Monitoring suggests that the hydraulic barrier has substantially reduced TCE concentrations in the downgradient plume and in-situ treatment has reduced concentrations in the source zone. (See additional detail below.)</td>
<td>6/30/2013</td>
</tr>
<tr>
<td>OU2</td>
<td>4. Increasing TCE trend in Bayport Municipal Wells #3 and #4 may require treatment in five years, or sooner if MCL is lowered.</td>
<td>Monitor TCE concentration relative to MCL and develop action plan for future protection</td>
<td>Completed</td>
<td>MPCA modified the OU2 remedy in July 2015 to select hookup of Well #3 to the existing air stripper and continued monitoring of Well #4. Remedial Action was completed in September 2016. (See additional detail in Remedy Implementation section of this FYR.)</td>
<td>9/30/2016</td>
</tr>
<tr>
<td>OU3</td>
<td>5. Modification of HRL for TCE may affect containment compliance criteria</td>
<td>Monitor and modify compliance criteria as needed</td>
<td>Ongoing</td>
<td>MDH finalized revised HRL in December 2015. Need for re-start of containment system currently based on trends in treatment area. (See</td>
<td></td>
</tr>
</tbody>
</table>
### Recommendations

#### Recommendation 3

In a FFS completed in June 2013, MPCA re-evaluated alternatives for supplying clean drinking water to rural residents affected by the Site. Alternatives evaluated by MPCA included continued treatment for individual homes using GAC treatment implemented through several different contracting mechanisms, and construction of a rural community water treatment and delivery system to replace treatment in individual homes. In the FFS, MPCA concluded that the current remedy and implementation method remains the best alternative. The FFS noted administrative concerns and high costs associated with implementation of a rural community water system.

The FFS did not include further evaluation of natural attenuation of the plume because source area treatment is not yet complete. Although mechanisms of monitored natural attenuation have not been demonstrated for the Site, continued groundwater monitoring suggests that contaminant concentrations are in general decreasing, as discussed in the Data Review section of this FYR.
Recommendation 4

In 2014, MPCA conducted a FFS to evaluate alternatives to address the City of Bayport Wells #3 and #4. The goal of the FFS was to evaluate alternatives to prevent exposure to the public from TCE contaminated municipal water with TCE concentrations exceeding the Federal MCL, State HRL or State HBV. In 2015, with the support of the City and funding from the State, MPCA added conveyance piping to connect Well #3 to the existing air stripper. The treatment goal for the air stripper currently is 0.2 µg/L TCE, which is 50 percent of the HBV for TCE (0.4 µg/L) and well below the MCL of 5 µg/L. At the same time, MPCA performed upgrades on Well #3 to facilitate conveyance, modified the air stripper system to accommodate the additional water, and installed a backup generator for the air stripper.

Recommendation 7

A building overlying the source area is occupied by several small businesses, including Hagberg's Country Market. MPCA conducted additional subslab and indoor air testing for the building in 2015 and it is regularly re-tested. Results confirm the presence of volatile contaminants in the some subslab samples at levels above screening levels; however, no volatile contaminants are detected in indoor air. Due to a concern that ERD treatment of groundwater beneath the building could cause vapor intrusion risk, in June 2015, MPCA installed a sub-slab depressurization system for the building.

In 2015, MPCA conducted a vapor intrusion assessment for an area in the City of Bayport and an area near the Lake Elmo Airport where historical groundwater data indicated a potential vapor intrusion risk for residents. Soil gas sampling conducted in December 2015 included 16 monitoring points distributed throughout the identified area of the City of Bayport and two monitoring points near two residences adjacent to the Lake Elmo Airport. The sampling showed that a variety of volatile contaminants were present in the soil at very low levels, as is common in many developed areas; however, none of the contaminants exceeded MPCA or EPA health-based screening levels based on potential cancer and non-cancer risk for residential properties.

IV. FIVE-YEAR REVIEW PROCESS

Community Notification and Involvement

A public notice entitled EPA Begins Review of Baytown Township Groundwater Plume Superfund Site was published in the St. Paul Pioneer Press on January 15, 2017, stating that there was a FYR and inviting the public to submit comments to EPA. No comments were received as a result of the notice. The results of the review and the report will be made available at the offices of MPCA located at 520 Lafayette Road North, St. Paul, Minnesota and on MPCA’s and EPA’s websites.

During the FYR site inspection, the site team met with the owner of Hagberg's Country Market and discussed the Site. A concern was raised about the placement of one of the vapor system pipes in the building. The pipe may interfere with plans for new market equipment. MPCA is following up with its contractor to address the concern.
Data Review

OU1

GAC Treatment

The enforceable standard for TCE in private drinking water, and the ARAR documented in the modified ROD for these wells, is the HRL of 0.4 µg/L. As of December 2016, GAC treatment is operating in approximately 356 homes with well water that exceeded the HRL for TCE. Of these, 332 were installed by MPCA and 24 were installed by homeowners. This is a substantial increase over the 180 GAC systems reported at the time of the last FYR. Many of the additional GAC systems were installed in response to the lowering of the HRL for TCE in private drinking water wells. In addition, the number reported in the last FYR did not include systems installed by homeowners.

In earlier years, a few residential wells slightly exceeded the HRL for CCl₄ and GAC systems were installed in those homes. However, the level of CCl₄ decreased over time and currently no homes have exceedances of the HRL.

Review of data tracked by MPCA and presented in annual reports indicates no evidence of exposure to TCE above the HRL in private drinking water wells monitored for the Site. The GAC remedy appears to be performing as intended to protect residents. However, there is a need to confirm this for systems installed by homeowners who did not report recent sampling or changeout in response to township ordinances. This is discussed further in the ICs section of this FYR and is included as a recommendation in the Recommendations section of this FYR.

Plume Boundaries

For this FYR, EPA and MPCA evaluated overall plume stability and trends in TCE concentration in all affected aquifers. Site-related groundwater contamination affects the shallow unconsolidated aquifer (Drift) and three deeper aquifers used for drinking water at the Site (Prairie du Chien, Jordan and Tunnel City aquifers). Groundwater contamination in the Drift aquifer is primarily present near the source area and is discussed under OU3 below. Through most of the rest of the Site, groundwater contamination is present mainly in the Prairie du Chien and Jordan aquifers. The Prairie du Chien and Jordan aquifers are sources of drinking water for many private residences at the Site. There is little confining material between the two formations and, for the purpose of the FYR, they are analyzed together. Near the St. Croix River, where the Prairie du Chien and Jordan formations have largely been eroded away, the plume is present in the Tunnel City aquifer. The Tunnel City aquifer is the source of drinking water for the City of Bayport. Figure 3 shows a general cross-section of aquifers at the Site.

A map showing the location of the boundary of the TCE plume that exceeds a concentration of 0.4 µg/L TCE in the Prairie du Chien and Jordan aquifers from the most recent data (2014 to 2016) is shown in Figure 4. For this FYR, plume boundaries in these aquifers were compared to 2011 data and found to be predominantly stable. (The definition of the plume changed, due to the change in HRL for TCE in 2015, but the plume itself did not change significantly.) An example of how the plume boundary is delineated is shown in Figure 5, a detailed map of sampling locations in the Jordan aquifer showing 2015 to 2016 data.

A map showing the location of the contaminated groundwater plume in the Tunnel City aquifer in 2015 (most recent mapped data) is shown in Figure 6. Through most of the period of this FYR, the area of the plume near the City of Bayport that exceeds the MCL continued to expand eastward, leading to the need to treat an additional municipal well. This is discussed further under OU2 below.
At its eastern boundary, groundwater from the Tunnel City aquifer discharges to the St. Croix River. Pre-treatment monitoring data from the wells closest to the river, City Wells #3 and #4, show that TCE concentrations in this part of the aquifer range from 2 to 4 pg/L (see Table 4 below). The State of Minnesota designates the St. Croix River as an Outstanding Resource Value Water – restricted use, with a surface water quality chronic standard for TCE of 5 pg/L. Based on the data from City Wells #3 and #4, the current discharge of the plume to the river appears to be below the current chronic surface water quality standard for TCE. However, pre-treatment monitoring data from Well #2, only slightly further from the river, show TCE concentrations up to approximately 9 pg/L. Therefore, the possibility of an exceedance in the future has been added to the Issues and Recommendations section of this FYR.

**Groundwater Trends**

For this FYR, EPA and MPCA compared TCE concentrations in wells monitored at the Site that had consistent detections of TCE in the Prairie du Chien, Jordan, and Tunnel City aquifers during approximately the last five years. A comparison of changes in TCE concentrations for the 24 Prairie du Chien wells with consistent TCE detections shows a mean decrease in TCE concentration of 4.4 pg/L. For the 22 Jordan aquifer wells with consistent detections, there was overall no significant change in TCE concentration. Prairie du Chien wells are in general more highly contaminated than Jordan wells. Twenty-one of 24 Prairie du Chien wells had TCE concentrations greater than ten times the HRL (i.e., more than 4 pg/L TCE, a level approaching the MCL of 5 pg/L). Only five of 30 Jordan wells had TCE concentrations greater than 10 times the HRL.

Four Tunnel City wells showed increased concentrations during the period of the FYR, including several City of Bayport municipal wells, discussed further under OU2 below. However, three Tunnel City wells with decreases in TCE concentration are located up-gradient of the municipal wells, which suggests that concentrations may be expected to stabilize or decrease in the Tunnel City aquifer in the coming years.

Overall at the Site, TCE concentrations in the Prairie du Chien aquifer are generally decreasing, and concentrations in the Jordan and Tunnel City aquifers are generally stable. This is consistent with a conceptual site model of slow aquifer recovery.

**OU2**

The City of Bayport reports the results of pre- and post-treatment groundwater sampling for its municipal wells to MPCA and MDH. The enforceable standard, and the ARAR documented in the ROD, for the municipal drinking water wells is the MCL; however, MPCA and MDH recommend that municipal drinking water also meet the HRL for TCE. The MCL for TCE is 5 pg/L and the HRL is 0.4 pg/L.

Sampling results for the City of Bayport wells show that untreated groundwater pumped from Well #2 continues to be contaminated with TCE at concentrations above both the MCL and the HRL. Before treatment, groundwater pumped from Well #3 also exceeds the HRL but remains slightly below the MCL, although concentrations are increasing. These two wells are treated with air stripping, in addition to standard treatment. After treatment, TCE is not detected in drinking water from either well. The air stripper treatment system is performing as required. Well #4 is not connected to the air stripper. TCE is present in samples from this well at concentrations below the MCL but above the HRL. As explained in the Status of Implementation section of this FYR, the City uses Well #4 for emergency backup use only.

The table below provides a summary of the TCE concentrations in each of the Bayport municipal wells during the last five years, and the post-treatment results.
Table 1 – Bayport Municipal Well Sampling Results for TCE (μg/L)

<table>
<thead>
<tr>
<th>Date Collected</th>
<th>Well #2 Before Treatment*</th>
<th>Well #3 Before Treatment*</th>
<th>Well #4 Before Treatment**</th>
<th>Post-Air Stripper (Wells #2 &amp; #3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/19/2012</td>
<td>8.3</td>
<td>3.2</td>
<td>2.4</td>
<td>Non-detect</td>
</tr>
<tr>
<td>5/3/2012</td>
<td>9.0</td>
<td>3.1</td>
<td>2.5</td>
<td>Non-detect</td>
</tr>
<tr>
<td>7/24/2012</td>
<td>8.3</td>
<td>3.7</td>
<td>2.4</td>
<td>Non-detect</td>
</tr>
<tr>
<td>10/18/2012</td>
<td>8.1</td>
<td>3.1</td>
<td>2.1</td>
<td>Non-detect</td>
</tr>
<tr>
<td>1/29/2013</td>
<td>8.2</td>
<td>3.2</td>
<td>1.9</td>
<td>Non-detect</td>
</tr>
<tr>
<td>4/8/2013</td>
<td>7.7</td>
<td>2.8</td>
<td>2.3</td>
<td>Non-detect</td>
</tr>
<tr>
<td>7/11/2013</td>
<td>8.1</td>
<td></td>
<td>1.7</td>
<td>Non-detect</td>
</tr>
<tr>
<td>12/30/2013</td>
<td>7.1</td>
<td>3.3</td>
<td>1.4</td>
<td>Non-detect</td>
</tr>
<tr>
<td>2/11/2014</td>
<td>8.6</td>
<td>3.7</td>
<td>1.8</td>
<td>Non-detect</td>
</tr>
<tr>
<td>4/22/2014</td>
<td>6.5</td>
<td>2.3</td>
<td>1.2</td>
<td>Non-detect</td>
</tr>
<tr>
<td>7/23/2014</td>
<td>7.7</td>
<td>4.2</td>
<td>2.4</td>
<td>Non-detect</td>
</tr>
<tr>
<td>11/4/2014</td>
<td>7.4</td>
<td>3.8</td>
<td>2.2</td>
<td>Non-detect</td>
</tr>
<tr>
<td>1/12/2015</td>
<td>7.5</td>
<td>3.6</td>
<td>2.3</td>
<td>Non-detect</td>
</tr>
<tr>
<td>5/6/2015</td>
<td>6.8</td>
<td>3.4</td>
<td>2.2</td>
<td>Non-detect</td>
</tr>
<tr>
<td>7/21/2015</td>
<td>8.1</td>
<td>4.1</td>
<td>2.5</td>
<td>Non-detect</td>
</tr>
<tr>
<td>11/19/2015</td>
<td>8.3</td>
<td>3.8</td>
<td>2.2</td>
<td>Non-detect</td>
</tr>
<tr>
<td>2/18/2016</td>
<td>8.9</td>
<td>4.0</td>
<td>2.2</td>
<td>Non-detect</td>
</tr>
<tr>
<td>5/17/2016</td>
<td>--</td>
<td>3.8</td>
<td>2.9</td>
<td>Non-detect</td>
</tr>
<tr>
<td>7/12/2016</td>
<td>7.8</td>
<td>3.7</td>
<td>--</td>
<td>Non-detect</td>
</tr>
<tr>
<td>11/9/2016</td>
<td>7.6</td>
<td>3.8</td>
<td>--</td>
<td>Non-detect</td>
</tr>
</tbody>
</table>

* Wells #2 and #3 receive air stripper and conventional treatment.
** Well #4 receives conventional treatment only.

The data above suggest that TCE concentrations in Well #2 and Well #3 have likely stabilized, but this is less clear for Well #4. It is possible that portions of the plume are continuing to expand near Well #4 (see Figure 6 for well locations).

OU3

The extraction wells were shut down during in-situ treatment in order to improve treatment effectiveness and avoid fouling of the wells.

Two phases of full-scale in-situ treatment were performed at the source area during the period of this FYR. For Phase 1, MPCA used ISCO treatment for the main source area and ERD treatment for the southern source area. For ISCO in the main source area, MPCA's contractor injected sodium permanganate at 28 temporary injection points. Twenty-two of the injection points were located near and beneath the commercial building and were conducted at depths from 35 to 55 feet. The remaining six injection points were located just downgradient, at depths between 45 and 80 feet. MPCA's contractor conducted ERD treatment in the southern source area by injecting emulsified vegetable oil (EVO) at 17 points. The EVO injection points were located at depths between 46 and 70 feet, in an area south of the commercial building and separated from the ISCO treatment area by a buffer zone. The use of two different treatment methods allowed MPCA to evaluate the effectiveness of both, while avoiding potential vapor issues for the commercial building that might be caused by ERD.

Monitoring results following Phase 1 treatment indicated that TCE concentrations decreased as a result of both treatment methods; however, TCE concentrations in the ISCO area rebounded significantly, likely due to additional desorption of TCE from soil into groundwater. The hydraulic barrier was restarted in mid-February 2016 to control the rebound. The ERD treatment
resulted in sustained decreases in TCE concentration, and corresponding increases in cis-dichloroethene and vinyl chloride, suggesting biological degradation of TCE in the ERD treatment area. Following data review, MPCA determined that ERD treatment alone should be used for Phase 2.

MPCA’s contractor conducted Phase 2 of source area treatment in May 2016 using injections of a lactate-EVO mixture for ERD treatment at 27 injection points. Treatment results to date varied across the source area, but were generally positive. As documented in the ESD, MPCA’s interim goal for source area treatment is to reduce TCE concentrations at the eastern Hagberg property boundary to 25 µg/L or less. MPCA chose this interim goal as a concentration that may allow natural attenuation of the downgradient plume to concentrations below the MCL and HRL within a reasonable time period.

Recent sampling results for the source area are shown on Figure 7. Results to date indicate that the interim treatment objective for TCE (25 µg/L) has been achieved in more than half of the source area monitoring locations (13 of 21 locations.) In addition, the MCL (5 µg/L) has been achieved at about one quarter of the locations (approximately 6 of 21 locations) and the HRL (0.4 µg/L) has been achieved at two locations (RW-4 and MW-27.) In addition, two of three monitoring wells located approximately 800 feet downgradient have achieved the interim treatment goal (MW-39 and MW-40) and an additional monitoring well located further downgradient (MW-10B) is also beginning to show a decline in TCE, although results remain several orders of magnitude above the HRL.

As of January 2017, the hydraulic barrier system remains shut down because TCE concentrations continue to decrease as a result of the treatment. If the extraction wells were restarted, it would decrease the residence time of treatment residuals. MPCA continues to monitor treatment results and plans to keep the barrier system shut down as long as treatment continues to lower the TCE concentration; however, written re-start criteria should be developed. This has been added to the Recommendations section of this FYR.

Vapor Intrusion Summary

During the period of this FYR, periodic sub-slab and indoor air monitoring for the commercial building (Hagberg’s Country Market) overlying the source area confirmed the lack of a complete vapor pathway. However, in 2015, MPCA installed a vapor mitigation system as a precaution against potential contaminant vapors being released during ERD treatment. The system is monitored regularly.

Also in 2015, MPCA investigated potential vapor intrusion risk in other areas of the Site with the most potential for vapor intrusion risk. Two soil gas surveys, one located in the City of Bayport and one area located near Lake Elmo Airport, found very low levels of several volatile contaminants, as is common in many developed areas. However, the sampling confirmed that none exceeded MPCA or EPA health-based screening levels for residential properties.

There may be a potential future vapor intrusion risk for an area down-gradient of the source area that is currently in agricultural use. This is discussed further in the IC Section of this FYR and is included in the Issues and Recommendations section.

Site Inspection

The inspection of the Site was conducted on January 4, 2017. Appendix C contains inspection photographs. Leah Evison, representing EPA, and Eric Pederson, Kurt Schroeder and Mark Elliott, representing MPCA, conducted the inspection. The purpose of the inspection was to assess the protectiveness of the remedy.
At the source area, the group inspected the vapor pressure manometers installed for the sub-slab vapor mitigation system at Hagberg's Country Market. At the time of the inspection, five of six suction ports showed a negative pressure differential as desired. MPCA discussed the one inactive suction port with its contractor, who explained that it is designed to draw air from a pit beneath the building and is to be turned on if methane is detected during periodic monitoring. The suction port was inactive due to the lack of methane.

The inspection team also observed select monitoring wells and well-heads for the extraction well system which were found to be in good condition. The exterior of the air stripper treatment plant in Bayport was also viewed and found to be in good condition. The treatment equipment is inspected regularly by the City and was not included in the FYR inspection because data have consistently shown good water treatment results, as discussed above. Likewise, individual GAC systems in homes were not inspected for this FYR because this is done regularly by MPCA and its contractor.

The Site inspection confirmed the protectiveness of the remedy and no issues impacting current and/or future protectiveness were observed during the inspection.

V. TECHNICAL ASSESSMENT

QUESTION A: Is the remedy functioning as intended by the decision documents?

Yes.

Question A Summary:

The remedy is functioning as intended by the decision documents. Treatment remedies for private wells throughout the Site and for municipal wells in the City of Bayport are protecting residents from exposure to contaminated groundwater. Treatment of the source area is ongoing and appears to be working. The downgradient plume is generally stable and concentrations on the whole are slightly decreasing. ICs in the form of informational and governmental controls are in place for the Site. A recommendation to develop and implement LTS procedures has been added to this FYR to ensure ICs remain in place and are effective. MPCA and MDH are discussing whether the SWBCA should be expanded or other procedures should be put in place to address several small areas of the plume that extend beyond the SWBCA boundary. MPCA and MDH also plan to request meetings with the boards of affected townships to discuss means to improve compliance with township ordinances.

QUESTION B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?

Yes.

Question B Summary:

The exposure assumptions and toxicity data used at the time of selection of the modified remedy are still valid. The ROD does not establish final cleanup levels for groundwater, but does include a site-wide RAO of achieving drinking water standards. MPCA uses current HRLs, which are lower than MCLs for the contaminants present at the Site, for action levels at the Site. RAOs
used at the time of remedy selection are still valid and no new exposure pathways have been identified. A vapor mitigation system has been installed for the building located at the source area, and soil gas surveys have confirmed the lack of vapor intrusion risk in other areas most likely to present unacceptable risk. One area of potential future vapor risk is addressed in the Issues and Recommendations section of this FYR.

**QUESTION C:** Has any other information come to light that could call into question the protectiveness of the remedy?

No.

**Question C Summary:**

No other information has come to light that could call into question the current protectiveness of the remedy; however, the distal portion of the groundwater plume discharges to the St. Croix River and an annual comparison to chronic surface water quality criteria is needed to document future protectiveness. This has been added as a recommendation below.

**VI. ISSUES/RECOMMENDATIONS**

<table>
<thead>
<tr>
<th>Issues/Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OU(s) without Issues/Recommendations Identified in the Five-Year Review:</strong></td>
</tr>
<tr>
<td>OU2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OU1</th>
<th><strong>Issue Category: Institutional Controls</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Issue:</strong> The current plume boundary extends outside of the SWBCA in several locations.</td>
<td><strong>Recommendation:</strong> Expand the SWBCA or establish written procedures to provide equivalent safeguards for an interim period while the plume boundary is further monitored.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Affect Current Protectiveness</th>
<th>Affect Future Protectiveness</th>
<th>Implementing Party</th>
<th>Oversight Party</th>
<th>Milestone Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>Yes</td>
<td>State</td>
<td>EPA</td>
<td>September 29, 2017</td>
</tr>
<tr>
<td>OU1</td>
<td>Issue Category: Institutional Controls</td>
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<tr>
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<tr>
<td><strong>Issue:</strong> Compliance issues with Township ordinances and State seller notification requirements have been noted.</td>
<td></td>
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<tr>
<td><strong>Recommendation:</strong> Encourage townships to institute actions to improve compliance with ordinances and notification requirements.</td>
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<tr>
<td>Affect Current Protectiveness</td>
<td>Affect Future Protectiveness</td>
<td>Implementing Party</td>
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<td>Milestone Date</td>
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<tr>
<td>No</td>
<td>Yes</td>
<td>State</td>
<td>EPA</td>
<td>September 29, 2017</td>
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<table>
<thead>
<tr>
<th>OU1</th>
<th>Issue Category: Institutional Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Issue:</strong> LTS procedures are needed to ensure that effective ICs are monitored, maintained and enforced.</td>
<td></td>
</tr>
<tr>
<td><strong>Recommendation:</strong> Develop and implement a LTS plan which includes procedures for monitoring and tracking compliance with existing ICs, communicating with EPA, and providing an annual certification to EPA that the ICs remain in place and are effective.</td>
<td></td>
</tr>
<tr>
<td>Affect Current Protectiveness</td>
<td>Affect Future Protectiveness</td>
</tr>
<tr>
<td>No</td>
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<table>
<thead>
<tr>
<th>OU1</th>
<th>Issue Category: Remedy Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Issue:</strong> A comparison of distal plume groundwater data to surface water quality criteria is not routinely performed.</td>
<td></td>
</tr>
<tr>
<td><strong>Recommendation:</strong> Compare distal plume groundwater data to surface water quality criteria annually.</td>
<td></td>
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<tr>
<td>Affect Current Protectiveness</td>
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</tr>
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</table>

<table>
<thead>
<tr>
<th>OU3</th>
<th>Issue Category: Institutional Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Issue:</strong> Undeveloped area immediately downgradient of source area is included in a long-range plan for potential residential development and may present a future vapor intrusion risk.</td>
<td></td>
</tr>
<tr>
<td><strong>Recommendation:</strong> Evaluate potential for vapor intrusion risk and assess need for City of Lake Elmo IC to require vapor mitigation if area immediately downgradient of source area is developed, and implement IC if needed.</td>
<td></td>
</tr>
<tr>
<td>Affect Current Protectiveness</td>
<td>Affect Future Protectiveness</td>
</tr>
<tr>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>
### OU3

**Issue Category:** Remedy Performance

**Issue:** ROD does not include a final cleanup goal for source-area groundwater.

**Recommendation:** Following additional monitoring, and additional treatment if needed, select a final cleanup goal for source area groundwater.

<table>
<thead>
<tr>
<th>Affect Current Protectiveness</th>
<th>Affect Future Protectiveness</th>
<th>Implementing Party</th>
<th>Oversight Party</th>
<th>Milestone Date</th>
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<tbody>
<tr>
<td>No</td>
<td>Yes</td>
<td>State</td>
<td>EPA</td>
<td>March 29, 2019</td>
</tr>
</tbody>
</table>

**Issue Category:** Remedy Performance

**Issue:** Re-start criteria for the hydraulic barrier system following treatment are unclear.

**Recommendation:** Clarify re-start criteria for the hydraulic barrier system.

<table>
<thead>
<tr>
<th>Affect Current Protectiveness</th>
<th>Affect Future Protectiveness</th>
<th>Implementing Party</th>
<th>Oversight Party</th>
<th>Milestone Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>Yes</td>
<td>State</td>
<td>EPA</td>
<td>September 29, 2017</td>
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</tbody>
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### VII. PROTECTIVENESS STATEMENT

**Protectiveness Statement(s)**

<table>
<thead>
<tr>
<th>Operable Unit:</th>
<th>Protectiveness Determination:</th>
</tr>
</thead>
<tbody>
<tr>
<td>OU1</td>
<td>Short-term Protective</td>
</tr>
</tbody>
</table>

**Protectiveness Statement:**

The remedy at OU1 currently protects human health and the environment because affected residential wells are receiving GAC treatment and ICs are in place and generally effective. However, in order for the remedy to be protective in the long-term, the following actions need to be taken to ensure protectiveness: expand the SWBCA or establish written procedures to provide equivalent safeguards for an interim period while the plume boundary is further monitored, encourage townships to institute actions to improve compliance with ordinances and notification requirements, develop and implement a LTS Plan, and compare distal plume groundwater data to surface water quality criteria annually.

**Protectiveness Statement(s)**

<table>
<thead>
<tr>
<th>Operable Unit:</th>
<th>Protectiveness Determination:</th>
</tr>
</thead>
<tbody>
<tr>
<td>OU2</td>
<td>Protective</td>
</tr>
</tbody>
</table>

**Protectiveness Statement:**

The OU2 remedy at OU2 is protective of human health and the environment. Municipal drinking water is being effectively treated and RAOs continue to be met.
<table>
<thead>
<tr>
<th>Operable Unit:</th>
<th>Protectiveness Determination:</th>
</tr>
</thead>
<tbody>
<tr>
<td>OU3</td>
<td>Short-term Protective</td>
</tr>
</tbody>
</table>

**Protectiveness Statement:**
The remedy at OU3 currently protects human health and the environment because source area groundwater is receiving in-situ treatment, a hydraulic barrier system is in place and available if needed, and a vapor intrusion mitigation system is operating in the on-Site building. However, in order for the remedy to be protective in the long-term, the following actions need to be taken to ensure protectiveness: evaluate potential for vapor intrusion risk and assess need for City of Lake Elmo IC to require vapor mitigation if area immediately downgradient of source area is developed, and implement IC if needed; following additional monitoring, and additional treatment if needed, select a final cleanup goal for source area groundwater; and clarify re-start criteria for the hydraulic barrier system.

<table>
<thead>
<tr>
<th>Sitewide Protectiveness Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protectiveness Determination:</td>
</tr>
<tr>
<td>Short-term Protective</td>
</tr>
</tbody>
</table>

**Protectiveness Statement:**
The remedy at the Site currently protects human health and the environment because affected residential and municipal drinking water wells are being treated, source-area groundwater is being treated, a vapor intrusion mitigation system is operating in a source-area building, and ICs for groundwater are in place and generally effective. However, in order for the remedy to be protective in the long-term, the following actions need to be taken to ensure protectiveness: expand the SWBCA or establish written procedures to provide equivalent safeguards for an interim period while the plume boundary is further monitored; encourage townships to institute actions to improve compliance with ordinances and notification requirements; evaluate potential for vapor intrusion risk and assess need for City of Lake Elmo IC to require vapor mitigation if area immediately downgradient of source area is developed, and implement IC if needed; develop and implement a LTS Plan; compare distal plume groundwater data to surface water quality criteria annually; select a final cleanup goal for source area groundwater; and clarify re-start criteria for the hydraulic barrier system.

**VIII. NEXT REVIEW**

The next FYR report for the Baytown Township Groundwater Plume Superfund Site is required no less than five years from EPA's signature date of this review.
APPENDIX A – REFERENCE LIST

Record of Decision for Baytown Township Groundwater Contamination Site, MPCA, May 25, 2000

Record of Decision Amendment for Baytown Township Groundwater Contamination Site, MPCA, July 13, 2007

Explanation of Significant Differences for Baytown Township Groundwater Contamination Site, MPCA and EPA, July 21, 2015

Final Annual Reports 2012 through 2015, Terracon Consultants, Inc.

Design Report, Bayport - Well No. 3 Conveyance and TCE Treatment, AECOM, June 30, 2015

Second Five Year Review, Baytown Township Groundwater Contamination Site, MPCA and EPA, March 29, 2012

City of Lake Elmo

Source Area

City of Bayport

Figure 1. Site Location

(Dotted line shows location of >0.4 µg/L TCE plume in unconsolidated aquifer; blue dashed line shows location of same boundary in Prairie du Chien aquifer.)
Figure 2. Institutional Controls Map

(Dashed line shows location of >0.4 μg/L TCE plume in bedrock aquifers.)
Figure 3. Geologic Cross-section
(Source area to left, City of Bayport and St. Croix River to right)
Figure 4. Plume Boundary in Prairie du Chien and Jordan Aquifers
(Based on exceedances of 0.4 µg/L TCE in 2016)
Figure 5. Boundary Delineation Detail

(Showing sampling locations from 2015 to 2016 in the Jordan aquifer. Red, yellow and green locations exceed HRL of 0.4 ug/L TCE; blue locations do not)
Trichloroethylene (TCE) Groundwater Concentrations in the Tunnel City Aquifer, Baytown Superfund Site, Washington County, Minnesota, 2015

Figure 6. TCE Concentrations in Tunnel City Aquifer (2015)

- Red and yellow locations exceed both MCL and HRL for TCE;
- Green locations exceed HRL but not MCL;
- Blue locations do not exceed HRL or MCL.
Figure 7. TCE Concentrations in Source Area Groundwater (2017)
(see Annual Report for additional information)
APPENDIX C – SITE INSPECTION PHOTOS
Building housing the source area air stripper (used to treat extracted source area groundwater; currently inactive to improve in-situ treatment effectiveness)

Monitoring wells along east edge of source area; view north

Source area extraction well (currently inactive to improve treatment effectiveness)

View east from source area (agricultural fields and homes along Manning Avenue)
City of Bayport treatment system building near Well #2

Vapor system monitor at building overlying source area, showing inactive pressure differential (currently unused port)

Vapor system monitor at building overlying source area, showing active pressure differential
Related Topics: Envirofacts

FRS

FRS Facility Coordinates

BAYTOWN
TOWNSHIP GW
CONTAMINATION SITE
SEE LOCATION
DESCRIPTION
LAKE ELMO, MN
55042 UNITED STATES
FRS Registry ID:
110020699975

Facility Registry Service Links:
- Facility Registry Service (FRS) Overview
- FRS Facility Query
- FRS Organization Query
- EZ Query
- FRS Physical Data Model
- FRS Geospatial Model

List of Facility Coordinates

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<tr>
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<th>Conveyer</th>
<th>Geo Source Acronym</th>
<th>Geo Source Id</th>
<th>Program SubId</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Horiz Datum</th>
<th>Best to Best Pick (Meters)</th>
<th>Collectin Method</th>
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<td>-92.857842</td>
<td>NAD83</td>
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</table>

Last updated on September 24, 2015

https://iaspub.epa.gov/enviro/gis_viewer.map_page?p_registry_id=110020699975#TOP
Appendix K. Interview Memorandums
To: file

Company: Brad L., Lake Elmo Maintenance Manager

Recorded by: M. Sauer

Time: 2:30 pm

Date: 9/21/17

Telephone No.: 612-919-3508

Project: Lake Elmo Airport

Project No.: 2838700-161542.02

Subject: Hazardous Materials Investigation

Brad and I had a discussion about the airport history and any previously known potentially hazardous materials that may impact or be impacted by proposed project activities. Specific questions discussed were as follows:

- Groundwater contamination – do they truck in water? Anything known about the site at all? Monitoring wells on site? Don’t expect to encounter, but vapor intrusion?

Brad indicated his knowledge of the groundwater contamination is that it’s not from the airport but from a metal working business and/or drycleaner located off-site nearby (This is consistent with research). Brad indicated there are groundwater monitoring wells on the airport and once a year, samples are taken from these (by a third party) and the airport is provided a copy of the reports.

- Valters Aviation Building – confirm location of tank on site.

As far as he knows, their only tank is an in-ground storage tank that’s visible on the terminal ramp and it’s not diesel since they don’t carry that. Not sure what’s inside, but believes it to be general airport maintenance and cleaning supplies and chemicals.

- Valters original location to east? Did they ever put a tank in the ground there?

Valters never did any other building. They used to own another hanger which was storage but it’s been sold.

- Former maintenance building (1970’s) in southwest corner accessed from 30th Street. - any tank there, previously?

This area was referred to as the Holiday Hangar as it’s a hangar building currently used by Mark Holiday. There was another FBO at this location previously and it is unknown if there was ever underground fuel at this facility. Previously, this hanger building was owned by Mark Holiday’s father and he did some maintenance out of it. Mark would be the best contact to determine the history of the site.
• Other

There used to be another maintenance building to the north-northwest of the current maintenance building. A 1980’s tornado pretty much wiped that out. Brad did not know if there was fuel storage of any kind there. Mayer Aviation was previous FBO on site. The building is gone but the pad is visible to the northwest of the current maintenance on site. The space is currently used as storage for snow plows and commodities like salt, gravel, etc.
I spoke with Nick Krueger regarding the Hangar 27E site. Nick indicated at the time of purchase of the hangar, he was required to register with the EPA and Minnesota Pollution Control Agency as a one-time generator of hazardous waste in order to have two 90 gallon containers of phosphoric acid (aluminum aircraft part surfacing materials) removed and disposed of by Safety Clean, a hazardous waste disposal company.

Nick was unaware of any additional potentially hazardous materials sites but did indicate Valter’s Aviation previously attempted to build a well on site at a former location east of their current building but were unsuccessful because of groundwater contamination. In addition, Nick indicated the current Valter’s building contains signs that the water on site is not potable and that the fire department did or does truck in water for an onsite storage tank to be used on site. The groundwater contamination is consistent with other database search results reviewed for the Airport.
Appendix I – Wildlife Hazard Site Visit Documentation & USDA-APHIS Correspondence
January 3, 2018

Mr. R. Evan Barrett, AICP
Mead & Hunt, Inc.
257900 West 78th Street, STE 370
Minneapolis, MN 55439

Dear Mr. Barrett,

This letter is in response to your request to examine the potential wildlife hazards related to the proposed runway realignment and lengthening at Lake Elmo Airport (21D), Lake Elmo, Minnesota.

After reviewing the provided documents (USDA APHIS Letter 11.06.2017, Figure 3-10.PDF) and discussion, the proposed changes to the existing airport layout are unlikely to increase the wildlife hazards present at 21D. The changes proposed would have little effect on current hazardous wildlife use of the airport and surrounding area.

Feel free to contact the USDA Wildlife Services office at 651-224-6027 if you have any questions concerning these recommendations.

Sincerely,

Alan K. Schumacher
Wildlife Biologist

cc:
G. Nohrenberg, USDA-WS, St. Paul, MN
L. Bridges, Mead & Hunt, Minneapolis, MN
November 6, 2017

Mr. Alan K. Schumacher, Wildlife Biologist
USDA- Wildlife Services
644 Bayfield Street, STE. 215
Saint Paul, MN 55107

RE: Lake Elmo Airport (21D) Wildlife Attractants

Dear Mr. Schumacher,

Mead & Hunt is conducting an Environmental Assessment (EA) for airfield improvements at Lake Elmo Airport in Lake Elmo, Minnesota, on behalf of the Metropolitan Airports Commission (MAC). The proposed project would relocate the primary runway (Runway 14/32) to the northeast and increase the runway length from 2,849 feet to 3,500 feet, as shown in the attached Figure 1. It would also extend the crosswind runway (Runway 04/22) from 2,496 to 2,750 feet.

We would like to request your concurrence with our opinion of potential impacts related to hazardous wildlife associated with this project, which is detailed in this letter. Please review the following and provide your opinion regarding the validity of these findings, for inclusion as an appendix to the EA document.

Introduction
Two multiple day field surveys were completed related to wildlife habitat at Lake Elmo Airport. The first occurred in June 2017 to identify and delineate wetlands, and the second occurred in October 2017 to observe and characterize wildlife attractants. A variety of plant and animal species were identified within the proposed action area (see Figure 1) including insects, arachnids, birds, mammals, amphibians, and wetland and upland vegetation.

Birds identified in June 2017 included but were not limited to: American crow, red-winged blackbirds, blue jay, chickadee, vireo, swifts/swallows, and multiple sparrow species. One female white-tailed deer was observed and photographed. Frogs were observed in wetland areas. The wetland vegetation is well documented in wetland data sheets and a related wetland delineation and functional assessment report. The location of wetlands delineated during this visit are shown in Figure 2. Upland herbaceous vegetation was dominated by Kentucky bluegrass, alfalfa, red clover, dandelion, oxeye daisy, yarrow, thistle and plantains. Areas with these dominant plants are frequently mowed and maintained.

Wildlife attractants and birds observed in October 2017 included the American crow (4), eastern wood-pewee (12), Canada goose (400+) continuous morning flights traveling south to north, blue jay (5) and...
approximately 300 red-winged blackbirds. Survey points (see Figure 3) were selected based on the ability to observe 90 percent or more of the airfield.

**Wildlife Attractants**

Attractants on the airport include agricultural land and wetlands. Approximately 300 acres on the airport are leased for farming with soybean and/or corn on a rotating basis. Grass/Alfalfa hay is also harvested onsite in areas not planted with corn or soybeans. During wet periods of the year the wetlands located onsite support ducks, shorebirds, passerines and wildlife that are dependent on wetland habitats.

The area to be impacted by the runway extension includes approximately 40 acres of land currently in agricultural production. Thus from a wildlife attractant perspective there would be approximately 40 fewer acres of wildlife habitat at the airport following implementation of the project.

Wildlife currently observed at the airport as reported by Airport staff include deer, birds, and other wildlife. Conversation with Airport maintenance staff (Mr. Brad Lavala) in September 2017 indicated that deer have been observed on the airport, and that Canada geese are increasing in numbers due to suburban development near the airport, which includes a new stormwater detention pond and open space. Mr. Lavala also indicated that most wildlife strikes during his tenure at the airport have been sparrows (seed eaters) and barn swallows (insect eaters) that nest in or near the hangars. Strike data recorded by Mr. Lavala indicated that, over a seven year period, two or three strike events included multiple birds per strike. Other strikes recorded indicate that single birds were struck. No more than six strikes have occurred during Mr. Lavala’s tenure.

Additional wildlife observed at the airport include fox, coyote, deer, 13-lined ground squirrel (numerous), gopher, red-tailed hawk, crow, killdeer, rock pigeon, and starlings.

Other attractants near the airport include the fairgrounds approximately one mile north, which attracts Canada geese. Most deer are observed during the daylight hours and tend to congregate north and northeast of the AOA near trees. No golf courses, wastewater treatment facilities, landfills or waste transfer station are within one mile of the airport.

Fencing at the airport consists of a partial 8-foot fence that includes non-security Gate A and B. Gate A is utilized for the operations and Gate B is utilized by the FBO. There is no fence along the railroad which extends along the north side of the airport for a length of three quarters (3/4) of a mile. The east fence is overgrown and no maintenance occurs there on a regular basis. In summary approximately 50% of the AOA is fenced and 50% is unfenced. The fence that is in place is not continuous and has access opening for agricultural operations.

Mowing of the airfield turf areas and hangar lands occurs approximately three days a week and encompasses 180 acres. Some mowing is outsourced to a local entity. All mowed areas are cut to within 2 inches in height.
Project Impacts
The expansion of the airfield and associated hardscapes and safety areas will reduce habitat for birds and wildlife at the airport. However, the dislocated deer will continue to congregate near the remaining treed areas to the N-NE. Most deer adjust to manmade activity and will relocate to nearby habitat. Should the airport construct a regulation fence with barbed wire outriggers the deer would be removed from the AOA. Agricultural crops will be reduced by approximately 40 acres which will reduce potential bird strikes (sparrows and swallows) near hardscapes and associated safety areas.

The project would not reduce Canada goose strike potential other than reducing risk by eliminating approximately 40 acres of agricultural crops.

Please feel free to contact Evan Barrett at 952-941-5619 or Lou Bridges at 970-250-0135 if you should have any questions or need additional information

Louis J Bridges, PhD, PWS, CWB®
Senior Environmental Professional

Evan Barrett, AICP
Project Manager

Attachments
- Figure 1: Ground Disturbance area
- Figure 2: Lake Elmo Wetlands
- Figure 3: October 2017 Survey/Photo Points
Josh Fitzpatrick  
Environmental Protection Specialist  
Federal Aviation Administration  
Dakota-Minnesota Airport District Office  
6020 28th Ave. S.  
Minneapolis, MN 55450

Dear Josh,

The Office of Environment and Energy (AEE) has received the non-standard AEDT aircraft substitutions request memo, dated August 23rd 2017 referencing the Environmental Assessment for Lake Elmo Airport (21D) in Lake Elmo, Minnesota from Mead & Hunt Inc. on behalf of the Metropolitan Airports Commission.

Listed below are the AEE responses for the requested AEDT aircraft substitutions:

<table>
<thead>
<tr>
<th>Aircraft Type</th>
<th>Aircraft Description</th>
<th>Proposed AEDT ANP Substitution</th>
<th>Required AEE AEDT ANP Substitution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Engine Piston</td>
<td>Van’s RV-6/7/8/9/10/12</td>
<td>GASEPV</td>
<td>Concur</td>
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<tr>
<td>Single Engine Piston</td>
<td>Rockwell Commander 112</td>
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<td>Twin Engine Piston</td>
<td>Cessna T-50 Bobcat</td>
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<td>Twin Engine Piston</td>
<td>Diamond Twin Star DA42</td>
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<td>Twin Engine Piston</td>
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<td>PA30</td>
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<tr>
<td>Twin Engine Piston</td>
<td>P-68 Observer</td>
<td>PA30</td>
<td>Concur</td>
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</table>
Please understand that this approval is limited to this particular request for the 2017 Environmental Assessment at Lake Elmo Airport for use with AEDT 2c SP2. All other non-standard AEDT inputs for this or any other project will require separate approval.

Sincerely,

[Signature]

Rebecca Cointin
Manager
AEE-100/Noise Division

cc: Airports Contact (Frank Smigelski, Jim Byers APP-400)
August 23, 2017

Joshua Fitzpatrick, Environmental Protection Specialist
FAA Dakota-Minnesota Airports District Office, MSP-ADO-600
6020 28th Avenue South, Room 102
Minneapolis, MN 55450

CC to:
Sean Doyle, Environmental Protection Specialist AEE-100
FAA Office of Environment and Energy
800 Independence Avenue SW
Washington, DC 20591

Subject: Lake Elmo Airport – Environmental Assessment Request for AEDT Non-Standard Aircraft Substitutions

Dear Josh,

We are writing to request review and concurrence from the Federal Aviation Administration (FAA) for use of substitution aircraft noise profiles to represent aircraft types for which the Aviation Environmental Design Tool (AEDT) does not identify a standard substitution aircraft noise profile.

Environmental Assessment – Background
Mead & Hunt is conducting an Environmental Assessment (EA) for airfield improvements at Lake Elmo Airport in Lake Elmo, Minnesota, on behalf of the Metropolitan Airports Commission (MAC). The proposed project would relocate the primary runway (Runway 14/32) to the northeast and increase the runway length from 2,849 feet to 3,500 feet. It would also extend the crosswind runway (Runway 04/22) from 2,496 to 2,750 feet. The design aircraft for both runways are small aircraft with fewer than 10 passenger seats and weighing less than 12,500 pounds.

Noise Modeling – Background
Mead & Hunt will prepare AEDT noise contours for three proposed development alternatives and a no action alternative to evaluate in the EA. The proposed alternative contours represent 24,261 general aviation annual operations at the Lake Elmo Airport under a 2025 forecast scenario after the runways are extended as planned. The annual operations are distributed as follows:

- Single-Engine Piston – 22,563
- Multi-Engine Piston – 607
- Turboprop – 243
- Jet – 26
- Helicopters – 825
Based on noise contours developed by the MAC for its Long Term Comprehensive Plan, it is not expected that the 65 dB DNL contour will extend off airport property in any of the future development alternatives.

**Noise Modeling – Proposed Grouping**

Based on the MAC’s flight track system data, we have identified six aircraft types which operated at the Airport and are not available in the AEDT. We propose the following substitutions to capture those operations:

<table>
<thead>
<tr>
<th>Single Engine Piston NOT In AEDT</th>
<th>Annual Operations</th>
<th>Proposed Substitutions</th>
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<tbody>
<tr>
<td>Van’s RV-6/7/8/9/10/12</td>
<td>4,625</td>
<td>GASEPV</td>
</tr>
<tr>
<td>Rockwell Commander 112</td>
<td>158</td>
<td>GASEPV</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Twin Engine Piston NOT in AEDT</th>
<th>Proposed Substitutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cessna T-50 Bobcat</td>
<td>BEC58P</td>
</tr>
<tr>
<td>Diamond Twin Star DA42</td>
<td>PA30</td>
</tr>
<tr>
<td>Piper PA-44 Seminole</td>
<td>PA30</td>
</tr>
<tr>
<td>P-68 Observer</td>
<td>PA30</td>
</tr>
</tbody>
</table>

We respectfully request FAA AEE review/concurrence for the above substitutions for purposes of generating the noise contours for the Environmental Assessment for airfield improvements at Lake Elmo Airport.

Thank you for your assistance in this review. Please let me know if you require any additional information.

Sincerely,

Mead & Hunt, Inc.

Evan Barrett, AICP
Aviation Planner
This technical memorandum presents the process and modeling inputs used in the creation of the following noise contour scenarios for the Lake Elmo Airport Federal EA/State EAW using the FAA’s Aviation Environmental Design Tool (AEDT) Version 2c:

- 2016 Baseline Condition
- 2025 No-Action Alternative
- 2025 Alternatives B, B1 and B2

Per applicable FAA guidance, the environmental consequences section of an EA should include analysis of potential noise impacts of the proposed action and alternative(s) for each timeframe evaluated. Timeframes for this analysis were determined in consultation with the FAA Airports District Office in Minneapolis to represent appropriate baseline, no-action, and “with project” operational conditions. For aviation noise analyses, the FAA has determined that the cumulative noise energy exposure of individuals to noise resulting from aviation activities must be established in terms of Yearly Day-Night Average Sound Level (DNL), the FAA’s mandated noise metric for evaluating aircraft noise impacts and land use compatibility around US airports. This metric accounts for the noise levels of all individual aircraft events, the number of times those events occur, and the period of day/night in which they occur. The metric logarithmically averages aircraft sound levels at a location over a complete 24-hour period, with a 10-decibel (dB) adjustment added to those noise events occurring from 10:00 p.m. and up to 7:00 a.m. the following morning. This adjustment accounts for increased sensitivity to noise during normal nighttime hours and because ambient sound levels during nighttime are typically about 10 dB lower than during daytime hours.

The AEDT model was initially released in 2015 to replace a series of legacy tools, including the Integrated Noise Model (INM), which was previously used for noise modeling in the recently completed Long Term Comprehensive Plan (LTCP) for Lake Elmo Airport. According to FAA, there is an overlap in functionality and underlying methodologies between AEDT and the legacy tools, however updates were made in AEDT which result in differences when comparing outputs from AEDT and the legacy tools. The updates include smaller flight segments to more accurately model aircraft noise levels for a larger number of aircraft and positions and states along a flight path; a new standard (SAE-ARP-5534) for computing the effects of weather on noise; correcting misidentified aircraft engine mounted locations for three aircraft types; and moving from recursive grids to dynamic grids for noise contour generation.

Noise contours depict an annualized average day of aircraft noise impacts using model inputs, such as runway use, flight track use, aircraft fleet mix, aircraft performance and thrust settings, topography...
information, and atmospheric conditions. Quantifying aircraft-specific noise characteristics in AEDT is accomplished through the use of a comprehensive noise database that has been developed under Federal Aviation Regulation Part 36. As part of the airworthiness certification process, aircraft manufacturers are required to subject aircraft to a battery of noise tests. Through the use of federally adopted and endorsed algorithms, this aircraft-specific noise information is used in the generation of DNL contours. Justification for such an approach is rooted in national standardization of noise quantification at airports.

**Airport Operations**

In coordination with MAC staff, Mead & Hunt developed 2016 baseline and 2025 forecast aircraft operations counts for the no-action and preferred alternative scenarios. The methodology for estimating these counts is explained in Appendix A, *Runway Length Needs Documentation*, which categorizes the operations according to specific aircraft make/model to each operation under the 2016 baseline scenario (see Table 14 in Appendix A), based on data provided from the FAA Traffic Management System Counts (TFMSC) and the MAC Noise and Operations Monitoring System (MACNOMS). For the 2025 forecast scenarios, the 2016 baseline distribution of flight track use for each aircraft make/model were applied to the 2025 forecasts (see Table 15 for 2025 No-Action (Base Case) forecast (Appendix A, Page A-14), and Table 18 for 2025 Extended Runway Scenario forecast (Appendix A, Page A-16)) for their respective engine type category to derive operations counts by specific aircraft make/model for the 2025 No-Action and Alternative B, B1, and B2 scenarios. *Tables 1, 2, and 3* attached to this memorandum present the daily baseline and forecast operations counts by aircraft type used to generate the AEDT inputs;

**Runway Use**

Specific 2016 baseline runway use and flight track distributions were estimated for each engine type category based on MACNOMS flight track data for which the aircraft type was known. The flight track distributions for operations to and from each runway end are the same in all scenarios, and the runway use distributions are the same in both the 2016 baseline and 2025 no-action scenarios. However, the runway use distributions were modified for the 2025 “with project” scenarios to account for runway improvements associated with the proposed action. *Tables 4 and 5* attached to this memorandum present the percentages used to distribute these daily operations among the four runway ends. Expected changes to runway use preference include the following:

- Piston aircraft are expected to use Runway 04/22 more often once the runway is extended and non-precision instrument approach procedures are established. Approximately 25% of piston operations occur on Runway 04/22 in the 2016 baseline and 2025 no-action scenarios, whereas approximately 35% occur on Runway 04/22 in the 2025 “with project” scenarios.
- Turboprop and jet aircraft are expected to use the Runway 14 end of the primary runway more often once an approach procedure is established. Approximately 30% of turboprop arrivals and no jet arrivals occur on Runway 14 in the 2016 baseline and 2025 no-action scenarios, whereas approximately 45% of turboprop arrivals and 33% of jet arrivals occur on Runway 14 in the 2025 “with project” scenarios. In all scenarios, all multi-engine turboprop and jet aircraft operations are expected to occur on the primary runway.
• Approximately 4% of single-engine turboprop operations are expected to occur on Runway 04/22 in the 2025 “with project” scenarios, whereas there are no single-engine turboprop operations on this runway in the 2016 baseline and 2025 no-action scenarios.

**Day/Night Split**
The 2016 MACNOMS data indicate that approximately 4% of total operations at Lake Elmo Airport occur during nighttime hours. To estimate nighttime operations and apply the 10-dB nighttime noise sensitivity penalty within the AEDT model, this percentage was applied to all operations for all aircraft makes/models in all scenarios.

**Flight Tracks**
Flight tracks were developed based on MACNOMS flight tracks and are consistent with those used in the recently completed Long Term Comprehensive Plan (LTCP). The AEDT study used two arrival tracks (straight-in, and left turn arrivals) and three departure tracks (straight-out, left turn departure, and right turn departure) for each runway end. The image below depicts arrival, departure and touch-and-go tracks as drawn in AEDT.
• Red are arrival tracks
• Blue are departure tracks
• Magenta are touch-and-go tracks
Track utilization percentages used in the AEDT study are shown in Table 6 attached to this memorandum. It is worth noting that due to the low number of total operations, the locations of arrival and departure tracks, and track utilization percentages are not expected to impact the contour size and shape. The contours do not extend out to the point where tracks begin to make turns, therefore would not change with different percentage utilization. The primary drivers of where noise is located and distributed at this airport, is the runway end utilization percentages and aircraft types modeled.

Approval of Non-Standard Aircraft Substitutions
In a letter dated August 22, 2017, the FAA Office of Environment and Energy (AAE) approved use of specific aircraft noise profiles for this study, to represent aircraft types for which AEDT does not identify a standard substitution. These aircraft types and substitution aircraft noise profiles were as follows:

- Van’s RV-6/7/8/9/1012 and Rockwell Commander 112 substituted with GASEPV noise profile.
- Cessna T-50 Bobcat substituted with BEC58P noise profile.
- Diamond Twin Star DA42, Piper PA-44 Seminole, and P-68 Observer substituted with PA30 noise profile.

Weather
The weather data used in the noise study were acquired from the National Oceanic and Atmospheric Administration (NOAA) National Climatic Data Center, which are auto-populated in the AEDT model based on the Airport’s location. Two separate data sources were used from NOAA, 30-year normals for 1971-2000 and 10-year averages for 1994-2004. Because there was not a weather station present at Lake Elmo Airport during either of these historic periods, weather data from St. Paul Downtown Airport was substituted by the model. The following weather inputs were used within the AEDT model to represent average operating conditions at Lake Elmo Airport:

- Ambient temperature = 46° Fahrenheit
- Sea level pressure = 1016.150024 millibars
- Relative humidity = 70.63%
- Dew point = 36.58° Fahrenheit
- Headwind speed = 7.37 knots

Graphics depicting the 2016 baseline, 2025 no-action alternative, and 2025 preferred alternative (B1) noise contours are shown in Figures 5-1, 5-2, and 5-3, attached to this memorandum. These graphics are also included in the Environmental Consequences chapter of the EA/EAW.

As shown in the figures, the 65 DNL contour would be contained entirely on Airport property under all three scenarios. As a result, there are no significant noise impacts to mitigate for the no-action or preferred alternatives. Noise contours were developed for the 60 DNL for informational purposes only, as FAA does not consider the 60 DNL significant per FAA Orders. The 60 DNL extends west of Airport property in the Baseline 2016 and No Action 2025 scenarios, but is contained entirely on Airport property in the Preferred Alternative 2025 scenario.
### Table 1: 2016 Baseline

#### Average Daily Operations

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<thead>
<tr>
<th>Aircraft Type</th>
<th>AIDT Aircraft ID</th>
<th>Departures</th>
<th>Arrivals</th>
<th>Touch and Go</th>
<th>Total Operations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Helicopter</strong></td>
<td></td>
<td>Day</td>
<td>Night</td>
<td>Total</td>
<td>Day</td>
</tr>
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<td>1.341</td>
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<td><strong>Small Jet</strong></td>
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<td>0.000</td>
<td>0.000</td>
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<td>CNA560XL</td>
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<td>0.000</td>
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<tr>
<td><strong>Single-Engine Piston</strong></td>
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<td>24.653</td>
<td>1.043</td>
<td>25.696</td>
<td>13.981</td>
</tr>
<tr>
<td>Piper PA-28/32 Cherokee/Warrior/Dakota/Arrow</td>
<td>GASEPF</td>
<td>7.458</td>
<td>0.316</td>
<td>7.774</td>
<td>4.232</td>
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<tr>
<td>Van's RV-6/7/6/9/10/12</td>
<td>GASEPV</td>
<td>5.046</td>
<td>0.214</td>
<td>5.260</td>
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<td>Cessna 172</td>
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<td>Cessna 182</td>
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<td>Cirrus SR20/SR22/SR22-Turbo</td>
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<td>1.676</td>
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<tr>
<td>Beech Baron 33/34/35/36</td>
<td>CNA208</td>
<td>1.920</td>
<td>0.081</td>
<td>2.001</td>
<td>1.089</td>
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<td>Cessna 150</td>
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<td>Mooney M-20 (various models)</td>
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<td>Lancair LC-41 Columbia 300/400</td>
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<td>Rockwell Commander 112</td>
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</tr>
<tr>
<td>Piper PA-46 Malibu</td>
<td>GASEPF</td>
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<td>0.051</td>
<td>0.021</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>24.653</td>
<td>1.043</td>
<td>25.696</td>
<td>13.981</td>
</tr>
<tr>
<td><strong>Total Operations</strong></td>
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<td>63.286</td>
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<td>65.981</td>
<td></td>
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<td><strong>Helicopter</strong></td>
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<td>0.005</td>
<td>0.123</td>
<td>0.000</td>
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<td>Beech King Air 90</td>
<td>DHC6</td>
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<td>0.000</td>
<td>0.007</td>
<td>0.000</td>
</tr>
<tr>
<td>Beech King Air 200</td>
<td>DHC6</td>
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<td>0.000</td>
<td>0.007</td>
<td>0.000</td>
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<td>Cessna Conquest 441</td>
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<td>0.014</td>
<td>0.028</td>
<td>0.002</td>
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<tr>
<td>Swearingen Merlin III</td>
<td>DHC6</td>
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<td>0.014</td>
<td>0.028</td>
<td>0.002</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>26.678</td>
<td>27.748</td>
<td>54.426</td>
<td></td>
</tr>
</tbody>
</table>

*Totals may not add due to rounding.
Table 2: 2025 No Action

Average Daily Operations

Aircraft Type
Helicopter

AEDT Aircraft ID
Robinson R44

R44

Cessna Citation Jet 560XLS
Cessna Mustang

CNA560XL
CNA510

Piper PA-28/32 Cherokee/Warrior/Dakota/Arrow
Van's RV-6/7/8/9/10/12
Cessna 172
Cessna 182
Cirrus SR20/SR22/SR22-Turbo
Beech Bonanza 33/34/35/36
Cessna 150
Cessna 205/206/210
Mooney M-20 (various models)
Lancair LC-41 Columbia 300/400
Rockwell Commander 112
Piper PA-24 Comanche
Piper PA-46 Malibu

GASEPF
GASEPV
GASEPF
CNA182
COMSEP
CNA208
GASEPF
GASEPV
GASEPV
GASEPV
GASEPV
GASEPV
GASEPF

Cessna 335/337/340
Beech Baron 55/58
Piper PA-30 Twin Comanche
Piper PA-31 Navajo / Chieftain
Piper PA-23 Apache/Aztec
Cessna T-50 Bobcat
Cessna 421
Cessna Chancellor 414
Diamond Twin Star DA42
Piper PA-34 Seneca
Cessna 310
Piper PA-44 Seminole
P-68 Observer

BEC58P
BEC58P
PA30
BEC58P
BEC58P
BEC58P
BEC58P
BEC58P
PA30
BEC58P
BEC58P
PA30
PA30

Socata TBM-700/850
Piper PA-46T Malibu Meridian
Pilatus PC-12
Cessna 208 Caravan

CNA208
CNA441
CNA208
CNA208

Beech King Air 90
Beech King Air 200
Cessna Conquest 441
Swearingen Merlin III

DHC6
DHC6
CNA441
DHC6

Small Jet

Single-Engine Piston

Twin-Engine Piston

Single-Engine Turbo Prop

Twin-Engine Turboprop

TOTAL
*Totals may not add due to rounding

Departures
Arrivals
Touch and Gos
Total Operations
Day
Night
Total
Day
Night
Total
Day
Night
Total
Day
Night
Total
1.251
0.000
1.251
1.251
0.000
1.251
0.000
0.000
0.000
2.501
0.000
2.501
1.251
0.000
1.251
1.251
0.000
1.251
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0.000
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0.004
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0.000
0.002
0.002
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0.000
0.000
0.000
0.004
0.000
0.004
23.026
0.975
24.001
23.026
0.984
24.011
13.059
0.559
13.617
59.111
2.518
61.628
6.966
0.295
7.261
6.966
0.298
7.264
3.953
0.169
4.122
17.885
0.762
18.647
4.713
0.199
4.913
4.713
0.202
4.915
2.674
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2.789
12.101
0.515
12.616
2.023
0.086
2.109
2.023
0.086
2.109
1.148
0.049
1.197
5.194
0.221
5.415
1.254
0.053
1.307
1.254
0.054
1.307
0.711
0.030
0.742
3.219
0.137
3.356
2.759
0.117
2.876
2.759
0.118
2.877
1.565
0.067
1.632
7.083
0.302
7.385
1.793
0.076
1.869
1.793
0.077
1.870
1.018
0.044
1.061
4.604
0.196
4.800
1.310
0.055
1.366
1.310
0.056
1.367
0.744
0.032
0.775
3.365
0.143
3.508
0.851
0.036
0.887
0.851
0.036
0.887
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0.644
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0.671
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0.017
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0.046
0.002
0.048
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0.557
0.024
0.581
0.124
0.005
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0.156
0.150
0.006
0.156
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0.089
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0.093
0.089
0.004
0.093
0.020
0.001
0.021
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0.207
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0.002
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0.055
0.002
0.057
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*Totals may not add due to rounding*
### Table 4: 2016 Baseline Condition & 2025 No-Action Alternative Average Annual Runway Use

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Note: Totals may not add to 100% due to rounding.

Source: MAC, Mead & Hunt
Table 5: 2025 With Project Condition Average Annual Runway Use

| Aircraft Group | Rwy | Arrivals | | | | | | Departures | | | | | | Touch and Gos | | |
|----------------|-----|----------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|                |     | Day      | Night | Total| Day | Night | Total| Day | Night | Total| Day | Night | Total| Day | Night | Total| Day | Night | Total|
| Helicopter     | 4   | 13%      | 13%   | 13% | 4%  | 4%    | 4%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   |
|                | 14  | 34%      | 34%   | 34% | 23% | 23%   | 23%  | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   |
|                | 22  | 15%      | 15%   | 15% | 26% | 26%   | 26%  | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   |
|                | 32  | 39%      | 39%   | 39% | 47% | 47%   | 47%  | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   |
| Single Piston  | 4   | 10%      | 3%    | 10% | 15% | 27%   | 15%  | 15% | 17%   | 15%  | 15% | 17%    | 15%  | 15% | 17%    | 15%  | 15% | 17%    | 15%  |
|                | 14  | 35%      | 57%   | 35% | 37% | 30%   | 37%  | 30% | 32%   | 30%  | 30% | 32%    | 30%  | 30% | 32%    | 30%  | 30% | 32%    | 30%  |
|                | 22  | 22%      | 3%    | 21% | 18% | 14%   | 18%  | 18% | 22%   | 18%  | 18% | 22%    | 18%  | 18% | 22%    | 18%  | 18% | 22%    | 18%  |
|                | 32  | 33%      | 37%   | 34% | 30% | 29%   | 30%  | 28% | 29%   | 28%  | 28% | 29%    | 28%  | 28% | 29%    | 28%  | 28% | 29%    | 28%  |
| Twin Piston    | 4   | 10%      | 2%    | 8%  | 24% | 17%   | 22%  | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   |
|                | 14  | 42%      | 48%   | 43% | 29% | 12%   | 29%  | 50% | 0%    | 0%   | 0%  | 50%    | 0%   | 0%  | 0%    | 0%   | 0%  | 50%    | 0%   |
|                | 22  | 15%      | 2%    | 14% | 18% | 2%    | 18%  | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   |
|                | 32  | 33%      | 48%   | 35% | 29% | 69%   | 31%  | 50% | 0%    | 0%   | 0%  | 50%    | 0%   | 0%  | 0%    | 0%   | 0%  | 50%    | 0%   |
| Single Turboprop| 4  | 2%       | 0%    | 2%  | 2%  | 0%    | 2%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   |
|                | 14  | 48%      | 50%   | 48% | 55% | 50%   | 55%  | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   |
|                | 22  | 2%       | 0%    | 2%  | 2%  | 0%    | 2%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   |
|                | 32  | 48%      | 50%   | 48% | 41% | 50%   | 41%  | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   |
| Twin Turboprop | 4   | 0%       | 0%    | 0%  | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   |
|                | 14  | 40%      | 40%   | 40% | 40% | 40%   | 40%  | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   |
|                | 22  | 0%       | 0%    | 0%  | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   |
|                | 32  | 60%      | 60%   | 60% | 60% | 60%   | 60%  | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   |
| Jet            | 4   | 0%       | 0%    | 0%  | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   |
|                | 14  | 33%      | 33%   | 33% | 40% | 40%   | 40%  | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   |
|                | 22  | 0%       | 0%    | 0%  | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   |
|                | 32  | 67%      | 67%   | 67% | 60% | 60%   | 60%  | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   | 0%  | 0%    | 0%   |

Notes: All new twin turboprop and jet aircraft operations assigned to Runway 14/32 due to length requirements. Greater share of overall piston and single turboprop aircraft operations assigned to Runway 04/22 due to planned extension, lighting, and approach procedures. Greater share of 14/32 operations in all categories except helicopters assigned to 14 due to new approach procedure. Totals may not add to 100% due to rounding.

Source: MAC, Mead & Hunt
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Note: Totals may not add to 100% due to rounding.

Source: Mead & Hunt
Note: Aircraft noise contour 60 DNL is shown for informational purposes only.

Lake Elmo Airport
Runway 14-32

FIGURE 5-1
2016 Baseline Aircraft Noise Contours
Note: Aircraft noise contour 60 DNL is shown for informational purposes only.
Lake Elmo Airport
Runway 14-32
2025 Alternative B1 Aircraft Noise Contours

Note: Aircraft noise contour 60 DNL is shown for informational purposes only.
Agency Scoping Meeting
Meeting Minutes
Lake Elmo Public Library
February 21, 2017
10:00 A.M.

The attached report represents this writer's interpretation of items discussed during the meeting. Any corrections or additional information should be brought to our attention for clarification.

The purpose of the meeting was to:

- Provide background information on the proposed action and planned environmental analysis to be undertaken at the Lake Elmo Airport.
- Seek input from regulatory agencies to incorporate into the project Scope of Work.

Items discussed were as follows:

After introduction of participants, Chad Leqve provided an overview of Lake Elmo Airport and the proposed action; Evan Barrett discussed the purpose and need, alternatives, planned environmental analysis, and project schedule; and Chad Leqve concluded with a general discussion and Q&A.

Jay Riggs asked if airport operations were expected to increase as a result of the proposed airport improvements. Chad Leqve responded that they were not.

Jay Riggs asked about the difference between a precision and non-precision approach. Chad Leqve explained that precision approaches can be used in a wider variety of weather conditions.

Regarding the wetland delineation, John Hanson commented that a function and value assessment will also be required. The Minnesota Rapid Assessment Methodology (MnRAM) computer model developed by the State Board of Water and Soil Resources (BWSR) was mentioned as an acceptable method. The
Watershed District noted these assessments are often done to establish buffer standards. For State-designated public waters, John Hanson said the minimum buffer is 25 feet, and greater if involving regulated fill. He said that Barr Engineering has recently completed updates to the floodplain and buffer assessments on and near the Airport, which are available on their website. He believed the last one was done approximately 10 years ago, and would need to be updated. He also mentioned there are some project areas on the PowerPoint slides that the Watershed District has not previously assessed that may need to be assessed.

John Hanson asked if we were in contact with the Minnesota Pollution Control Agency (MPCA) regarding known underground trichloroethylene (TCE) contamination on the Airport. Evan Barrett responded that the MPCA and U.S. Environmental Protection Agency (EPA) were asked for scoping comments and that the environmental review will identify and acknowledge the contamination as part of the hazardous materials review.

John Hanson offered to send Evan Barrett the Watershed District’s Rules and Regulations, which are available on the Watershed District’s website. Evan Barrett said Mead & Hunt will amend the Scope of Work to account for these rules and regulations.

Jay Riggs asked about wildlife impacts (specifically birds) and how they would be assessed/addressed within the project. He stated there are a lot of bird species flying through the area with the St. Croix River close by. He also said he wouldn’t be surprised if we hear a lot of questions or concerns from the public on this topic. Evan Barrett responded that the project team will assess the wildlife impacts as part of the environmental review process.

Jen Sorensen asked what kind of traffic is on 30th Street North. Evan Barrett said existing and future traffic would be analyzed as part of the environmental review. Chad Leqve said it is a low volume road used mostly by local residents.

John Hanson asked if the MAC would consider taking over ownership of 30th Street. Chad Leqve replied that it would not.

John Hanson asked if there are inundation period standards for airports. Discussion ensued about FAA requirements for stormwater infiltration and drainage, which typically require drainage within 48 hours of a storm event.

Jay Riggs asked if the airport service road has different requirements with relation to the runway protection zones (RPZs), as this road goes through the proposed RPZ but does not seem to be an issue. MAC and Mead & Hunt responded that the RPZ guidance refers to public roads as incompatible uses and because the service road has limited access the requirements are less stringent.

Jen Sorensen asked how the State EAW process fits in with the Federal EA. Evan Barrett responded that EA narrative will cross reference each EAW section, and a table will be developed for the EA that refers to each EAW section to ease agency review.

John Hanson asked whether 30th Street North could be kept as far to the northeast as possible to avoid or maximize the distance from the wetland. Discussion ensued regarding potential modifications to the road alignment and potential wetland/floodplain impacts.

Becky Horton asked why 30th Street North could not be relocated to the south to adjoin to Neal Avenue at a 90 degree angle south of the existing intersection. Chad Leqve responded that this was one of the
original alternatives that was evaluated but there was a lot of public concern regarding moving the intersection during the LTCP process.

The timing of the project was discussed. The earliest construction start would be in 2019.

The meeting adjourned at approximately 10:45 a.m.
### Participant Sign-In Sheet

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization/Address</th>
<th>Phone or email</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Hansen</td>
<td>4300 Market Par Dr, Mpls, MN 55437</td>
<td>952-832-2422</td>
</tr>
<tr>
<td></td>
<td></td>
<td><a href="mailto:hansen.o6@umn.edu">hansen.o6@umn.edu</a></td>
</tr>
<tr>
<td>Jay Riggs</td>
<td>455 Hayward Ave, Chaska, MN 55318</td>
<td><a href="mailto:jriggs@umn.edu">jriggs@umn.edu</a></td>
</tr>
<tr>
<td>Becky Horton</td>
<td>1200 Warner Rd, St Paul</td>
<td><a href="mailto:becky.horton@st.hls.us">becky.horton@st.hls.us</a></td>
</tr>
<tr>
<td>Evan Barrett</td>
<td>Mead &amp; Hunt, 7900 W 78th St, Suite 370, Minneapolis, MN</td>
<td><a href="mailto:evan.barrett@meadhunt.com">evan.barrett@meadhunt.com</a></td>
</tr>
<tr>
<td>Jen Sorensen</td>
<td>1200 Warner Rd, St Paul, 651-259-5754</td>
<td><a href="mailto:jenifer.sorensen@state.mn.us">jenifer.sorensen@state.mn.us</a></td>
</tr>
<tr>
<td>Colleen Bosold</td>
<td>Mead &amp; Hunt, 7900 West 78th St, Mpls, MN 55439</td>
<td><a href="mailto:colleen.bosold@meadhunt.com">colleen.bosold@meadhunt.com</a></td>
</tr>
<tr>
<td>Laura Norland</td>
<td>Mead &amp; Hunt</td>
<td><a href="mailto:laura.norland@meadhunt.com">laura.norland@meadhunt.com</a></td>
</tr>
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Thank you for your participation!
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<thead>
<tr>
<th>Agency</th>
<th>c/o</th>
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<th>Address</th>
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<th>Zip Code</th>
<th>Email Address</th>
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<tbody>
<tr>
<td>Minnesota Department of Agriculture</td>
<td>Becky Balk</td>
<td></td>
<td>625 N. Robert Street</td>
<td>St. Paul</td>
<td>55155</td>
<td><a href="mailto:becky.balk@state.mn.us">becky.balk@state.mn.us</a></td>
</tr>
<tr>
<td>Minnesota Department of Commerce</td>
<td>Ray Kirsch</td>
<td></td>
<td>85 Seventh Place East, Suite 500</td>
<td>St. Paul</td>
<td>55101</td>
<td><a href="mailto:raymond.kirsch@state.mn.us">raymond.kirsch@state.mn.us</a></td>
</tr>
<tr>
<td>Minnesota Department of Health</td>
<td>Michele Ross</td>
<td>Environmental Health Division</td>
<td>625 N. Robert Street</td>
<td>St. Paul</td>
<td>55155</td>
<td><a href="mailto:health.review@state.mn.us">health.review@state.mn.us</a></td>
</tr>
<tr>
<td>Minnesota Department of Natural Resources</td>
<td>Randall Doneen</td>
<td>Environmental Review Unit</td>
<td>500 Lafayette Road</td>
<td>St. Paul</td>
<td>55155</td>
<td><a href="mailto:randall.doneen@state.mn.us">randall.doneen@state.mn.us</a></td>
</tr>
<tr>
<td>Minnesota Pollution Control Agency</td>
<td>Dan Card</td>
<td>Environmental Review Unit - 4th Floor</td>
<td>520 Lafayette Road North</td>
<td>St. Paul</td>
<td>55155</td>
<td><a href="mailto:dan.card@state.mn.us">dan.card@state.mn.us</a></td>
</tr>
<tr>
<td>Minnesota Department of Transportation</td>
<td>Debra Moynihan</td>
<td>MnDOT Office of Environmental Stewardship</td>
<td>395 John Ireland Blvd, MS 620</td>
<td>St. Paul</td>
<td>55155</td>
<td><a href="mailto:debra.moynihan@state.mn.us">debra.moynihan@state.mn.us</a></td>
</tr>
<tr>
<td>Minnesota Board of Water and Soil Resources</td>
<td>Travis Germundson</td>
<td></td>
<td>520 Lafayette Road</td>
<td>St. Paul</td>
<td>55155</td>
<td><a href="mailto:travis.germundson@state.mn.us">travis.germundson@state.mn.us</a></td>
</tr>
<tr>
<td>U.S. Army Corps of Engineers</td>
<td>Chad Konickson</td>
<td>Regulatory Branch</td>
<td>180 Fifth Street East, Suite 700</td>
<td>St. Paul</td>
<td>55101</td>
<td><a href="mailto:chad.konickson@usace.army.mil">chad.konickson@usace.army.mil</a></td>
</tr>
<tr>
<td>U.S. Environmental Protection Agency</td>
<td>Kenneth Westlake</td>
<td>Office of Enforcement and Compliance Assurance</td>
<td>77 W. Jackson Blvd (mail code: E-19J)</td>
<td>Chicago, IL</td>
<td>60604</td>
<td><a href="mailto:westlake.kenneth@epa.gov">westlake.kenneth@epa.gov</a></td>
</tr>
<tr>
<td>U.S. Fish and Wildlife Service</td>
<td>Project Leader</td>
<td>Twin Cities Field Office E.S.</td>
<td>4101 American Blvd East</td>
<td>Bloomington, MN</td>
<td>55425</td>
<td><a href="mailto:twin.cities@fws.gov">twin.cities@fws.gov</a></td>
</tr>
<tr>
<td>Metropolitan Council</td>
<td>Review Coordinator</td>
<td>Local Planning Assistance</td>
<td>390 Robert Street North</td>
<td>St. Paul, MN</td>
<td>55101</td>
<td><a href="mailto:reviewscoordinator@metc.state.mn.us">reviewscoordinator@metc.state.mn.us</a></td>
</tr>
<tr>
<td>Valley Branch Watershed District</td>
<td>John Hanson</td>
<td>Barr Engineering</td>
<td>4300 MarketPointe Drive, Suite 200</td>
<td>Bloomington, MN</td>
<td>55435</td>
<td><a href="mailto:jhanson@barr.com">jhanson@barr.com</a></td>
</tr>
<tr>
<td>Washington Conservation District</td>
<td>Jay Riggs</td>
<td></td>
<td>455 Hayward Ave North</td>
<td>Oakdale, MN</td>
<td>55128</td>
<td><a href="mailto:jriggs@mnwcd.org">jriggs@mnwcd.org</a></td>
</tr>
<tr>
<td>Federal Aviation Administration</td>
<td>Josh Fitzpatrick</td>
<td>Dakota-Minnesota Airports District Office</td>
<td>6020 28th Avenue South, Room 102</td>
<td>Minneapolis, MN</td>
<td>55450</td>
<td><a href="mailto:joshua.fitzpatrick@faa.gov">joshua.fitzpatrick@faa.gov</a></td>
</tr>
<tr>
<td>MN Indian Affairs Council</td>
<td>Dennis Olson</td>
<td></td>
<td>161 St. Anthony Ave, Ste 919</td>
<td>St. Paul, MN</td>
<td>55103</td>
<td><a href="mailto:Dennis.W.Olson@state.mn.us">Dennis.W.Olson@state.mn.us</a></td>
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Agenda

• Introductions
• Airport Overview
• Proposed Action
• Purpose & Need
• Alternatives
• Planned environmental analysis
• Project schedule
• Discussion
Airport Overview

Primary Role of Lake Elmo Airport
- Integral part of the regional Reliever Airport system
- Accommodates Personal, Recreational, and some Business Aviation users
- Design Aircraft is and will continue to be small, propeller driven aircraft with < 10 passenger seats
- Role not expected to change in forecast period
- Only public airport in Washington County

Existing Facility & Activity Level Overview
- ~200 Based Aircraft
- ~26,000 Aircraft Operations
- Airport Context
### Proposed Action

- Relocate and extend Runway 14/32
- Realign 30th Street North around the new Runway 32 RPZ
- Reconstruct and extend Runway 4/22
- Construct a new cross-field taxiway to serve the new Runway 14 end
- Convert existing Runway 14/32 to a partial parallel taxiway and construct other taxiways as needed to support the relocated runway
- Establish a new non-precision approach to Runway 14 and upgrade existing Runway 4 approach to RNAV (GPS)
EA/EAW Supplemental Planning Analysis

• Review & Verify LTCP Aircraft Operations Forecasts
• Review & Verify LTCP Runway Length Analysis
• Review & Verify Preferred Alternative
Purpose and Need

Purpose and Need Components:

- Provide the required runway length justification for design aircraft needs.
- Prevent existing incompatible uses in the Runway 14/32 runway protection zones (RPZs).
- Replace failing runway and taxiway pavement.
- Provide adequate runway to taxiway separation.
- Resolve hangar penetrations to Runway 14/32 transitional surface.
- Provide adequate and modernized instrument approach capability for users.

“...comments submitted to the Sponsor during the LTCP process regarding the proposed project will be reviewed and integrated into the alternatives analysis as appropriate to resolve community concerns while providing facilities needed to comply with the project objectives.”
Alternatives

- No-Action Alternative
- Airport Relocation
- Use of other Airports in the Vicinity
- LTCP Alternatives
- LTCP Preferred Alternative
- Preferred Alternative Refinement Recommendations from Supplemental Analysis
Planned Environmental Analysis

- Air quality modeling
- Historic, architectural, archeological, and cultural resources
- Aircraft noise and land use compatibility
- Hazardous materials inventory
- Wetland delineation
- Other NEPA categories
EA Project Timeline

Project Elements

- Project Kick-Off
- Purpose & Need
- Alternatives Analysis
- Affected Environment
- Environmental Effects
- Avoidance, Minimization, and Mitigation Plans
- Preliminary Federal EA/State EAW Review - FAA & MAC
- Draft Federal EA/State EAW Public & Agency Review
- Respond to Comments & Prepare Final Federal EA / State EAW

Meetings & Workshops

- Public Event
- Community Engagement Panel (CEP) Meeting

Timeline:

- MILESTONE: 1
- MILESTONE: 2
- MILESTONE: 3
- MILESTONE: 4

Environmental Assessment
Lake Elmo Airport
Discussion/Questions

• Please send written comments to:
  • Mead & Hunt, Inc., Attn: Evan Barrett, 7900 W 78th Street, Suite 370, Minneapolis, MN 55439
  • Evan.barrett@meadhunt.com

• If you have questions regarding the project, please contact Chad Leqve at 612.725.6326, or chad.leqve@mspmac.org
Re: Project Scoping for Airport Improvements at Lake Elmo Airport, Lake Elmo, Washington County, Minnesota

Dear Mr. Fitzpatrick:

The U.S. Environmental Protection Agency (EPA) has reviewed the referenced project scoping document, which was emailed to me by Chad Lequie of the Metropolitan Airports Commission (MAC) on February 8, 2017. The scoping document was prepared by Mead & Hunt, Inc., consultant to the Federal Aviation Administration (FAA) and the MAC. We are providing comments pursuant to our authorities under the National Environmental Policy Act (NEPA), Council on Environmental Quality regulations (40 CFR Parts 1500-1508), and Section 309 of the Clean Air Act.

The proposed action involves:

- Relocating Runway 14/32 by shifting it 615 feet to the northeast and extending it to 3,500 feet, including all necessary grading, clearing, and runway lighting;
- Realigning 30th Street North around the new Runway 14/32 Runway Protection Zone (RPZ), and reconnecting to the existing intersection with Neal Avenue;
- Constructing a new cross-field taxiway to serve the new Runway 14/32 end, including taxiway lighting and/or reflectors;
- Converting existing Runway 14/32 to a partial parallel taxiway and constructing other taxiways as needed to support the relocated runway, including taxiway lighting and/or reflectors;
- Reconstructing Runway 4/22 and extend to 2,750 feet, including necessary lighting and taxiway connectors, and
• Establishing a new non-precision approach to Runway 14 end and upgrade existing Runway 4/22 approach to area navigation (RNAV)

Based on our review, we have comments relating to water quality, wetlands, air quality strategies, green infrastructure, climate change, energy efficiency, recycling and reuse of construction materials, creating a federal strategy to promote the health of honey bees and other pollinators, and consultation records, as stated below.

**Water Quality**
The EA should describe how the proposed action may affect water bodies listed as impaired under Section 305(d) of the Clean Water Act¹ and their listing status as impaired. We recommend that this section of the document discuss current impairments, and how the proposed action may affect, either positively or detrimentally, the impairment.

**Wetlands**
The EA should explain how the Clean Water Act: Section 404(b)(1) guidelines have been applied with regard to both stream and wetland impacts. The Section 404 (b)(1) guidelines call for the Least Environmentally Damaging Practicable Alternative to be selected to address impacts to wetlands, streams, and other waters of the United States. The guidelines also require the sequence of first avoiding, then minimizing, and finally mitigating for any unavoidable impacts to aquatic resources. Please also provide discussion of proposed mitigation for unavoidable, minimized, aquatic impacts (if applicable).

**Air Quality Strategies**
We recommend FAA analyze best available control strategies, and utilize emission reduction activities to the maximum extent possible. The enclosed document, *U.S. Environmental Protection Agency Diesel Emission Reduction Checklist*, provides a list of common best management practices and mitigation measures that we recommend be used during construction.

**Green Infrastructure**
One-hundred-year storm events are occurring with increasing frequency. The number of storm events occurring with greater intensity is also increasing. We recommend that FAA and the local sponsor account for increased storm frequency and intensity in the design of this project in order to help ensure the health and safety of the public, by constructing appropriate green infrastructure (GI). GI includes elements of the natural environment – green space, lakes, wetlands, riparian corridors, prairies, and trees – as well as elements of the constructed environment – green roofs, bioswales, rain gardens, community gardens, permeable pavements, and medians along main streets of cities.

¹ For a list of Minnesota 303(d) listed waterbodies, see:
https://ofmpub.epa.gov/waters19/attains_state.control?p_state=MN
GI contributes to environmental quality, healthy communities, reduced long-term maintenance costs, and economic value within communities by:

- reducing the amount of polluted stormwater runoff entering rivers and lakes,
- decreasing flood risk by slowing and reducing stormwater runoff into waterways,
- positively impacting air quality through carbon sequestration and reducing fugitive dust and air pollutants,
- reducing traffic speeds through design elements and providing a buffer between pedestrians and the roadway,
- providing linkages between habitat corridors to support plant and animal communities, including rare species,
- encouraging outdoor physical activity and increasing walkability, leading to a healthier population and decreased crime, and
- saving money for residential, commercial, industrial, and municipal entities by using natural systems rather than expanding traditional, built systems and by reducing energy consumption.

EPA recently released a video entitled, Green Streets: The Road to Clean Water. This video highlights green streets techniques for managing stormwater and providing other economic and community benefits. It includes examples from localities that have worked with EPA and other partners to incorporate green streets into their stormwater management plans. Green features shown include porous pavement, rain gardens, vegetative curb areas and sidewalk trees. For more examples of GI and information regarding economic and structural performance, visit EPA’s GI webpage at https://www.epa.gov/green-infrastructure/what-green-infrastructure or The Economic Benefits of Green Infrastructure: A Case Study of Lancaster, PA (2014). For case studies, including several from the Midwest, and funding sources, visit: http://www3.epa.gov/region5/sustainable/stormwater-greenschools.html.

Green infrastructure can be a cost-effective approach to improve water quality and help communities stretch their infrastructure investments further by providing multiple environmental, economic, and community benefits. For additional information to learn how other communities have realized cost savings through their green infrastructure programs as well as about tools you can use to inform your own cost-benefit analysis, visit: https://www.epa.gov/green-infrastructure/green-infrastructure-cost-benefit-resources.

EPA recognizes that vegetation management at and near airports must be consistent with FAA standards to minimize the risk of attracting wildlife that could pose a safety threat to aircraft. Include a discussion on adaptation and, as appropriate, consider practicable changes to the alternatives to make them more resilient to anticipated future conditions.

**Energy Efficiency**

We encourage the use of energy-efficient runway and taxiway lighting, use of sustainable building materials, and installation of renewable energy sources. Section 438 of the Energy Independence and Security Act provides excellent examples of how to integrate energy efficiency into Federal projects.
Recycling and Reuse of Construction Materials
We recommend pavement (asphalt, concrete, or cement) and structural materials be reclaimed for future use for this project, or elsewhere. A discussion on the benefits of reclaiming pavement can be found at the following Federal Highway Administration website:

Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators
The 2014 Presidential Memorandum (PM) entitled, “Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators,” responds to evidence of steep declines in certain pollinator populations. Pollinators are critical contributors to our nation’s economy, food system, and environmental health. Vegetation within the project area can provide much needed habitat for pollinators, providing food, shelter, and connections to other patches of habitat. Maintenance staff and landscape designers can all take steps to improve the quality of vegetation to benefit pollinators, steps that can also reduce costs, maintain public safety, and improve public good will.

Consultation Records
EPA recommends attaching consultation documents regarding historic resources (Minnesota State Historic Preservation Agency), wetlands (U.S. Army Corps of Engineers), and Federal and state threatened and endangered species (U.S. Fish and Wildlife Service and the Minnesota Department of Natural Resources) with the draft EA. Please include, in the draft environmental assessment (EA), a list of agency contacts.

We are available to discuss these comments at your convenience. Please feel free to contact Mike Sedlacek of my staff at 312-886-1765, or by email at sedlacek.michael@epa.gov.

Sincerely,

[Signature]

Kenneth A. Westlake, Chief
NEPA Implementation Section
Office of Enforcement and Compliance Assurance

Enclosure: U.S. Environmental Protection Agency Diesel Emission Reduction Checklist

cc: Evan Barrett, Mead & Hunt, Inc.
    Chad Leque, Metropolitan Airports Commission

1 www.whitehouse.gov/briefing-room/presidential-actions/presidential-memoranda
U.S. Environmental Protection Agency
Diesel Emission Reduction Checklist

- Use low-sulfur diesel fuel (15 ppm sulfur maximum) in construction vehicles and equipment.
- Retrofit engines with an exhaust filtration device to capture diesel particulate matter before it enters the construction site.
- Position the exhaust pipe so that diesel fumes are directed away from the operator and nearby workers, reducing the fume concentration to which personnel are exposed.
- Use catalytic converters to reduce carbon monoxide, aldehydes, and hydrocarbons in diesel fumes. These devices must be used with low sulfur fuels.
- Use enclosed, climate-controlled cabs pressurized and equipped with high efficiency particulate air (HEPA) filters to reduce the operators' exposure to diesel fumes. Pressurization ensures that air moves from inside to outside. HEPA filters ensure that any incoming air is filtered first.
- Regularly maintain diesel engines, which is essential to keep exhaust emissions low. Follow the manufacturer's recommended maintenance schedule and procedures. Smoke color can signal the need for maintenance. For example, blue/black smoke indicates that an engine requires servicing or tuning.
- Reduce exposure through work practices and training, such as turning off engines when vehicles are stopped for more than a few minutes, training diesel-equipment operators to perform routine inspection, and maintaining filtration devices.
- Repower older vehicles and/or equipment with diesel- or alternatively-fueled engines certified to meet newer, more stringent emissions standards. Purchase new vehicles that are equipped with the most advanced emission control systems available.
- Use electric starting aids such as block heaters with older vehicles to warm the engine reduces diesel emissions.
- Use respirators, which are only an interim measure to control exposure to diesel emissions. In most cases, an N95 respirator is adequate. Workers must be trained and fit-tested before they wear respirators. Depending on work being conducted, and if oil is present, concentrations of particulates present will determine the efficiency and type of mask and respirator. Personnel familiar with the selection, care, and use of respirators must perform the fit testing. Respirators must bear a NIOSH approval number.
- Per Executive Order 13045 on Children's Health, EPA recommends operators and workers pay particular attention to worksite proximity to places where children live, learn, and play, such as homes, schools, daycare centers, and playgrounds. Diesel emission reduction measures should be strictly implemented near these locations in order to be protective of children's health.

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5 Children may be more highly exposed to contaminants because they generally eat more food, drink more water, and have higher inhalation rates relative to their size. Also, children's normal activities, such as putting their hands in their mouths or playing on the ground, can result in higher exposures to contaminants as compared with adults. Children may be more vulnerable to the toxic effects of contaminants because their bodies and systems are not fully developed and their growing organs are more easily harmed. EPA views childhood as a sequence of life stages, from conception through fetal development, infancy, and adolescence.
Appendix L – Public Involvement
Stakeholder Engagement Plan

1. **Stakeholder engagement objectives**

Stakeholder engagement facilitates and supports public involvement of interested members of the public – providing the opportunity for all stakeholders to participate and be heard. This plan describes coordination and communication efforts intended to inform, educate, and engage the public and airport users as part of the Federal Environmental Assessment (EA)/State Environmental Assessment Worksheet (EAW) for Lake Elmo Airport, as well as the approach for documenting the outreach process. The EA will be carried out according to the requirements of the National Environmental Policy Act (NEPA) and the EAW will be carried out according to the requirements of the Minnesota Environmental Policy Act (MEPA). The two environmental processes will be carried out in parallel and the public engagement will include both processes.

The focus audience for the strategy will be members of the Metropolitan Airports Commission (MAC) policy board, airport tenants, the general public and community leaders (elected and other) in the vicinity of the Airport, and stakeholders who actively participated in the recent long-term comprehensive plan (LTCP) process. When the term “the MAC” is used in this plan, it means the collective staff and board of commissioners and committee members acting in their respective roles and carrying out their respective responsibilities. When a specific staff or commissioner role is intended, that role is included in the reference.

The stakeholder engagement strategy is created to help the MAC achieve all of the following objectives:

- Strengthen the MAC’s relationship with its stakeholders
- Foster collaboration
- Build stakeholder trust and support
- Proactively identify areas of interest and concern in a collaborative setting
- Support and document a thorough and effective process and create a robust documentation record
- Formalize a system to reach a wide variety of stakeholders and interest groups
- Develop a model for future similar processes
- Create opportunities for members of the MAC’s Board of Commissioners to recognize stakeholder engagement in the EA/EAW process
- Streamline agencies’ review

By nature, this Stakeholder Engagement Plan is dynamic. Once the technical work on the EA/EAW begins, there may be circumstances that require an amendment to the plan in order to better achieve the above objectives. If the plan is amended, stakeholders will be made aware of the change through the project webpages and a notification through an electronic news (E-news) subscription service (see Section 6 Project Outreach Platforms).


2. **Project roles and responsibilities**

The stakeholder engagement framework is designed to create a shared ownership of the community engagement process for the Lake Elmo Airport EA/EAW. There are several major stakeholder groups described here including the MAC, the FAA, the Community Engagement Panel (CEP) and the interested public. The framework is built on the following roles and responsibilities.

**The MAC:** As the owner and operator of the Lake Elmo Airport, a critical part of the MAC airport system, the MAC is the sponsor of the EA and has the overall responsibility for the conduct of the EA and the EAW. The MAC developed the Scope of Work, and approved this Stakeholder Engagement Plan in consultation with stakeholders and regulatory agencies. The MAC contracted with Mead & Hunt, Inc. (the M&H Team) to provide technical consulting services for this project. In this role, the M&H Team provides information and makes recommendations to the MAC. The MAC is the final decision maker regarding all aspects of the EA/EAW including but not limited to the conduct of the EA; the composition of the CEP (See Section 3); and the alternatives considered for the EA. The MAC takes action on the final EAW as the responsible government unit under MEPA.

**Federal Aviation Administration (FAA):** The FAA is the federal regulatory agency responsible for the national system of airports and the national air space. The FAA has well defined roles and responsibilities in the airport EA process. The FAA is responsible for publishing the Federal Register notice, handling public comments received from the notice and taking action on the EA document once it is submitted to the FAA. The FAA takes action on the final EA as the lead agency under NEPA.

**Community Engagement Panel (CEP):** The CEP is an advisory board representing major community stakeholder groups that is more closely involved in the EA/EAW project than the public at large. The CEP serves several important functions including: representing a broad range of stakeholder groups in the EA, receiving information about the EA/EAW and sharing it with constituencies; providing input to the EA/EAW as the voice of key stakeholders; and in some cases, providing technical advice to the M&H Team. Experience has shown that environmental review projects can benefit from the creation and participation of a CEP as part of the EA/EAW process. See Section 3 for more information on the CEP.

It is important to note that the CEP is advisory only to the EA/EAW. That is, the CEP may offer opinions, advice and guidance, but the MAC has the sole discretion to act on the CEP recommendations.

**Interested Public:** Members of the public who have an interest in the EA/EAW have a role to play and a responsibility for its outcome. Members of the general public are encouraged to stay informed of the EA/EAW progress by visiting the project webpages, registering for project notifications through the E-news subscription service, participating in public milestone events, submitting comments on the EA, and attending the public hearing for the EA. See Section 6 for a discussion of communication outreach tools.
3. **CEP membership – key stakeholder groups**

In order for the CEP to be effective and to be representative of all of the key stakeholders, it must be composed of a diverse group of stakeholders including, but not limited to, community representatives, aircraft operators, and affected jurisdictions. While representation needs to be broad, the CEP needs to remain a reasonable size so that deliberations are efficient and meetings are effective.

Key stakeholder groups will be represented on the Community Engagement Panel (CEP) by the following representatives:

- City of Lake Elmo (2 representatives)
- Baytown Township (2 representatives)
- West Lakeland Township (2 representatives)
- Airport Tenants/Users (2 representatives)
- Greater Stillwater Chamber of Commerce
- MAC Commissioner
- MAC staff (2 representatives)
- Washington County

The MAC will identify specific members to serve on a CEP and extend an invitation to participate. A kick-off CEP meeting will be held in February 2017 to provide background information on the environmental process and this stakeholder engagement plan, and will prepare community leaders to respond to inquiries from their constituent groups. See Section 2 for a description of the roles and responsibilities of the CEP.
4. **Approach to development of project messaging**

The MAC, using plain language, will develop materials and messages that are clear and relevant to lay members of the community. The M&H Team will work collaboratively with the MAC staff on these efforts. While this approach will strive for brevity and clarity, the information will also be complete – erring on the side of too much information rather than too little. This will be achieved through strategies that include:

- Use of plain language – minimizing the use of acronyms and technical jargon that would likely be unfamiliar to a public audience
- Providing definitions of unfamiliar or technical terms when used in project messages
- Providing explanations related to the requirements of the EA/EAW at each stage of the process
- Providing explanations of aviation terms and regulations and airport operations that are relevant to project messages
- Using easy-to-understand graphics, tables and charts in addition to narrative descriptions
- Reviewing public comments received in response to public messaging and providing additional explanation or clarification when needed through follow up outreach.

The M&H Team may develop suggested messaging text and presentations, and the CEP may be invited to comment on draft material. However, the MAC is the owner of the EA/EAW process and will make all final decisions related to printed content and graphic material produced for the project.

5. **Timing, notification, and format for engaging stakeholder groups**

The EA/EAW process will be organized around four project milestones:

- **Milestone 1: Introduction to the NEPA process**
- **Milestone 2: Purpose & Need and Alternatives**
- **Milestone 3: Environmental Effects**
- **Milestone 4: Public Hearing**

Milestone 1 also includes an introduction to the state MEPA process. A milestone is a point in the process that will culminate in a public meeting event (See Section 7) followed by a significant project decision point for the MAC. The public input received during each milestone phase will help to inform the next project decision. For example, the input received during **Milestone 1: Introduction to the NEPA process** will be considered when developing the Purpose and Need of the project and selecting alternatives to be considered.

In order to create an open and transparent process and to encourage public involvement, the MAC will follow a standardized process for engaging stakeholder groups during each milestone. That process is described here. More information about each public outreach tool is provided in Section 6.
**Project Webpages.** A set of project webpages will be maintained during the EA/EAW process to share information. The pages will be accessed through the current Lake Elmo website page of the Metroairports.org website.

**Monthly Project Updates.** A monthly project update will be sent out through the E-news subscription service to all project subscribers. Additional notifications will be sent out if information is time sensitive.

**Initial Project Schedule.** An initial project schedule is included in this Stakeholder Engagement Plan based on current expectations and assumptions (see Section 7). A current project timeline will be maintained on the project website and will be updated as needed to reflect project progress. If changes are made, that information will be shared on the project website and included in the next monthly project update sent through the E-news subscription service.

**MAC Commission/Committee Meetings.** The MAC and the M&H Team will make presentations to the members of the MAC Commission or Planning, Development, and Environment (PDE) Committee in advance of milestone events. Presentation dates, times and locations will be posted on the project website at least one week before the meetings. The public may attend these meetings and public input will follow the established protocols governing public comments during the meeting. Presentation materials including PowerPoint slides, graphic boards, and handouts will be posted to the project website no later than 3 days following the meeting. Meeting minutes and video recordings will be made available by the MAC based on the standard practice of the MAC for these meetings.

**CEP Meetings.** A CEP kick-off meeting will be held in February 2017. Subsequently, the MAC will schedule five meetings (about every two to three months) with the CEP starting in May 2017. Four of these meetings will take place following the public input events to allow for a group discussion (debrief) of “what we heard” at the previous public input event and also a kickoff for the next project milestone phase. One additional CEP meeting will be held that does not occur following a public input event. At least two weeks prior to each CEP meeting, the M&H Team will work with the MAC staff to identify specific goals and objectives for the meeting. The dates, times and locations of these meetings will be posted on the project website and the meetings will be open to members of the general public who may attend as observers. If a change is made to the CEP meeting date, a notification will be sent through the E-news subscription service to all project subscribers. Presentation materials including PowerPoint slides, graphic boards, and handouts will be posted to the project webpage no later than 3 days following the meeting. The M&H Team will be responsible for developing draft meeting minutes for the MAC. The MAC will post the approved meeting minutes to the project webpage within 14 days.

**Public Meeting Events.** As noted above, each milestone will culminate in a public meeting event. A date, time and location will be determined for each public meeting event at least 21 days before the event. As soon as a date, time and location are determined for the event, the information will be shared in several ways:

- Posted on the project website
- Sent out through the E-news subscription service to all project subscribers
- Emailed to CEP members and members of the MAC Commission
This section describes a standardized method of communicating with the general public about the EA/EAW process. This system is described and shared so that interested citizens can stay informed at every point in the process. The following sections provide more information about each of the communication outreach platforms, the public milestone events, and ways to provide input into the EA/EAW process.

6. **Project outreach platforms**

The MAC, in coordination with the M&H Team, will communicate through the following platforms:

**In-Person Presentations:** In-person presentations will be made by members of the MAC staff and the M&H Team prior to key milestone events at regular MAC Commission or Committee meetings and at CEP meetings following key milestone events. Presentations are expected to include PowerPoint slides, handout material and question and answer sessions. The public may attend these meetings and public input will follow the established protocols governing public comments during the meeting.

Additional presentations by members of the MAC staff and the M&H Team may be made to City Council/Committee meetings, Township Board meetings, County Board meetings, and Metro Council meetings on request. If these events are scheduled, they will be noted on the project webpage and a notice will be sent out via the E-news subscription service to all subscribers.

**Special presentations for elected officials:** Special presentations for elected officials will be held at noon or early afternoon on the day of each public milestone event to provide a preview of information to be presented. Invitations will be sent directly to elected officials approximately two weeks in advance of the event.

**Project Newsletters:** Project newsletters will be developed and printed in advance of the four project milestone events. Each newsletter will include information about the upcoming milestone event such as date, time and location as well as messages and content associated with the public milestone event and supporting graphics and photographs. Each newsletter will also provide information about subscribing to the E-news subscription service and about the project webpages.

The first of the four newsletters will be mailed directly to homes and businesses in the City of Lake Elmo, Baytown Township and West Lakeland Township. A printed copy of all four newsletters will be available at public locations at least seven days before each public milestone event and will be posted on the project webpage. (The second, third and fourth newsletters will not be distributed through a direct mail.)

Newsletters will contain four (4) pages and ½ page will be reserved for mailing space. Printed newsletters will be produced on an 11 x 17 sheet size, folded in half.
Project Website:
A set of project website pages will be maintained during the EA/EAW process to share information. The pages will be accessed through the current Lake Elmo website page of the MetroAirports.org website. At a minimum, the webpages will include:

- Public meeting information
- Public project documents (reports, newsletters, presentations, fact sheets, etc.)
- Frequently asked questions
- Information on how to provide public comment
- Information on how to sign up for the E-news subscription service notifications (see below)

E-news subscription service: A project account will be made available by the MAC for the Lake Elmo Airport EA/EAW project using the E-news subscription service. Stakeholders and members of the public will be informed of the opportunity to subscribe. Also, email addresses will be collected at public meetings and added to the E-news subscription service account if permission is granted on the sign-in sheet (check box to be added). A monthly project update will be sent out through the E-news subscription service to all project subscribers. Additional notifications will be sent out if information is time sensitive.

Public Notices: Public notices will be developed in advance of key milestone events by the MAC with input from the M&H Team and will be distributed by the MAC to media outlets in and around the project area. Public notices will include information about public meeting logistics as well as EA/EAW project messages.

7. Project milestone events

Critical project milestones are established based on decision points in the EA/EAW process that require stakeholder consideration. At each milestone, there is a strategic engagement event in the project timeline which will provide an opportunity for public participation and input. The format for each event may vary. At least two weeks prior to each milestone event, the M&H Team will work in cooperation with the MAC staff to identify specific event goals and objectives and recommend a meeting format based on the goals and objectives. Possible formats include an open house event, a presentation with a question and answer session, or a public hearing with a formal public comment option.

The EA/EAW engagement process is built around the four project milestones. The timeline presented here is a general framework based on assumptions and expectations that may change over the course of the project. If the timeline changes, the new timeline information will be posted to the project webpage and a notification will be sent out through the E-news subscription service.

- Milestone 1: Introduction to the NEPA process. This first milestone event is a project kick-off meeting that introduces the MAC staff and the M&H Team to the community and helps
the public understand the MAC’s commitment to a transparent, open process. This milestone will explain the NEPA and MEPA processes, including the anticipated project timeline, opportunities for public input, environmental analysis categories, how and why alternatives are considered, how an EA/EAW differs from the airport planning process and the possible outcomes of the EA/EAW process. This milestone event is expected to take place in Month 2 of the process – allowing time during Month 1 for preparation and community outreach.

- **Milestone 2: Purpose & Need and Alternatives.** This second milestone event will be held to present the Purpose & Need of the project and to introduce the alternatives that will be considered in the EA. This milestone event is expected to take place in Month 5 of the process, although work will begin toward it beginning in Month 1.

- **Milestone 3: Environmental Effects.** This third milestone event presents the outcome of the technical analysis of the environmental categories for the preferred alternative and the no-action alternative. This milestone event is expected to take place in Month 8 of the process.

- **Milestone 4: Public Hearing.** The fourth milestone event occurs during the 30-day public review of the draft EA/EAW. The draft document, including information about the preferred alternative, will be presented at this event. The M&H Team will develop specific public hearing protocol guidelines that will be distributed to all participants. For example, the guidelines would include an announcement such as “all comments are being recorded and will be responded to in writing in the draft EA and posted on the project website.” This milestone event is expected to take place in Month 12 of the process. Following the public hearing, the draft EA document is expected to be revised and submitted to the FAA in Month 14 of the process. The EAW will also be completed and submitted to the State of Minnesota.
EA Project Timeline

Project Elements

- Project Kick-Off
- Purpose & Need
- Alternatives Analysis
- Affected Environment
- Environmental Effects
- Avoidance, Minimization, and Mitigation Plans
- Preliminary Federal EA/State EAW Review - FAA & MAC
- Draft Federal EA/State EAW Public & Agency Review
- Respond to Comments & Prepare Final Federal EA / State EAW

Meetings & Workshops

- Public Event
- Community Engagement Panel (CEP) Meeting

Note: Schedule updated October 24, 2017. Subject to change.

Time Frame

- KO: Kickoff Meeting
- P: Public Event
- C: Community Engagement Panel (CEP) Meeting
- PH: Public Hearing

Environmental Assessment
Lake Elmo Airport
8. Communication platforms – public input

Throughout the EA/EAW process, the MAC and the M&H Team will gather input through a variety of specific input streams:

- Public comment via the project website
- Written public comment mailed to an address posted on the project website and provided via other methods (i.e. newsletters, at public events)
- At public engagement events. Note: The public comment process will vary depending on the event format and may include written comment forms, a verbal statement made during a public comment window, or a comment made to a court reporter.

While many opportunities will be provided for public input, the MAC staff and the M&H Team will not respond directly to individual comments. Rather, comments will be addressed in one or more of the following ways:

- Comments may be addressed as part of the FAQs offered on the project website.
- Comments will be reported in the draft EA with a written response.
- Comments may be answered verbally as part of a question and answer session in a public meeting.

This policy supports the desired outcome of a transparent process by making the same information available to all members of the public, by presenting information that is consistent through the project and by creating a process to consistently document all comments and responses (see Section 9).

If a comment is received from an elected official or similar individual representing a group of stakeholders or citizens, the MAC may offer a written comment in response during the project. In this case, both the written comment and the written response will be posted on the project website for public review.

9. Approach to documenting and incorporating public feedback

Documenting: The M&H Team will collect, organize and save public comments received during the Lake Elmo Airport EA/EAW project and will also collect, organize and save responses provided by the MAC if applicable (see Section 8). A master spreadsheet will be developed to track input. The spreadsheet will note the submitter name, date received, and method of input (i.e. written letter, website comment, public meeting, response to comment, etc.) as well as information such as address, zip code or email address that may be provided with the comment.

Incorporating Public Feedback: The goal of the Stakeholder Engagement Plan is to foster collaboration and build stakeholder trust and support. Public comment is a valuable part of an EA/EAW and it each comment will be thoughtfully considered. During the course of the Lake Elmo EA/EAW, public comment will be considered and incorporated as follows:
Stakeholder Engagement Plan

In some cases, concerns and objections expressed through the public comment process indicate a lack of understanding or a misunderstanding on a specific topic. In this instance, the MAC will refine the FAQs on the project website, issue a press release, include more information at the next milestone event and/or include the topic as an agenda item at a CEP meeting in order to get more information out to the public.

In some cases, public comments express support or opposition to the project and may include reasons for the opinions. These opinions are welcome and they may provide valuable insight for the EA/EAW in terms of both project benefits and areas where concerns may need to be mitigated.

In other cases, public comments may raise a new issue or provide information that needs to be considered in the EA/EAW evaluation process. These comments will be vetted by the MAC and the M&H Team and included in the EA/EAW evaluation process as appropriate.

A written response to each comment will be provided in the draft final EA except that similar comments on a common theme may be grouped together and addressed with one collective response.
Lake Elmo Airport EA/EAW Newsletters

The following pages contain newsletters distributed publicly prior to the public events during the following months:

- April 2017
- August 2017
- November 2017

The first newsletter was mailed to all residents within a two mile radius of the airport, with the subsequent newsletters distributed electronically via a subscription list accumulated from sign-ups on the project website and at the public events. Hard copies of each newsletter were also made available to the public at each public event, and were placed at Lake Elmo City Hall, Lake Elmo Public Library, and Baytown Community Center.
In 2016, the Metropolitan Airports Commission (MAC) adopted a Long-Term Comprehensive Plan (LTCP) for Lake Elmo Airport. The LTCP provides guidance and a roadmap for possible airfield improvements over the next 20 years. Specifically, the LTCP proposes the following improvements:

- Relocate and extend Runway 14/32 to 3,500 feet
- Realign 30th Street North around the relocated runway protection zone
- Construct new taxiways
- Convert the existing runway to a parallel taxiway
- Reconstruct and extend crosswind Runway 4/22 to 2,750 feet
- Upgrade instrument approaches to use newer technology

However, before these improvements can be made, the MAC needs to study the possible environmental effects associated with them.

Information developed for and presented in the LTCP provides the basis for the environmental review.

The National Environmental Policy Act (NEPA) process is used by the federal government to determine whether proposed projects—in this case the Lake Elmo Airport airfield improvements—will have significant environmental effects. In order to qualify for federal funding, the Lake Elmo Airport improvements project must undergo a NEPA review.
The NEPA process covers 14 environmental categories that include related social and economic effects. The categories include:

- Air Quality
- Biological Resources (including fish, wildlife, and plants)
- Climate
- Coastal Resources
- Department of Transportation Act, Section 4(f)
- Farmlands
- Hazardous Materials, Solid Waste, and Pollution Prevention
- Historic, Architectural, Archeological, and Cultural Resources
- Land Use
- Natural Resources and Energy Supply
- Noise and Compatible Land Use
- Socioeconomics, Environmental Justice, and Children’s Environmental Health and Safety
- Visual Effects (including light emissions)
- Water Resources (including wetlands, floodplains, surface waters, groundwater, and wild and scenic rivers)

Based on the nature of the proposed improvements, the Federal Aviation Administration (FAA)—the responsible federal agency in this case—has determined that an Environmental Assessment (EA) is required. An EA addresses the purpose and need of the project by considering a range of alternatives. It then determines whether or not the proposed alternative has the potential to cause significant environmental effects compared to a no-action (status quo) alternative.

If the FAA finds that the project would have no significant environmental impacts, the NEPA process is concluded and the project is eligible for federal funding. After completing the NEPA process, the decision to move forward with the project is made at the local level.

The Minnesota Environmental Policy Act (MEPA) and related Minnesota Environmental Quality Board (EQB) guidelines also require project proposers to complete environmental reviews for various types of projects. To meet state requirements, an Environmental Assessment Worksheet (EAW) is required for the Lake Elmo Airport airfield improvements because it includes construction of a new paved runway. As such, the MAC will complete the state EAW requirements simultaneously with the Federal EA.

The MAC has begun the EA/EAW process, which will involve extensive public outreach and opportunities for public involvement.

The first CEP meeting occurred in February, with six more to follow. To learn more about how you can share your thoughts and ideas during this process, visit the project website at www.metroairports.org/General-Aviation/Lake-Elmo-Environmental-Assessment.aspx.

Community Engagement Panel (CEP)

Environmental review projects always benefit from the participation of a range of stakeholders. Stakeholders for this project include affected cities, townships, and counties, businesses, airport users, and, of course, members of the community.

To facilitate stakeholder engagement and participation, the Metropolitan Airports Commission has established a Community Engagement Panel (CEP). This panel, representing major community stakeholder groups, will serve in an advisory role. The CEP members serve several functions, including receiving and then sharing information about the environmental process with their individual constituencies; providing input to the process as the voice of key stakeholders; and, in some cases, providing technical advice to the MAC’s consultant team.

The Lake Elmo Airport CEP is composed of representatives from the following organizations/stakeholder groups:

The Anticipated EA Project Timeline is as follows:

- **MAC Adopted Lake Elmo LTCP (SEPTEMBER 2016)**
- **EA Process Begins (FEBRUARY 2017)**
- **Analysis of Impacts and Alternatives (SPRING-FALL 2017)**
- **Draft EA Public Review (WINTER 2018)**
- **Final EA in FAA Determinations (SPRING 2018)**

For more detail, see the Stakeholder Engagement Plan on the project website. Schedule is subject to change. Any significant schedule updates will be published on the project website and distributed to e-news subscribers, as appropriate.

For more information, visit the project website at www.metroairports.org/General-Aviation/Lake-Elmo-Environmental-Assessment.aspx.
Stay Involved

The best way to keep current on what’s happening with the project is to sign up to receive updates via our e-news subscription program. Go to the project website to sign up.

Regular updates will be sent to this email list, including notices about public events. You can also find up-to-date information such as public event details, public project documents (reports, newsletters, presentations, fact sheets, etc.), answers to frequently asked questions, and information on how to provide public comment on the project website.

Project website: www.metroairports.org/General-Aviation/Lake-Elmo-Environmental-Assessment.aspx

Community Event

Thursday, May 11, 2017
6:00 to 8:00 p.m. (Presentation at 6:30)
Stillwater Area High School
2nd Floor Rotunda & Forum Room
5701 Stillwater Blvd N.
Stillwater, MN 55082

We want your input! The MAC is committed to a transparent and open community involvement process. The purpose of this first community event is to provide information and to give community members an opportunity to ask questions.

When arriving at Stillwater Area High School, please park in the main lot and enter through the Administration entrance in the middle of the front plaza. There will be a presentation at 6:30 p.m. where community members can learn more about the proposed project, the NEPA and MEPA processes, environmental analysis categories, how and why alternatives are considered, the anticipated project timeline and opportunities for public input. The event is open to the public and all interested parties are encouraged to attend.
Since the public event in May, the Lake Elmo Airport Environmental Assessment project team has been busy developing the project’s Purpose and Need Statement, as well as analyzing alternatives for meeting project goals. (For a recap of the proposed improvements, please see the April 2017 newsletter.) The team has developed several alternatives that will be carried through the environmental review process. These alternatives will be the subject of the next public event scheduled for August 17.

To ensure a thorough review and to fully consider community and stakeholder input, the team closely evaluated the types of aircraft and the number of aircraft operations forecasted for Lake Elmo Airport. As a result of input provided by the public and Community Engagement Panel members, we’ve expanded the range of alternatives being considered for both Runway 14/32 and 30th Street North.

The project team has also been researching and collecting data regarding environmental resources that may be affected by the project. This includes field surveys of wetlands, plant species, historical structures, and other resources in areas around the airport. This information will be used to compare alternatives to ensure the implementation of the project avoids or minimizes environmental effects to the greatest extent possible. A broader discussion of the environmental data collected will be the subject of the third public event, tentatively scheduled for November. An updated schedule is available on the project website.

Lake Elmo Airport Environmental Assessment Work in Full Swing

Project Website

www.metroairports.org/General-Aviation/Lake-Elmo-Environmental-Assessment.aspx
The Purpose and Need Statement is the foundation of an environmental assessment. It should clearly and concisely explain why a project is being proposed and should be understandable to those unfamiliar with aviation. The purpose is a general statement of over-arching project goals. The need is a more detailed statement describing problems that would be solved by implementing the project.

**The PURPOSE of the proposed improvements:**

1. Address and attend to the airport's failing, end-of-life infrastructure;
2. Enhance safety for airport users and neighbors; and
3. Improve facilities for the types of aircraft using, and expected to use, the airport.

**The NEED for the proposed improvements:**

1. Existing runway pavements are deteriorating and, for safety's sake, need to be replaced.
2. The primary runway has several incompatible land uses within its runway protection zones (RPZs), including a railroad and two public roads.
3. The existing runway lengths do not meet the needs of current aircraft operators and their aircraft.
4. The airport lacks the most current navigational technology for landing aircraft.

**PURPOSE OF THE PROJECT:**

Ensuring Safety and Utility for one of Minnesota’s Busiest Airports

According to the Minnesota Department of Transportation (MnDOT), Lake Elmo Airport is one of 83 intermediate airports in the state. Of those, Lake Elmo is the fourth busiest and ranks second for the number of aircraft that call it home. However, when ranked by primary runway length, Lake Elmo is at the back of the pack.

At 2,849 feet, only four intermediate airports have shorter primary runways than that of Lake Elmo's. The average length of Minnesota primary runways at intermediate airports is 3,654 feet—805 feet longer than Lake Elmo’s. As one pilot told us, regarding the proposed runway length, it’s the difference between an extremely short runway and just a short runway.

Undoubtedly, some airport neighbors have expressed concern about a longer runway (3,500 feet total) attracting larger jet aircraft, which don't currently operate at the airport. In reality, nearly all jet aircraft need significantly more than 3,500 feet to safely and efficiently take off and land. Lake Elmo’s primary runway—at 3,500 feet—has been designed for propeller-driven airplanes that weigh less than 12,500 pounds and have fewer than 10 passenger seats—the same class of aircraft using the airport today.

The graphic on the next page shows the required runway lengths at 60 percent and 90 percent useful load. Useful load is one way to measure how safely and effectively an aircraft can operate on a specific runway length in various weather conditions. The allowable useful load represents the number of passengers and weight of cargo a plane can carry while still operating safely. Fuel on board is also part of the useful load equation, which directly affects how far an aircraft can travel. Useful loads below 60 percent severely limit an aircraft’s ability to fulfill its purpose.

As the graphic shows, larger jet aircraft could not safely operate on the proposed extended runway in nearly all scenarios. The ultimate goal of the runway extension is to increase the margin of safety for the aircraft currently operating at the airport.
How a Preferred Alternative is Selected

Environmental reviews typically evaluate more than one scenario—or alternative. In this case, eight alternatives are currently being considered for the primary runway and five alternatives for 30th Street North. After an initial evaluation, a preferred alternative for each will be selected to carry forward. The other alternatives will then be dismissed. Public input is important when determining a preferred alternative. The project’s conformance to FAA design standards and its effect on safety and airport operations are also critical.

30th Street North

A significant concern we heard throughout the long-term comprehensive planning process and this environmental review process is the effect the realignment of 30th Street North will have on travel time and safety. Taking these concerns into consideration, the project team has developed several roadway design options that minimize travel time and maximize safety, while meeting project goals. The road realignment alternatives will be presented at the August 17 public event.

Public Invited to Attend Event – August 17

The next opportunity for the public to learn about and provide input to the Lake Elmo Airport Environmental Assessment will occur on Thursday, August 17 at the Oak-Land Middle School Auditorium. The event begins at 6 p.m. with a presentation at 6:30 p.m. Community members will have an opportunity to ask questions both before the presentation (one on one) or during the question and answer period following the presentation. We would be pleased to have you join us.

Based on feedback received at the May event and from the Community Engagement Panel, we are making some changes for the second public event. The focus of the evening will be to explain the Purpose and Need for the proposed improvements and introduce the alternative scenarios being considered, including alternatives for primary Runway 14/32 and 30th Street North.

Thursday, August 17, 2017
6 to 8 p.m. (Presentation at 6:30)
Oak-Land Middle School Auditorium
820 Manning Ave. N.
Lake Elmo, MN 55042

Parking is available in the front lot on the east side of the school. The auditorium is just inside the main entrance.

FAQs Updated on Project Website

A number of frequently asked questions and their answers have been added to the project website. These represent many of the questions asked at the May event and those we’ve received online. Examples include:

- How will aircraft noise be evaluated in the Environmental Assessment?
- Can the airport restrict certain types of aircraft or operations to certain times?
- What type of aircraft operate at the airport today? Is this expected to change?
- Why not simply rehabilitate the runway without extending it?
- Will the planned improvements have an impact on the value of my property?
- What are the social and economic benefits of the Lake Elmo Airport?

Visit the Frequently Asked Questions page of the website to browse all questions and answers. Have a question that’s not listed? Submit your question or comment by emailing ContactLakeElmoAirportEA@mspmac.org.
How are environmental effects evaluated?

The FAA establishes thresholds of significant effects for many of the environmental categories. Projects funded fully or in part by the FAA that result in effects at or above these thresholds must either reduce effects below threshold levels or be evaluated further. Since thresholds do not exist for all environmental categories, the FAA has also established factors that should be considered when evaluating the context and intensity of potential environmental effects. For example, the FAA has specific quantitative criteria establishing whether noise effects associated with a project are considered significant (a threshold), while visual effects are evaluated more qualitatively based on the degree to which the project would create annoyance, interfere with normal activities, and affect the visual character of the area (a factor). After all relevant thresholds and factors have been considered, the FAA is responsible for taking action on the environmental document and determining whether the proposed changes to the airport would lead to significant environmental effects.

It is important to note that only environmental effects that meet the FAA’s definition of a *significant impact* would require further action.
Anticipated EA/EAW Project Timeline

1. **Is the environmental category relevant to the proposed development?**

   - **YES**
   - **NO**
     - No Further Analysis Required

2. **Are effects "significant" based on FAA-established thresholds and factors?**

   - **YES**
   - **NO**
     - No Further Analysis Required

### Environmental Effects Evaluation Process

#### What environmental categories have been evaluated?

The National Environmental Policy Act (NEPA), which governs this evaluation process, covers 14 environmental categories, including:

- Air Quality
- Biological Resources (including fish, wildlife, and plants)
- Climate
- Coastal Resources
- Department of Transportation Act, Section 4(f)
- Farmlands
- Hazardous Materials, Solid Waste, and Pollution Prevention
- Historic, Architectural, Archeological, and Cultural Resources
- Land Use
- Natural Resources and Energy Supply
- Noise and Compatible Land Use
- Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety
- Visual Effects (including light emissions)
- Water Resources (including wetlands, floodplains, surface waters, groundwater, and wild and scenic rivers)

Of these 14 categories, five required minimal review based on FAA guidance and therefore will not be evaluated in detail. The environmental review document will include a detailed analysis for the remaining nine categories.

Thus far, members of the public have expressed concerns related to Land Use, Noise, Visual Effects (including airfield lighting) and Water Resources. Following is a summary of the environmental review results within these areas. Results for the remaining categories will be included in the draft environmental review document, which will be published in early 2018 for public comment.

#### Land Use

The primary concerns surrounding land use include residential, ground transportation and wildlife attractants. The FAA has not established thresholds or factors of significance to consider for land use impacts. The FAA typically looks to the results of other related categories to determine whether there is a significant impact within the Land Use category. For instance, effects to public parks, historical sites and farmlands are established under other environmental categories, and may also be considered effects within the general land use category.

#### Residential Land Uses

The State of Minnesota has established model safety zones for land surrounding airports. The intent is to restrict land uses that could be hazardous to airport operations and to protect the safety and property of people on the ground. While zoning regulations are not currently in effect at Lake Elmo Airport, the Minnesota Department of Transportation (MnDOT) recommends they be adopted by communities within close proximity to an airport. The Metropolitan Airports Commission (MAC) will convene a Joint Airport Zoning Board (JAZB) prior to completion of the environmental process consistent with Minnesota state statutes. The process will consider public input during development of an airport zoning ordinance. This process could result in a zoning ordinance recommendation to the MnDOT Office of Aeronautics that deviates from the state's model zoning ordinance.

Until then, the environmental document will use the state's model zoning ordinance to evaluate the environmental effects. There are two safety zones in the state's model ordinance: Safety Zone A generally prevents the erection of new structures while Safety Zone B generally prevents high-density residential development. When considering the airport's proposed development, five houses would end up in the state's model Zone A and 20 houses in the state's model Zone B.

### Ground Transportation Land Uses

The project team also completed a focused study on the realignment of 30th Street North to determine if the proposed changes would have adverse impacts to traffic safety and efficiency, as well as emergency response. This included reviewing existing traffic data and emergency routes, analyzing traffic counts and forecasts, and computing and documenting emergency response times. The project team then explored alternate roadway configurations meant to minimize travel time and maximize safety — two concerns identified by the community as important factors when evaluating alternatives.

In August, the team presented several roadway design options to the Community Engagement Panel (CEP), all of which improved upon the safety and efficiency of the preferred alternative identified in the Long-Term Comprehensive Plan. Since the CEP did not unanimously support any of the alternate options, the original configuration has been retained and used for the environmental effects evaluation.

The proposed design of the realigned section of road can accommodate the forecasted number and type of vehicles. The realignment will slightly increase average travel time along 30th Street North—by approximately 46 seconds in either direction.

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**Proposed 30th Street North Realignment Corridor**

For more detail, see the Stakeholder Engagement Plan on the project website. Schedule is subject to change. Any significant schedule updates will be published on the project website and distributed to e-news subscribers, as appropriate.
**Wildlife Attractants**
Land uses that attract wildlife, such as refuges, landfills, and lakes, can present hazards to aircraft operations. The proposed development does not create any new wildlife attractants at Lake Elmo Airport. In fact, the reduction in agricultural farmland and the on-airport tree removal associated with the proposed development is expected to reduce wildlife attractants on the airport.

**Land Use Conclusion**
Based on the results of the analysis for this category, there are no FAA-defined significant land use effects associated with the proposed airport development; however, under the no-action alternative, 30th Street North, Manning Avenue and the railroad would remain in the primary runway’s protection zones, which would be considered incompatible by FAA design standards.

**Noise**
Noise contours delineate areas on and surrounding an airport that experience different average noise levels associated with an airport’s aircraft activity. These contours are based on an FAA-approved program that uses a myriad of data inputs to calculate the results. The contours, however, do not depict specific flight paths or the loudness of individual aircraft operations.

The process of calculating the average noise level is called “noise modeling.” The result is a metric that describes aircraft noise in annual Day-Night Average Sound Level (DNL). The FAA considers an increase of 1.5 DNL or above significant when applied to noise-sensitive areas—like residential homes—that are located within the 65 DNL contour. In the case of Lake Elmo Airport, the project team modeled the forecasted change in DNL that would result from implementing the proposed development at the airport and compared it with the noise levels that would occur if no development were to occur (the no-action alternative) for the same timeframe. Based on both existing and 2025 forecast operations, the results show that the 65 DNL contour is contained entirely on airport property in both scenarios. This means that there are no impacts—either now or in 2025—to noise-sensitive areas within the 65 DNL contour, and therefore no mitigation would be required. A 60 DNL contour was developed for informational purposes, but is also entirely contained on airport property in the 2025 proposed development scenario.

**Water Resources**
Water resource effects associated with the proposed development include filling approximately two acres of wetlands on airport property (including less than one-tenth of an acre within a mapped floodplain), and adding a net increase of approximately 550,000 square feet of impervious surface at the airport as a result of the proposed runway, taxiway and road pavement. The team expects that the wetland effects will require the MAC to replace those acres elsewhere at a 2:1 ratio. It is most likely to take the form of credits purchased from a wetland bank (a site where wetlands are restored, created or enhanced for the purpose of providing compensatory mitigation for unavoidable impacts associated with projects located elsewhere) in the east central Minnesota region. At the airport, the stormwater effects will require site-specific drainage controls and implementation of best management practices. The groundwater beneath the airport is not expected to be affected or disturbed by the project since it is 50 feet underground.

**Visual Effects (including airfield lighting)**
There are no federal standards that specifically define the significance of airfield lighting effects; however, according to the FAA, location and use of lighting systems should be considered in environmental reviews. The lighting components of the proposed development include relocating and extending the existing primary runway lights and installing new lights on the crosswind runway. Some of these lights will be closer to residential areas; however, they will only be activated at full brightness when pilots are approaching and departing the airport. This scenario would typically occur only during nighttime or inclement weather operations, which historically accounts for about 15 percent of aircraft operations. The project team is considering various strategies for shielding the lights from the airport’s neighbors.

**What does all this mean?**
The results of the environmental analysis indicate that there are no substantial effects in any single environmental category that cannot be mitigated. Neither permanent adverse nor significant environmental effects are expected with the proposed development at Lake Elmo Airport. That being said, efforts will be taken, where feasible, to avoid or reduce environmental effects. The next step in the process is to complete the draft environmental review document and publish it for public review. A public hearing will then be held in Spring 2018 to take public comments on the document. All comments received during the comment period will be included and responded to in the final environmental review document.
Lake Elmo Airport EA/EAW
Community Engagement Panel
Meeting Documentation

The following pages contain agendas, minutes, sign-in sheets, and presentation slides from CEP meetings held on the following dates:

- February 21, 2017
- May 25, 2017
- August 8, 2017
- October 19, 2017
Lake Elmo Airport
Community Engagement Panel
Meeting #1
February 21, 2017
6:30 P.M.

Agenda

1. Introductions
2. MAC Purpose & Mission
3. Recap – Long-Term Comprehensive Plan (LTCP)
4. Environmental Process Overview
5. Stakeholder Engagement Plan
6. CEP Guidelines
7. Discussion/Questions
LAKE ELMO AIRPORT FEDERAL EA / STATE EAW

Community Engagement Panel
Meeting #1 Minutes
Lake Elmo Public Library
February 21, 2017
6:30 P.M.

Panel Attendees
John Renwick  
Marlon Gunderson  
Keith Bergmann  
Mary Vierling  
Dave Schultz  
Stephen Buckingham  
Kent Grandlienard  
Ann Pung-Terwedo  
Chad Leqve  
Neil Ralston

Representing
Airport Tenant/User  
Airport Tenant/User and City of Lake Elmo Resident  
City of Lake Elmo Resident  
West Lakeland Township Resident  
West Lakeland Township Supervisor  
Baytown Township Resident  
Baytown Township Supervisor  
Washington County Public Works Planner  
Metropolitan Airports Commission Director of Environment  
Metropolitan Airports Commission Airport Planner

Other Attendees
Dana Nelson  
Joe Harris  
Melissa Scovronski  
Brad Juffer  
Evan Barrett  
Laura Morland  
Colleen Bosold

Representing
Metropolitan Airports Commission  
Metropolitan Airports Commission  
Metropolitan Airports Commission  
Metropolitan Airports Commission  
Mead & Hunt  
Mead & Hunt  
Mead & Hunt

Absent Panel Members
Stephen Wensman  
Robin Anthony  
Michael Madigan

Representing
City of Lake Elmo Planning Director  
Greater Stillwater Chamber of Commerce  
MAC Commissioner District F

(Sign in sheet attached along with presentation and meeting materials distributed)

The attached report represents this writer's interpretation of items discussed during the meeting. Any corrections or additional information should be brought to our attention for clarification.
The purpose of the meeting was to:

- Provide background information on the environmental process and the stakeholder engagement plan for proposed airfield improvements at Lake Elmo Airport.
- Prepare community engagement panel (CEP) members to be the point of contact for information sharing, both to and from the community and MAC, and to respond to inquiries from their constituent groups.

Items discussed were as follows:

After introduction of participants, Chad Leqve provided an overview on the MAC’s purpose and mission, as well as the primary role of Lake Elmo Airport; Neil Ralston provided a recap of the Lake Elmo Airport Long-Term Comprehensive Plan; Evan Barrett provided an overview of the environmental process; and Chad Leqve concluded with an overview of the stakeholder engagement plan, a discussion of CEP guidelines and general Q&A as described below.

A CEP member asked about airport runway lighting – whether it is generally ground lighting, whether the lights are always on or only while in use, and whether there are any plans to change what currently exists. Chad Leqve answered that the Airport currently has steady-burning lights along the runway edges and strobe runway end identifier lights (REILs). The runway edge lights are pre-set to low intensity, but can be increased in intensity by pilot remote control. The REILs are pre-set to remain off unless activated by pilot remote control. The Airport also has a rotating beacon, which is always on. There are no plans to change the character of the lighting at the Airport as part of the project.

Stephen Buckingham asked about the frequency of the CEP meetings. During his presentation, Chad Leqve stated that the CEP meetings will take place after each of the four public milestone events. Mr. Buckingham asked whether this statement about meeting frequency constituted a change from the project schedule in the Stakeholder Engagement Plan, which shows six CEP meetings held bi-monthly starting in May. Evan Barrett confirmed that the CEP meetings will be held once every other month, starting in May, as shown in the project schedule. Four of the CEP meetings will occur after a public milestone event, and two additional CEP meetings will be held that do not occur following public milestone events.

Dave Schultz asked if the Township could put project information and updates on its own website. Melissa Scovronski answered that they could include a link to the MAC project website and possibly a sign-up for the E-news subscription, which will also be available on the project website.

A CEP member asked if City of Lake Elmo officials will be represented on the CEP. Chad Leqve answered yes, but that the City of Lake Elmo Planning Director was unable to make it to tonight’s meeting, as were the MAC Commissioner and Greater Stillwater Chamber of Commerce representatives.

Kent Grandlienard offered the Baytown Township community building for future meetings, possibly the public meetings for which a larger space is needed. A CEP member asked when and where the first public meeting will be held. Evan Barrett answered that it is shown in the project schedule for late April or early May. The exact date, time and location have not yet been set, but will be publicized at least three weeks in advance of the meeting.

Mary Vierling commented that the CEP composition seems unbalanced as she represents over 200 constituents who have concerns about the potential safety and community effects of the project. Chad
Leqve explained the rationale for the CEP’s composition and stated the intent of convening the CEP is to bring a cross section of stakeholder voices to the table. He also mentioned that the CEP is advisory and, because there will be no roll call votes conducted by the CEP, proportional representation should not be an issue.

Ann Pung-Terwedo commented that the MAC is going a lot farther with the planned stakeholder engagement process than is required, which is above and beyond what she has ever seen, and praised the MAC for that effort.

Mary Vierling expressed concerns that floodwater is up to the road on both sides of 30th Street North and that because there is no sewer/drainage system there is nowhere for the water to go.

Dave Schultz asked when the Valley Branch Watershed District (VBWD) would be involved in the process. Chad Leqve responded that there was a separate agency scoping meeting held earlier that day which the VBWD representative attended. The project team received some useful information from the agencies and will coordinate evaluation of effects on water resources with relevant regulatory agencies throughout the process.

Kent Grandlienard asked whether there are exemptions for airports with wetlands at the ends of runways, as the proposed alternative would move the runway end closer to an existing wetland. His understanding was that this is undesirable for safety reasons. He asked further questions about waterfowl and wildlife attractants, and stated that the pond in the new development across Manning Avenue is a significant wildlife attractant. Chad Leqve said that a wildlife hazard assessment will be developed and wildlife hazards will be evaluated during the environmental process in accordance with Federal Aviation Administration (FAA) guidance.

Mary Vierling stated that the Metropolitan Council submitted a comment during the LTCP process mentioning the MAC had 36 acres of wetland on the airport. She asked if it was possible to get an overview of where these wetlands are. Neil Ralston answered that there is a map in the LTCP in Figure 2-10 on Page 2-31 that shows the wetland locations.

A CEP member asked how the environmental review will address affected farmlands. The MAC leases land some of the Airport’s land to farmers and could at any time make a business decision to stop leasing that land. Joe Harris replied that the MAC may need to reduce or eliminate some of the agricultural rentals as part of this project.

A CEP member asked about the LTCP showing a re-routing of County Highway 15 (Manning Avenue) for one of the rejected alternatives. This highway is slated for expansion from two lanes to four lanes. Ann Pung-Terwedo said the highway expansion project is currently planned for some time after 2020.

A CEP member asked whether the Manning Avenue expansion issues played into the decision to move the runway. Neil Ralston said that removing Manning Avenue from the Runway Protection Zone (RPZ) is a benefit of relocating the runway, but is not the impetus for the decision. However the expansion of Manning Avenue will likely trigger FAA review if it is not removed from the RPZ.

A CEP member asked if there was a chance the FAA would not require Manning Avenue to be re-routed if the runway were to remain in its existing location. Neil Ralston answered that it is possible, but it is difficult to predict exactly what the FAA’s response would be in that scenario.
Melissa Scovronski asked if she and her team, which will be designing and managing the project website, could use the CEP for feedback on website materials as they are developed. Chad Leqve and the CEP responded that was a great idea and they would be happy to review materials.

**Next Steps**

Mead & Hunt will finalize the Scope of Work based on feedback received from the CEP and agencies. The CEP will reconvene approximately two weeks after the first public meeting, which will provide an introduction to the environmental process. The MAC intends to schedule these meetings with ample advance notice as described in the Stakeholder Engagement Plan.

The meeting adjourned at approximately 8:00 p.m.
## Participant Sign-In Sheet

<table>
<thead>
<tr>
<th>Name</th>
<th>Address</th>
<th>Phone or email</th>
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</thead>
<tbody>
<tr>
<td>Colleen Bosold</td>
<td>5505 Morgan Ave S. Minneapolis, MN 55419</td>
<td><a href="mailto:renwickj@gmail.com">renwickj@gmail.com</a></td>
</tr>
<tr>
<td>John Renwick</td>
<td>6040 W. 78th St., Mpls MN 55439</td>
<td><a href="mailto:renwickj@gmail.com">renwickj@gmail.com</a></td>
</tr>
<tr>
<td>Joe Harris</td>
<td>6040 W. 78th St., Mpls MN 55439</td>
<td><a href="mailto:joh.harris@mead-hunt.com">joh.harris@mead-hunt.com</a></td>
</tr>
<tr>
<td>Mary Van Acker</td>
<td>2825 NE 19th Ave, Stillwater MN 55082</td>
<td>mary1 inaccessible email</td>
</tr>
<tr>
<td>Dave Schnitz</td>
<td>4900 Northbrook Ave, Stillwater MN 55082</td>
<td><a href="mailto:dschnitz@comcast.net">dschnitz@comcast.net</a></td>
</tr>
<tr>
<td>Kent Vandermark</td>
<td>4477 Northbrook Ave, Stillwater MN 55082</td>
<td><a href="mailto:kent.vandermark@bayouwine.org">kent.vandermark@bayouwine.org</a></td>
</tr>
<tr>
<td>Ann Pooni-Folke</td>
<td>Washington County 18694 30th Street Circle</td>
<td><a href="mailto:annypooni-folke@washingtoncounty.org">annypooni-folke@washingtoncounty.org</a></td>
</tr>
<tr>
<td>Stephen Buckingham</td>
<td>Stillwater (Baytown)</td>
<td><a href="mailto:swi.buckingham@comcast.net">swi.buckingham@comcast.net</a></td>
</tr>
<tr>
<td>Marilyn Blanderson</td>
<td>2986 Lake Elmo Ave</td>
<td><a href="mailto:sondergun@gmail.com">sondergun@gmail.com</a></td>
</tr>
<tr>
<td>Keith Beigun</td>
<td>5833 Lake Elmo Ave</td>
<td><a href="mailto:kekm.Beigun@gmail.com">kekm.Beigun@gmail.com</a></td>
</tr>
<tr>
<td>Brian Juffer</td>
<td>MAC 640 20th Ave</td>
<td><a href="mailto:brianjuffer@comcast.net">brianjuffer@comcast.net</a></td>
</tr>
<tr>
<td>Laura McRorie</td>
<td>Mead &amp; Hunt</td>
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<tr>
<td>Chad, Dana, Melissa, Neil</td>
<td>MAC</td>
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Thank you for your participation!
Lake Elmo Airport
Environmental Assessment (EA)/
Environmental Assessment (EAW) Worksheet

February 21, 2017 – Community Engagement Panel Meeting #1
EA/EAW Process Overview and Stakeholder Engagement Plan
Agenda

• Introductions
• MAC Purpose & Mission
• Recap – Long-Term Comprehensive Plan (LTCP)
• Environmental Process Overview
• Stakeholder Engagement Plan
• CEP Guidelines
• Discussion
Introductions

Community Engagement Panel (CEP)

- City of Lake Elmo (2)
- Baytown Township (2)
- MAC Staff (2)
- Airport Tenants/Users (2)
- Washington County
- Greater Stillwater Chamber of Commerce
- MAC Commissioner
- West Lakeland (2)
Metropolitan Airports Commission

- Public corporation created by Minnesota Legislature
- Owns and operates airports within 35 miles of downtown St. Paul and Minneapolis
- MSP International Airport
- Six general aviation airports
- User-fee based funding
- Limited property taxing authority unused since 1960s
Board Makeup

- Gov. appoints chairman and 12 commissioners (8 metro, 4 outstate)
- Minneapolis and St. Paul mayors each appoint one
Legislative Mandate to Effectively Enable Aviation

Minn. Stat. § 473.602

(1) promote the public welfare and national security; serve public interest, convenience, and necessity; promote air navigation and transportation, international, national, state, and local, in and through this state; promote the efficient, safe, and economical handling of air commerce; assure the inclusion of this state in national and international programs of air transportation; and to those ends to develop the full potentialities of the metropolitan area in this state as an aviation center, and to correlate that area with all aviation facilities in the entire state so as to provide for the most economical and effective use of aeronautic facilities and services in that area;
Lake Elmo Airport

Primary Role of Lake Elmo Airport
- Integral part of the regional Reliever Airport system
- Accommodates Personal, Recreational, and some Business Aviation users
- Design Aircraft is and will continue to be small, propeller driven aircraft with < 10 passenger seats
- Role not expected to change in forecast period
- Only public airport in Washington County

Existing Facility & Activity Level Overview
- ~200 Based Aircraft
- ~26,000 Aircraft Operations
- Airport Context
Long-Term Comprehensive Plan (LTCP)
Planning & Development Process Steps 1 through 11
LTCP: Meeting the Objectives

Planning Objectives
• Addresses failing end-of-life Infrastructure
• Enhance safety
• Improve operational capacity for design aircraft family

Addressing the Objectives: Proposed Project
• Relocate Runway 14/32 by shifting 615 feet to the northeast and extending 3,500 feet, including all necessary grading, clearing, and runway lighting.
• Realign 30th Street North around the new Runway 32 Runway Protection Zone (RPZ) and reconnect to the existing intersection with Neal Avenue.
• Construct a new cross-field taxiway to serve the new Runway 14 end, including taxiway lighting and/or reflectors.
• Convert existing Runway 14/32 to a partial parallel taxiway and construct other taxiways as needed to support the relocated runway, including taxiway lighting and/or reflectors.
• Reconstruct Runway 4/22 and extend to 2,750 feet, including necessary lighting and taxiway connectors.
• Establish a new non-precision approach to Runway 14 end and upgrade existing Runway 4 approach to RNAV (GPS).
Environmental Review
Planning & Development Process
Steps 12 through 14
Environmental Process Overview

- Federal requirements are identified by the National Environmental Policy Act (NEPA) and associated Federal Aviation Administration (FAA) implementation guidance.
- State requirements are identified by the Minnesota Environmental Policy Act (MEPA) and associated Environmental Quality Board (EQB) implementation guidance.
Federal Environmental Process

**Initiate the Planning Process:**
- Develop a Proposal
- Determine Appropriate Level of Environmental Review
- Will the Project Have Significant Environmental Effects?

**YES**

**NO**

- Categorical Exclusion (CATEX)
  - Is the Action outside the Bounds of the Possible CATEX?
  - Are there Extraordinary Circumstances that Merit Further Review?

**Environmental Assessment (EA)**
- Involve the Public to the Extent Practicable
- Publish Draft EA for Public Review & Comment
- Publish Final EA and Make Available to the Public
- Will the Action Have Significant Environmental Effects?

**Environmental Impact Statement (EIS)**
- Issue Notice of Intent (NOI)
- Conduct Public Scoping and Engage the Public
- Publish Draft EIS for Public Review & Comment
- Publish Final EIS and Make Available to the Public
- Federal Agency Signs Record of Decision (ROD)

**STAKEHOLDER ENGAGEMENT**

- **1. Scoping**
- **2. Purpose and Need**
- **3. Alternatives Analysis**
- **4. Affected Environment**
- **5. Environmental Consequences**
- **6. Mitigation**
State Environmental Process

- New paved runways less than 5,000 feet long require an Environmental Assessment Worksheet (EAW) (see Minnesota Rules 4410.4300)
- Because a Federal EA is being completed, it can fulfill the informational requirements of a State EAW (see MR 4410.1300 and 4410.3900)
- For Lake Elmo Airport, the MAC is both the responsible government unit (RGU) and the project proposer (see MR 4410.0500 and 4410.4300)
EA/EAW Supplemental Planning Analysis

• Review & Verify LTCP Aircraft Operations Forecasts
• Review & Verify LTCP Runway Length Analysis
• Review & Verify Preferred Alternative
Purpose and Need

• Purpose and Need Components:
  • Provide the required runway length justification for design aircraft needs.
  • Prevent existing incompatible uses in the Runway 14/32 runway protection zones (RPZs).
  • Replace failing runway and taxiway pavement.
  • Provide adequate runway to taxiway separation.
  • Resolve hangar penetrations to Runway 14/32 transitional surface.
  • Provide adequate and modernized instrument approach capability for users.

“...comments submitted to the Sponsor during the LTCP process regarding the proposed project will be reviewed and integrated into the alternatives analysis as appropriate to resolve community concerns while providing facilities needed to comply with the project objectives.”
Alternatives Analysis

• Compare and evaluate alternatives for meeting the Purpose & Need.
• Alternatives will be developed in sufficient detail to allow an evaluation and comparison in terms of cost, operational and safety factors, and environmental issues.
• Analysis will be completed for all alternatives identified in the LTCP, and rely on information from the LTCP, as well as any refined versions of the preferred alternative developed under the Supplemental Analysis.
Environmental Analysis and Cumulative Impacts

- Affected Environment
- Environmental Considerations:
  - Air Quality
  - Biological Resources (including fish, wildlife, and plants)
  - Climate
  - Coastal Resources
  - Department of Transportation Act, Section 4(f)
  - Farmlands
  - Hazardous Materials, Solid Waste, and Pollution Prevention
  - Historical, Architectural, Archeological, and Cultural Resources
  - Land Use
  - Natural Resources and Energy Supply
  - Noise and Compatible Land Use
  - Socioeconomics, Environmental Justice, and Children’s Environmental Health and Safety
  - Visual Effects (including light emissions)
  - Water Resources (including wetlands, floodplains, surface waters, groundwater, and wild and scenic rivers)

- Cumulative Impacts - The NEPA process requires projects that are connected, cumulative and similar (common timing and geography) be considered. The planning window and geographic limit to consider will be determined during preparation of the EA.
Stakeholder Engagement Plan: Objectives

• The MAC formulated a project-specific stakeholder engagement plan to achieve the following objectives:
  • Strengthen its relationships with stakeholders
  • Foster collaboration
  • Build stakeholder trust and support
  • Proactively identify areas of interest and concern
  • Support and document a thorough and effective process
  • Formalize a system for reaching a wide variety of stakeholders
  • Develop a model for future similar processes
  • Create opportunities for MAC Board members to recognize stakeholder engagement in the EA/EAW process
  • Streamline agency review
Interested Public and Community Engagement Panel (CEP)

- **Interested Public**: Members of the public who have an interest in the EA/EAW have a role to play and a responsibility for its outcome.
- **Community Engagement Panel (CEP)**: The CEP is an advisory board representing major community stakeholder groups that is more closely involved in the EA/EAW project than the public at large.
Community engagement Panel (CEP)

**CEP Role:**
Serves several important functions including:

- Representing a broad range of stakeholder groups in the EA;
- Receiving information about the EA/EAW and sharing it with constituencies;
- Providing input to the EA/EAW as the voice of key stakeholders; and
- Providing technical advice to the M&H Team.
Messaging

Messaging Strategies:

• Use of plain language – minimizing the use of acronyms and technical jargon that would likely be unfamiliar to a public audience
• Providing definitions of unfamiliar or technical terms when used in project messages
• Providing explanations of aviation terms and regulations and airport operations that are relevant to project messages
• Using easy-to-understand graphics, tables and charts in addition to narrative descriptions
• Reviewing public comments received in response to public messaging and providing additional explanation or clarification when needed through follow up outreach.
Outreach Platforms

• In-Person Presentations
• Special presentations for elected officials
• Project Newsletters
• Project Website
• GovDelivery
• Press Releases
Stakeholder Engagement Plan: Public Events & Outreach Platforms

• Public events will be held at four key project milestones:
  • Introduction to the NEPA process
  • Purpose & Need and Alternatives
  • Environmental Effects
  • Draft EA Public Hearing

• Project messaging platforms include the following:
  • Project webpage
  • Monthly project updates and periodic newsletters
  • GovDelivery email subscriber list
  • Press releases
CEP Guidelines

• Acknowledge and respect the opinions and interests of all CEP members at all times
• No formal meeting or voting procedures will be established
• CEP is advisory; MAC retains decision-making authority
• CEP members are encouraged to disseminate project information to their constituent groups and the general public
• CEP members are discouraged from misrepresenting meeting proceedings to their constituent groups, the general public, or the media
• Observers may attend CEP meetings but are asked to refrain from interrupting the proceedings
• Future meetings will be scheduled at least one month in advance and every effort will be made to identify dates and times that work for all CEP members
• MAC’s consultant will take meeting notes for the record, which will be made available on the project website
Discussion/Questions

• CEP Meeting #2 planned for two weeks after first public event (tentatively May 2017)

• Topics for the next meeting will include:
  • A recap of the first public event
  • Initial work on Purpose & Need and Alternatives
Lake Elmo Airport
Federal EA / State EAW
Community Engagement Panel
Meeting #2
May 25, 2017
6:00 P.M.

Agenda

1. Recap – CEP Participants, Role & Guidelines

2. Debrief – May 11th Public Event

3. Recap – Environmental Process

4. Purpose & Need
   a. FAA Guidance
   b. Project Goals & Objectives

5. Range of Alternatives Considered
   a. FAA Guidance
   b. Range of Alternatives Considered
      i. No-Action Alternative
      ii. Primary Runway 14/32 Alternatives
      iii. 30th Street North Realignment Alternatives
      iv. Crosswind Runway 04/22 Alternatives
      v. Approach Upgrade Alternatives
   c. Alternatives to be Carried Forward into the EA
   d. Alternatives Evaluation Criteria

6. Discussion/Questions
LAKE ELMO AIRPORT FEDERAL EA / STATE EAW

Community Engagement Panel
Meeting #2 Minutes
Lake Elmo Public Library
May 25, 2017
6:00 P.M.

Panel Attendees
John Renwick  
Airport Tenant/User  
Marlon Gunderson  
Airport Tenant/User and City of Lake Elmo Resident  
Keith Bergmann  
City of Lake Elmo Resident  
Stephen Wensman  
City of Lake Elmo Planning Director  
Mary Vierling  
West Lakeland Township Resident  
Dave Schultz  
West Lakeland Township Supervisor  
Stephen Buckingham  
Baytown Township Resident  
Ann Pung-Terwedo  
Washington County Public Works Planner  
Chad Leqve  
Metropolitan Airports Commission Director of Environment  
Neil Ralston  
Metropolitan Airports Commission Airport Planner  
Michael Madigan  
MAC Commissioner District F  

Other Attendees
Dana Nelson  
Metropolitan Airports Commission  
Joe Harris  
Metropolitan Airports Commission  
Patrick Hogan  
Metropolitan Airports Commission  
Melissa Scovronski  
Metropolitan Airports Commission  
Brad Juffer  
Metropolitan Airports Commission  
Gary Schmidt  
Metropolitan Airports Commission  
Evan Barrett  
Mead & Hunt  
Colleen Bosold  
Mead & Hunt  

Public Observers
Jonathan Schmelz  
Lake Elmo  
Jim Aronson  
West Lakeland Township  
Jennifer Foreman  
West Lakeland Township  
Ellie B.  
West Lakeland Township  
Mary Ritt  
Baytown Township  
Jack Ritt  
Baytown Township
The purpose of the meeting was to:

- Conduct a debrief of the May 11th public event and get the Community Engagement Panel’s (CEP’s) feedback on what went well and what could be improved for future public events.
- Introduce the Purpose & Need and Alternatives portions of the environmental process, and get feedback from the CEP on the material presented.
- Continue to equip CEP members to be the point of contact for information sharing, both to and from the community and MAC, and to respond to inquiries from their constituent groups.

Items discussed and Q&A were as follows:
Dana Nelson started off the meeting with a recap of the CEP’s role, participants and guidelines. She then shared statistics on the May 11th public event, including number of attendees and written comments as well as a breakdown of the types of comments received, breakdown of attendees by city/township, and common themes of the questions and comments. At that point, she asked the CEP if there were common question/comment themes the group thought were missing from the list based on what they heard and discussions they had at the public event.

John Renwick said he talked to a woman at the public event who was concerned about emergency response times and asked if it made sense to have emergency responders attend a future CEP meeting. Dave Schultz reported there are no fire hydrants in Baytown Township, and that fire trucks have to haul in water from the nearest fire hydrant, which was reported to be a quarter mile west of Manning Avenue in Lake Elmo, meaning they will have to go around the proposed curve shown for some of the 30th Street North realignment alternatives to obtain water. There was some discussion of whether the planned realignment of Stillwater Boulevard would result in hydrants closer to the area in question.
Dana Nelson then asked for feedback and a discussion on the following three items relating to the public meeting:

- What are your thoughts on advanced notification for the meeting, venue/room set-up, and information presented at the meeting?
- Are there opportunities for improvement?
- How do we make it easier for each person to get their question/comment heard during the meeting?

Keith Bergmann said he didn’t know how to get people to ask the real questions that were concerning them, like where does the MAC get the funding for capital improvements. He reported that after the public meeting, in talking to several people, it seemed their biggest concern was the 30th Street North
realignment, but nobody brought that up during the Q&A portion of the public event. He expressed concern that people didn’t voice their honest concerns at the public event.

Stephen Buckingham noted that some of the people were fearful of increased jet traffic and noise and their voices in the discussion were louder than the rest.

Mary Vierling suggested there were so many issues that came up, that people lost focus on their main problem or question.

Keith Bergmann proposed taking the topics of concern and addressing them at the next public meeting.

John Renwick said he thought the one-on-one discussions before and after the formal presentation and Q&A session were the most valuable part of the meeting.

Dana Nelson asked if we should consider lengthening the time at the informational boards for the next public event (but not the length of the overall event). She stated that approximately 55 of the 60 members of the public in attendance signed up to receive the e-news updates for the project.

Dana then explained that the project team will be expanding the FAQs on the project website to respond to the common questions and comments heard during the public event, and provided a list of those new FAQs to be developed (see presentation “Next Steps” slide for list of questions). The group agreed that the list of questions presented were representative of the scope of questions/concerns that were raised by the public.

Dana then turned the meeting over to Evan Barrett, the project manager from Mead & Hunt, which is the consultant in the environmental review process. Evan began the presentation with a recap of the environmental process. He stated that the last time the CEP met, in February, the project was in the scoping phase. He reported we are now in phases 2 and 3, the Purpose & Need and Alternatives Analysis portions of the environmental process. He also went over the project schedule.

Evan then explained what the Purpose & Need are according to FAA guidance, and defined what they are specifically for this project at Lake Elmo Airport. He then went into detail on the four Purpose & Need objectives for Lake Elmo Airport.

While discussing Purpose & Need Objective 2 (minimize incompatible land uses in the RPZs), Neil Ralston added that another objective in relocating Runway 14/32 is to maintain a clear RPZ relative to Washington County’s proposed widening of Manning Avenue from two to four lanes in the next five years. He explained that a roadway expansion would require FAA approval if it were to occur within the RPZ and is, therefore one of the driving factors for relocating the runway.

While discussing Purpose & Need Objective 3 and talking about “useful loads,” a citizen observing the CEP meeting asked Evan to clarify what he meant by “load” and asked if that meant bigger jets/planes. Evan answered that a useful load refers to passengers, cargo, and fuel carried aboard an aircraft, and that jet aircraft requirements were not considered as part of the Purpose & Need for the project. Chad Leqve explained that the useful load numbers represent how effective/useable the current runway length can be given each individual aircraft’s takeoff and landing performance requirements. Chad then talked about the MAC system of airports and how Lake Elmo Airport is an important part of the system for accommodating smaller aircraft.
Evan Barrett then discussed the FAA guidance for the range of alternatives that should be considered, followed by what this means specifically for Lake Elmo Airport in terms of the criteria used to identify reasonable alternatives and the five categories of concepts that will be considered.

Stephen Buckingham asked how many turboprop aircraft are currently based at the airport, and noted they are essentially a jet engine with a propeller. He also asked where they get fuel. Joe Harris and Neil Ralston answered there is one based at the airport, and Neil said it obtains fuel at either Anoka County or St. Paul Downtown airports.

Mary Vierling asked how many helicopters are based at Lake Elmo Airport. Joe Harris said there were two helicopters based at the Airport. A citizen observing the CEP meeting said there are several aircraft that fly low over Lake McDonald and expressed frustration about it.

John Renwick explained to the group that in addition to being on the CEP and a pilot at the airport, he wears several other hats. He’s the Lake Elmo Airport volunteer for the Aircraft Owners and Pilots Association (AOPA) as well as a representative on the MAC Reliever Airports Advisory Council, which meets with the MAC Commissioners to discuss issues and concerns. He offered that he is happy to listen to the concerns of others in the community – not just the tenants – and to see if he can work with the airport tenants to resolve any issues at that level. John also noted that he’s asked the MAC to provide on-airport signage on the airport’s noise abatement policy and procedures.

Dave Schultz expressed frustration about citizen reports regarding aircraft operating loudly and early in the morning. He also noted the airport seems busier than ever in the last few months. He said there’s a twin-engine plane that has flown very low – just above his treetops – and he has called Dana Nelson to report the issue.

A citizen observing the CEP meeting said pilots should adjust the pitch of the propeller to reduce noise.

Keith Bergmann asked why it was important to maintain the existing runway orientations. Evan Barrett answered that the airfield is currently laid out in a way that was most compatible with other airport infrastructure, and it would be more cost-effective to maintain those orientations. He also noted that maintaining the orientations would prevent significant changes to existing aircraft flight patterns near the airport. Neil Ralston also mentioned that the orientations provide optimal wind coverage. John Renwick suggested that the real goal in this respect is to try and use the land the MAC has most effectively. Evan and Neil confirmed that.

Evan Barrett then presented the No-Action Alternative and the five Primary Runway 14/32 Alternatives.

A citizen observing the CEP meeting then asked why it was necessary to have the airport here if there’s an airport in New Richmond that serves bigger aircraft and questioned the sincerity of the MAC’s public outreach efforts. Marlon Gunderson stated that these improvements have been in a master plan since the 1960s. Chad Leqve responded that the MAC is doing its best to find an optimal solution to the needed improvements at Lake Elmo Airport to make the airfield safer. He noted that if you look at the record of discussions on this project, one would see that MAC began with a plan for a 3,900-foot primary runway. When studying it in the recent Long-Term Comprehensive Planning (LTCP) process, the proposed length was reduced to 3,600 feet. After receiving public input as part of the LTCP, the proposed length was further reduced to 3,500 feet. The EA is now looking at an option with a displaced threshold to further consider input from the public. He stated it would be hard to argue that the MAC’s efforts are insincere. However, he acknowledged that it’s unlikely that everyone involved is going to be completely happy at the end of this process.
A citizen observing the CEP meeting voiced concerns about property values decreasing as a result of the airport improvements as he suspects larger aircraft will start using the airport.

John Renwick stated that he doesn’t see that the runway improvements would change the character of the airport and the aircraft that use it.

Evan Barrett then presented the 30th Street North Realignment Alternatives.

Stephen Buckingham expressed safety concerns over the “hairpin curve” on 30th Street North and emergency vehicle response times.

Dave Schultz expressed frustration over the idea of another cul-de-sac in West Lakeland Township as he stated they are difficult to maintain and plow. A citizen observing the CEP meeting added that large trucks are difficult to maneuver around a cul-de-sac. Several people stated they did not like cul-de-sacs or roundabouts, and noted that the postmaster doesn’t like cul-de-sacs, either.

Chad Leqve asked the CEP members if they had a preference on roundabouts versus T-intersections. The general reaction was that it’s a toss-up, and both are bad options. Dave Schultz, Mary Vierling and several citizens observing the CEP meeting expressed that they didn’t like either option.

There was discussion and concern over the proposed curve in the road. Neil Ralston pointed out that 30th Street North already has curves in it at other points in the road.

Mary Vierling pointed out that there’s a grade difference and asked if the grades had been considered in the 30th Street North realignment alternatives. A citizen observing the CEP meeting stated that he believed the elevation change is 24 feet. Neil Ralston confirmed there is a grade difference, and asked Evan Barrett to be sure the project team looks at that when analyzing the alternatives.

Chad Leqve pointed out that the Mead & Hunt team, in developing the alternatives presented tonight, has been looking at the LTCP comments, travel times, and the safety of the roadway design and curves. He expressed concern that the primary issues and concerns identified in the LTCP process were now changing and he asked if MAC and Mead & Hunt were on the right path or trying to hit a moving target. When asked what the true issues and concerns are regarding the 30th Street North realignment, the group’s consensus was travel time and safety of the roadway design. Chad again reiterated that MAC and Mead & Hunt may not be able to make everyone completely happy, but is doing its best to address the public’s primary concerns. Dave Schultz confirmed that yes, we are on the right path, and said that of the three alternatives that were being carried forward (3, 4A and 4B), he would prefer 3 over 4A or 4B.

Neil Ralston asked if there was a benefit to continuous traffic (no stop sign) on 30th Street North as proposed by Alternatives 4A and 4B. Several members of the CEP and citizen observers answered no – that they prefer a stop because they see a stop as being safer.

Marlon Gunderson suggested the idea of Alternative 4B modified to include a through road on Neal Avenue instead of a cul-de-sac. Evan said that the project team would look into this possibility.

A citizen observing the CEP meeting asked about the FAA’s RPZ versus MnDOT’s Clear Zone. Evan Barrett answered that the MnDOT Clear Zone is larger for this particular runway, and that Alternatives 4A and 4B propose “clipping” the outer corners of the MnDOT Clear Zone. Neil Ralston added that MnDOT wants the airport to own the property in the clear zone, which the MAC does in the case of Lake Elmo.
Airport. The observer then questioned whether the RPZ and Clear Zone were hard rules or only guidelines. Neil responded that the FAA has a hard stance regarding roads in the RPZ.

Evan Barrett then presented the Crosswind Runway 04/22 & Instrument Approach Alternatives. In both cases, the supplemental planning analysis did not identify any additional alternatives for these categories, so the preferred alternative from the LTCP would be carried forward for each of these. Evan then recapped the alternatives to be carried forward into the Environmental Assessment, and gave a brief overview of the alternatives evaluation criteria that would be used to determine a preferred alternative for Runway 14/32 and the 30th Street North realignment.

The meeting was then opened to the CEP for general discussion and questions.

A citizen observing the CEP meeting asked if a date had been set yet for the next public event. Evan Barrett answered no, not yet, and stated the meeting will be publicized on the project website and through public notices in the local papers at least three weeks prior to the event.

Dave Schultz asked if he heard correctly, that by the next public event, the project team would have the runway and roadway alternatives whittled down to one with which to move forward? Evan Barrett answered, yes, we would have a preferred alternative for each of those by the next public event, and would be presenting those at that event.

Marlon Gunderson shared his perspective as a pilot, saying that in regards to the proposed runway length, “we’re talking about the difference between a ridiculously short runway versus just a short runway.” He noted the noise impacts on the runway end will be moved south a little bit due to the shift in the traffic pattern.

Keith Bergmann noted that it’s clear the MAC is attempting to mitigate and accommodate noise concerns with the displaced threshold option.

John Renwick explained to the group what a displaced threshold is and noted it seemed like a good idea to him.

Dave Schultz asked Marlon Gunderson what kind of airplane he flies. Marlon answered a ¾-scale Piper Cub and another self-built aircraft. He stated he can only fly this airplane by himself out of this airport.

Dave Schultz stated that the runway flight path is over agricultural land now, but when the runway is shifted, it will be over homes. He then pointed out where there’s a home in the flight path.

Mary Vierling commented that Neal Avenue is a narrower road than 30th Street North.

Dave Schultz noted that the township had recently had a traffic study done on Neal Avenue and 30th Street North, and found that there were over 1,500 cars a day on 30th Street North and over 100 cars per hour at rush hour.

Evan Barrett concluded the meeting by thanking everyone for their time and input, encouraged attendance at the next public event, and said there would be further discussion on alternatives at the public event and next CEP meeting.

The meeting adjourned at approximately 8:00 p.m.
## Participant Sign-In Sheet

<table>
<thead>
<tr>
<th>Name</th>
<th>Representing</th>
<th>Address</th>
<th>Phone or Email</th>
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<tbody>
<tr>
<td>Colleen Bosold</td>
<td>Mead + Hunt</td>
<td>7900 West 78th St. Minneapolis, MN 55439</td>
<td><a href="mailto:Colleen.bosold@meadhunt.com">Colleen.bosold@meadhunt.com</a></td>
</tr>
<tr>
<td>Evan Barrott</td>
<td>Mead + Hunt</td>
<td>II</td>
<td><a href="mailto:evan.barrett@meadhunt.com">evan.barrett@meadhunt.com</a></td>
</tr>
<tr>
<td>John Renwick</td>
<td>Airport tenant</td>
<td>5505 Morgan Ave S Minneapolis 55419</td>
<td><a href="mailto:renwickj@gmail.com">renwickj@gmail.com</a></td>
</tr>
<tr>
<td>Marion Gundrum</td>
<td></td>
<td>2950 Lake Elmo Ave</td>
<td><a href="mailto:mgundrum@comcast.net">mgundrum@comcast.net</a></td>
</tr>
<tr>
<td>Keith Bergmann</td>
<td>City of Lake Elmo</td>
<td>5833 Lake Elmo Ave M.</td>
<td><a href="mailto:keith.bergmann@mn.com">keith.bergmann@mn.com</a></td>
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<tr>
<td>Erik Bunker</td>
<td>West Lakeview</td>
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*Thank you for your participation!*
## Lake Elmo Airport
### Community Engagement Panel
#### Meeting #2
May 25, 2017, 6:00 P.M.

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<th>Name</th>
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<tr>
<td>Stephen Buckingham</td>
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<td>Jonathan Schlitz</td>
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<td>Keith Benjmann</td>
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<td>Stephen Wempen</td>
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<td>Mary Hill</td>
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<td>Jack Smith</td>
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*Thank you for your participation!*
Lake Elmo Airport
Environmental Assessment (EA)/
Environmental Assessment (EAW) Worksheet

May 25, 2017 – Community Engagement Panel Meeting #2
Public Event Debrief and Introduction to Purpose & Need/Alternatives
Agenda

• Recap – CEP Participants, Role, & Guidelines
• Debrief – May 11th Public Event
• Recap – Environmental Process
• Purpose & Need
• Range of Alternatives to be Considered
• Discussion
Community Engagement Panel (CEP)
Recap: Participants & Role

Serves several important functions including:

- Representing a broad range of stakeholder groups in the EA;
- Receiving information about the EA/EAW and sharing it with constituencies;
- Providing input to the EA/EAW as the voice of key stakeholders; and
- Providing technical advice to the M&H Team.
Recap: CEP Guidelines

• Acknowledge and respect the opinions and interests of all CEP members at all times
• No formal meeting or voting procedures will be established
• CEP is advisory; MAC retains decision-making authority
• CEP members are encouraged to disseminate project information to their constituent groups and the general public
• CEP members are discouraged from misrepresenting meeting proceedings to their constituent groups, the general public, or the media
• Observers may attend CEP meetings but are asked to refrain from interrupting the proceedings
• Future meetings will be scheduled at least one month in advance and every effort will be made to identify dates and times that work for all CEP members
• MAC’s consultant will take meeting notes for the record, which will be made available on the project website
May 11th Public Event #1

Overall Meeting Summary

- **Total Attendees**: 60
- **Total Written Comments**: 25
- **Project-Specific Commenters**: 18
- **Meeting Format Commenters**: 7

### Attendees by City/Township
- **West Lakeland Township**: 36%
- **Lake Elmo**: 20%
- **Baytown**: 17%
- **Stillwater**: 12%
- **Other**: 15%
Meeting Format Comments

- Meeting Format Commenters: 7
- Like (71%)
- Suggestions for Improvement (29%): Larger PowerPoint Font (2), Roving Mic
Project-Specific Comments

- Total Project-Specific Commenters: 18
- Opposed (83%)
- Support (6%)
- Neutral (11%)

Opposition Comment Themes

- Noise: 20%
- Data Requests: 12%
- Clear Purpose/Justification for Project: 12%
- Fear of Airpot role change/Use/Fleet Changes: 12%
- 30th Street Funding/Realignment: 10%
- Access Restrictions: 7%
- Light Pollution: 7%
- Proper Value: 7%
- Project Forced on Community: 5%
- Community does not benefit from the airport: 5%
- Safety and Protection for Residents: 2%
Questions/Comment Themes

- Jet operations
- Business operations
- Aircraft noise
- Close the airport
- Property values
- Project costs versus benefits
- 30th Street Realignment/who’s going to maintain
- Taxes MAC pays to the city/county and use of general tax dollars
- MAC/pilots/users don’t care about impacts to the community
- TCE groundwater pollution
- Concern that this project is meant to attract more, bigger aircraft – that this is to grow the airport
Discussion and Feedback

• What are your thoughts on advanced notification for the meeting, venue/room set-up, and information presented at the meeting?

• Are there opportunities for improvement?

• How do we make it easier for each person to get their question/comment heard during the meeting?
Next Steps

• We will be expanding FAQs on the website to respond to the common questions and comments heard throughout the meeting:
  • How will noise be evaluated in the EA?
  • Why do aircraft need to run their engines up?
  • Why do aircraft repeatedly fly over the same areas?
  • What will be done to mitigate aircraft noise?
  • Is the airport able to restrict certain kinds of aircraft or operations to certain times?
  • What is the current make-up of the aircraft at the Airport today? How is it expected to change?
  • What are the impacts to my property value?
  • What are the project costs and funding sources?
  • How will my property taxes be impacted?
  • Who will pay for the reconstruction of 30\textsuperscript{th} Street?
  • Who will be responsible for maintaining 30\textsuperscript{th} Street?
  • How is the airfield lighting going to change?
  • Why can’t the runway be rehabilitated without extending?
Environmental Process Recap

The Environmental Assessment (EA) Project Timeline outlines the stages of the project through various meetings, workshops, and decision points. Here’s a breakdown of the process:

1. **Scoping**
   - Project Kick-Off
   - Purpose & Need
   - Alternatives Analysis
   - Affected Environment
   - Environmental Effects
   - Avoidance, Minimization, and Mitigation Plans
   - Preliminary Federal EA/State EAW Review - FAR & MAC
   - Draft Federal EA/State EAW Public & Agency Review
   - Respond to Comments & Prepare Final Federal EA/State EAW

2. **Stakeholder Engagement**
   - Meetings & Workshops
     - Public Event
     - Community Engagement Panel (CEP) Meeting

3. **Affected Environment**

4. **Environmental Consequences**

5. **Mitigation**

The timeline visually represents the timeline with milestones such as MILESTONE 1, MILESTONE 2, MILESTONE 3, and MILESTONE 4, indicating key points in the project's progression.
Purpose and Need
FAA Guidance
• Explains why a project is being proposed.
• A defensible Purpose and Need statement should be:
  • Clearly written
  • Concise (incorporating any detailed supporting data by reference)
  • Understandable to those unfamiliar with aviation
• The **Purpose** is a general statement of over-arching project goals.
• The **Need** is a more detailed statement describing:
  • Problems to be solved by the project, and
  • Specific objectives for resolving these problems and achieving the project goals.
Purpose and Need
Lake Elmo Airport

The **Purpose** of the project at Lake Elmo Airport is to pursue the following broader goals:

1) Address failing end-of-life infrastructure  
2) Enhance safety for airport users and the general public  
3) Improve facilities for the aircraft currently operating at the airport

The **Need** for the project at Lake Elmo Airport is based on the following specific objectives:

1) Improve the runway pavement conditions  
2) Minimize incompatible land uses in the runway protection zones (RPZs)  
3) Meet runway length needs for existing users  
4) Upgrade the instrument approach procedures
P&N Objective 1: Improve the Runway Pavement Conditions

- Both runways have pavement condition index (PCI) ratings between 41 and 60.
- Pavements in this PCI range usually require major repairs, from overlays to reconstruction.
- Once the PCI falls below 40, reconstruction is typically the only viable alternative.
P&N Objective 2: Minimize Incompatible Land Uses in the RPZs

- Runway 14/32 has the following incompatible land uses within its RPZs:
  - Manning Avenue N
  - 30th Street N
  - Union Pacific Railroad
  - Private property
P&N Objective 3: Meet Runway Length Needs for Existing Users

- Airfield design at Lake Elmo is based on a group of “design aircraft” with the following characteristics:
  - Wingspan less than 79 feet
  - Approach speed less than 121 knots
  - Gross weight less than 12,500 pounds

- Operations by existing airport users are currently limited by the current runway lengths.
  - Runway 14/32 = 2,849 feet
  - Runway 04/22 = 2,496 feet

- Optimum runway lengths are based on the needs of the “design aircraft” for each runway.

### Runway 14/32
**Design Aircraft (less than 12,500 pounds)**

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<tr>
<th>Aircraft Model</th>
<th>Engine Type</th>
<th>Seat Capacity</th>
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<tr>
<td>Beechcraft King Air 200</td>
<td>Multi-Engine Turboprop</td>
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<tr>
<td>Pilatus PC-12</td>
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<td>Cessna 421C</td>
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<td>Socata TBM 700</td>
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<td>Cessna 310R</td>
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### Runway 04/22
**Design Aircraft (less than 5,000 pounds)**

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<tr>
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<td>Lancair IV</td>
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<td>Piper PA-30 Twin Comanche</td>
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<td>Cirrus SR22</td>
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<td>Mooney M20TN</td>
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<td>Piper PA-28 Cherokee</td>
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<tr>
<td>Cessna 172</td>
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P&N Objective 3: Meet Runway Length Needs for Existing Users

- Recommended Runway 14/32 length (3,500 feet) is based on a blend of takeoff, landing, and accelerate stop distance requirements of design aircraft.

- Recommended Runway 04/22 length (2,750 feet) is based on takeoff distance requirements of design aircraft at maximum takeoff weight.

Note: Landing distances adjusted to account for wet/slippery runway conditions, and to allow landing within 70% of the available runway length.
P&N Objective 4: Upgrade the Instrument Approach Procedures

• Instrument approach procedures allow safer access to the airport, especially during inclement weather.

• Upgrading the runway approaches to modern navigational technology will improve airport safety and accessibility.
Range of Alternatives Considered
FAA Guidance

- Alternatives considered should:
  - Represent the range of reasonable alternatives.
  - Provide a clear basis for choice among options.
- No requirement for specific number or range of alternatives.
- Generally, the greater the degree of environmental effects, the wider the range of alternatives that should be considered.
- An EA may limit alternatives to the proposed action and no action if there are no conflicts concerning alternative uses of available resources.
- A preferred alternative should be identified by the EA.
- The EA should briefly explain why certain alternatives were eliminated from further study.
Range of Alternatives Considered
Lake Elmo Airport

• Criteria used to identify reasonable alternatives at Lake Elmo include:
  • Maintain Runway 14/32 and Runway 04/22 orientations
  • Avoid or minimize land acquisition
  • Avoid or minimize changes to airport use and aircraft flight patterns

• Five categories of alternative concepts will be considered by the EA:
  • No-Action Alternative
  • Primary Runway 14/32 Alternatives
  • 30th Street North Realignment Alternatives
  • Crosswind Runway 04/22 Alternatives
  • Instrument Approach Alternatives
No-Action Alternative

- Must be carried forward throughout the environmental review for comparison with the preferred alternative.
- Under this scenario, no improvements would be made to the airport.
- The airport would become increasingly unusable due to:
  - Failing pavement,
  - Incompatible land uses in the RPZs,
  - Inadequate runway length, and
  - Outdated/inadequate instrument approaches.
- This alternative does not meet the Purpose & Need.
Primary Runway 14/32 Alternatives

• The LTCP considered five concepts.

• Supplemental planning identified three additional concepts.
Primary Runway 14/32 Alternatives

Figure 5-3: Alternative B Layout

Figure ES-5: Alternative B1 (Final Preferred Alternative)

Figure 5-4: Alternative C Layout
Primary Runway 14/32 Alternatives
Primary Runway 14/32 Alternatives

Of the eight Runway 14/32 concepts, only four meet the Purpose & Need.

- Alternative B
- Alternative B1
- Alternative B2
- Alternative D
30th Street North Realignment Alternatives

• The LTCP considered three concepts.
• Supplemental planning identified two additional concepts.
30th Street North Realignment Alternatives

• Alternatives 4A & 4B are modified hybrid versions of Alternatives 2 & 3.
Crosswind Runway 04/22 & Instrument Approach Alternatives

• Crosswind Runway 04/22 LTCP Alternatives
  • Base Case Alternative (reconstruct only) – does not meet Purpose & Need
  • Preferred Alternative: Extend Runway 04/22 by 254 feet northeast

• Instrument Approach LTCP Alternatives
  • Preferred Alternative: Instrument Approach Upgrades

• Supplemental planning did not identify any additional alternatives for these categories.
Alternatives to be Carried Forward into the EA
Lake Elmo Airport

• No-Action Alternative

• Primary Runway 14/32
  • Alternatives B, B1, B2, & D

• 30th Street North Realignment
  • Alternatives 3, 4A, & 4B

• Crosswind Runway 04/22
  • Preferred Alternative from LTCP

• Instrument Approach
  • Preferred Alternative from LTCP
Alternatives Evaluation Criteria
Lake Elmo Airport

Evaluation criteria to be used in determining preferred alternatives for Runway 14/32 and 30th Street North realignment:

1) Purpose & Need
2) Practicability Factors
   a) Financial factors
   b) Operational factors
   c) Logistical factors
3) Environmental Factors
   a) Wetlands
   b) Tree Removal
   c) Wildlife
   d) Aircraft Noise
   e) Social Effects
   f) Private Land Uses
   g) Other Unique Effects

Note: This is not a comprehensive list of environmental analysis categories required under Federal and State regulations. A more comprehensive analysis of environmental effects will be completed for the no-action and preferred alternatives.
Discussion/Questions

• CEP Meeting #3 planned for two weeks after second public event (tentatively July 2017)

• Topics for the next meeting will include:
  • A recap of the second public event
  • More on alternatives analysis
  • Initial work on Affected Environment and Environmental Consequences
Lake Elmo Airport
Federal EA / State EAW
Community Engagement Panel
Meeting #3
August 8, 2017
6:00 P.M.

Agenda

1. Proposed public event format changes

2. Efforts to address stakeholder input received at May meetings
   a. Updated frequently asked questions (FAQ) posted to website
   b. Baseline and forecast aircraft operations
   c. 30th Street North design alternatives
   d. Project schedule update

3. Recap – Purpose and Need

4. Alternatives evaluation process overview
   a. No-Action Alternative
   b. Primary Runway 14/32
   c. 30th Street North
   d. Crosswind Runway 04/22
   e. Instrument Approach Procedures

5. Identification of Preferred Alternatives

6. Panel Discussion

7. 10-Minute Comment Period
LAKE ELMO AIRPORT FEDERAL EA / STATE EAW

Community Engagement Panel
Meeting #3 Minutes
Baytown Community Center
August 8, 2017
6:00 P.M.

Panel Attendees Representing
John Renwick Airport Tenant/User
Marlon Gunderson Airport Tenant/User and City of Lake Elmo Resident
Mary Vierling West Lakeland Township Resident
Dave Schultz West Lakeland Township Supervisor
Kent Grandlienard Baytown Township Supervisor
Stephen Buckingham Baytown Township Resident
Ann Pung-Terwedo Washington County Public Works Planner
Chad Leqve Metropolitan Airports Commission Director of Environment
Neil Ralston Metropolitan Airports Commission Airport Planner
Michael Madigan MAC Commissioner District F

Other Attendees Representing
Dana Nelson Metropolitan Airports Commission
Joe Harris Metropolitan Airports Commission
Brad Juffer Metropolitan Airports Commission
Evan Barrett Mead & Hunt
Stephanie Ward Mead & Hunt
Chris Rossmiller Mead & Hunt
Robert Sims Mead & Hunt

Public Observers Resident of
Alison Griffin Minneapolis
Tom Vierling West Lakeland Township
Jennifer Foreman West Lakeland Township
Jim Aronson West Lakeland Township
Laura Bracklein West Lakeland Township
Carl Bracklein West Lakeland Township
Molly Olson West Lakeland Township
Laura Kaschmitter West Lakeland Township
Mick Kaschmitter West Lakeland Township

August 8, 2017

Environmental Assessment | Lake Elmo Airport
The attached report represents this writer’s interpretation of items discussed during the meeting. Any corrections or additional information should be brought to our attention for clarification.

The purpose of the meeting was to:

- Conduct a debrief on the efforts to address stakeholder input received at May meetings.
- Present the alternatives evaluation process and get feedback from the CEP on the material presented.
- Continue to equip CEP members to be the point of contact for information sharing, both to and from the community and MAC, and to respond to inquiries from their constituent groups.

The presentation was as follows:

Evan Barrett opened the meeting by welcoming everyone, reviewing the agenda and explaining the format for the meeting. He proposed that the presentation take place first followed by CEP comments and questions, and then a ten-minute public comment period would take place at the end of the meeting. The CEP agreed to the proposed format.

Dana Nelson explained the new format proposed for the next public meeting. Changes include a local consultant hired to act as a facilitator; non-verbal options for the public to express their concerns; and changes to the question and answer session. Dana also mentioned the FAQs on the website were updated to reflect recent questions and concerns from the public and provided the CEP with the FAQ document. She then asked for any concerns or other ideas. Upon receiving no responses from the CEP, she turned the meeting back over to Evan Barrett.

Evan Barrett provided a review of baseline and forecast aircraft operations by aircraft category, the method of collecting data through the MAC Noise and Operations Monitoring System (MACNOMS), and how the preferred alternative should meet existing and anticipated aviation demand.

Evan then discussed efforts to respond to stakeholder concerns about the 30th Street North realignment, including coordinating with the Baytown fire chief to review emergency response considerations and meeting with West Lakeland Township CEP members and homeowners most affected by new roadway alternatives.

Kent Grandlienard asked about the direction of fire response shown in the alternative. He believed fire response would not approach from the west. Evan Barrett stated that there are several different scenarios for fire response and, depending on who responded, they may come from different directions. Neil Ralston also mentioned that water shuttles to the nearest hydrant may necessitate trucks going to and approaching from the west, and fire response to the airport itself would require Bayport Fire
Department to use the realigned portion of 30th Street North. Kent agreed that the direction of approach would depend on who was responding.

Evan Barrett discussed the project team’s effort to evaluate alternate designs for 30th Street North to address the primary concerns from the CEP and the community, which included increased travel time, safety and project cost. Evan said based on the CEP response at its May meeting, the alternatives that included a cul-de-sac and potential round-about will not be considered further.

Evan Barrett then reviewed the schedule, purpose and need, and the criteria used to determine whether an alternative would be considered further. He emphasized the purpose of the Environmental Assessment (EA) and how the alternatives analysis fits into that process. Evan then introduced the five categories of alternatives that would be discussed: no-action, primary runway, 30th Street North realignment, crosswind runway and instrument approaches. Evan stated that, as the primary runway would impact the rest of the alternatives, it would be examined first and subsequent decisions made on the other alternative categories.

Evan described that the no-action alternative would not involve any improvements beyond maintaining the existing airfield and although it does not meet the purpose and need, the alternative must be carried forward throughout the process for comparison with the preferred alternative. Evan then walked through the evaluation process for the primary runway alternatives using a funnel graphic to depict the criteria used to first identify alternatives, and second, to screen the alternatives based on the purpose and need, compliance with FAA policies, and compatibility with a viable 30th Street North realignment alternative. He then described that the finalist alternatives were compared with one another based on objective practicability and environmental factors. Evan then detailed each of the eight primary runway alternatives and explained the results of the screening process, which identified Alternatives B and B1 as the two alternatives that met the screening criteria.

Ann Pung-Terwedo asked about the implications of the proposed improvements for Manning Avenue. Evan Barrett stated that one of the objectives of the proposed improvements is to clear Manning Avenue from the RPZ. Its planned expansion to four lanes would trigger an RPZ study by FAA. Stephen Buckingham asked how that is justified, as expansion to a four-lane road would not necessarily affect the amount of traffic on the road, but instead development in the area was driving the increase in traffic. Neil Ralston replied that the road expansion was the trigger point for the FAA analysis. Stephen then clarified his point by saying the traffic would occur regardless of the expansion from two to four lanes. Evan Barrett replied that the RPZ policy states any proposed change in the land use within the RPZ would trigger a study.

Dana Nelson explained the concept of a displaced threshold and how it may be used to mitigate aircraft noise. She provided background on the FAA noise policies, including how aircraft noise is measured. She stated that FAA policy considers the 65 Day-Night Average Sound Level (DNL) to be the threshold of significance for noise impacts around airports. Dana discussed how noise impacts were analyzed for Alternative B1 and for the displaced threshold alternative (Alternative B2) and in both scenarios, the 2025 forecast 65 DNL noise contour did not extend beyond airport property. Additionally, the project team calculated the DNL level at the nearest residential area under the extended runway centerline and found that a 200-foot displaced threshold would not change the DNL level in that location and would result in a less than 20-foot difference in altitude for arriving aircraft. Based on the result of this analysis, the FAA would not support Alternative B2. Dana stated that there are specific noise abatement procedures that the MAC encourages pilots to observe. She mentioned the MAC’s voluntary Noise
Abatement Plan for Lake Elmo Airport, the signs that are on the airfield to remind pilots to fly neighborly, and pilot outreach and communication efforts, and concluded by mentioning upcoming events for pilots and members of the community.

Evan Barrett then discussed the finalist alternatives with respect to practicability factors and environmental factors. A summary of the three alternatives was displayed and Evan summarized why Alternative B1 was selected to be carried forward in the environmental evaluation as the preferred alternative.

A review of preferred alternatives for the primary runway, 30th Street North, the crosswind runway and instrument approaches was provided before Evan displayed a composite graphic of all preferred alternatives. He ended the presentation by opening discussion by the CEP.

The CEP discussion occurred as follows:

Stephen Buckingham stated that the purpose and need appeared to be tailored to select a predetermined alternative and expressed concern that the purpose and need does not consider the needs of the community. Kent Grandlienard stated that the alternatives evaluation process for Lake Elmo Airport has been going on for several years and that the alternatives have changed over time based on community involvement. Chad Leqve stated that the team working on the project has looked in detail at multiple options and that if the CEP were to support a specific alternative for 30th Street North, he would advocate for it at the MAC.

John Renwick stated the pavement is at the end of its useful life and that the purpose and need is based on actual issues with the existing airfield, including inadequate runway length and incompatible land uses. Stephen Buckingham reiterated his concern that the purpose and need did not consider impacts to residents. Chad Leqve stated that the runway length has been reduced and roadway alternatives have been examined to account for community concern and that the constraints of the existing site limit what can be done.

Marlon Gunderson stated that 30th Street has no shoulders and cars must share one lane to accommodate bicyclists. He asked if there would be shoulders added to the road to accommodate bicycles. Interest was also expressed for a bike trail. Kent Grandlienard stated that interest in bicycle trails and shoulders have been expressed in the past and are generally desirable but usually cost prohibitive. Evan stated that the new alternatives were designed using appropriate state and local design standards, including expanded shoulders.

Dave Schultz stated that, based on airnav.com, the pavement at Lake Elmo Airport appears to be in good condition and expressed concern that the pavement at Lake Elmo did not require as much repair as expressed by the purpose and need. Evan Barrett stated that airnav.com uses a different set of FAA criteria than the industry-standard engineering pavement condition criteria used by the purpose and need. Chad Leqve asked for clarification whether Dave was concerned that the condition of the Lake Elmo Airport pavements was being misrepresented. Dave confirmed that was his concern. Joe Harris stated the pavement was in poor condition, that frost heaving during the spring was negatively affecting the runways, and that the pavement was at the end of its useful life. Dave Schultz asked if constructing the pavement in place was examined. Evan Barrett stated that this was the no-action alternative. Dave Schultz thanked everyone for the clarification and stated he was glad that this was being considered.
Dana Nelson explained that the presentation at the next public meeting would be like what Evan Barrett presented earlier but welcomed new ideas for the team to consider. Mary Vierling asked if the MAC had control over military operations, as what appear to be military helicopters have conducted late night/early morning operations over residential areas. Kent Grandlienard agreed and said medevac and news helicopters may also be a factor. Dana Nelson explained that the MAC does not control military operations or the flying public in general. Chad Leqve stated that, even though legislative control is not possible, successful coordination with the flying community can and has taken place at MAC airports to reduce aircraft noise.

Dave Schultz asked why the crosswind runway extension had been reduced when compared to Alternative A. Evan Barrett replied that Alternative A considered extending the crosswind runway rather than the primary runway. This would not correct the RPZ issue and that extending the crosswind runway instead of the primary runway would not best meet the purpose and need because it is not aligned with the prevailing winds. He further stated that the shorter crosswind runway length is based on the needs of lighter, less crosswind capable aircraft. Neil Ralston stated that hourly wind data from the airport has only been available since 2008 and with improved data it was confirmed that the primary runway is superior to the crosswind runway in terms of wind coverage. Evan Barrett stated that the primary runway alignment at Lake Elmo Airport is common for airports in this area.

Dave Schultz asked why the property under the RPZ hadn’t been purchased by MAC in the past. Chad Leqve stated that this has been considered in the past but that it was expensive and there were other options available to address the RPZ issue without affecting Manning Avenue. These other options would also allow MAC to be more responsible with their finances. Dana Nelson added that previous plans over several decades proposed realigning the primary runway in this manner within the existing property boundary so that buying additional property within the RPZ would not be required.

Evan Barrett emphasized the importance of feedback from the local community. Members of the CEP and MAC coordinated schedules for the next CEP meeting, selecting a tentative date of October 19th, and the meeting was opened to comments from the public in attendance.

The public comment period occurred as follows:

A citizen stated that she was hearing impaired and microphones should be used to allow everyone to hear the discussion. She asked how many homes were within a two-mile radius when the plan was originally considered in the past but that it was expensive and there were other options available to address the RPZ issue without affecting Manning Avenue. These other options would also allow MAC to be more responsible with their finances. Dana Nelson added that previous plans over several decades proposed realigning the primary runway in this manner within the existing property boundary so that buying additional property within the RPZ would not be required.

Another citizen asked how many cars a day use Manning Avenue. Ann Pung-Terwedo replied that it was over 10,000 but she was unsure of the exact number.

Another citizen stated they heard the airport was unsafe. Michael Madigan stated that nobody was claiming the airport was unsafe but that the longer runway would increase the margin of safety. The citizen stated they must have misheard the current condition of the airport. This citizen then asked why the no-action alternative was referred to as “no action”, as it includes reconstructing the runway. Marlon Gunderson stated that this was because the airport configuration wouldn’t change. Evan Barrett stated that the purpose of the no-action alternative is to provide a baseline to which the other
alternatives should be compared. Dana Nelson and Chad Leqve stated that the term “no-action” comes from the FAA. The same member of the public asked who was paying for the project. Chad Leqve replied that the funds would be generated by users of the airport system.

Dave Schultz discussed runway lengths at surrounding airports and questioned whether Lake Elmo needed the runway length proposed. Neil Ralston and Evan Barrett replied that, when the longest runway is considered for each airport in the intermediate airport category of the state system plan, Lake Elmo’s primary runway is comparatively short. Neil Ralston stated that the goal of the project was to allow the airport to better fulfill its existing role and not to expand the role of the airport.

A citizen stated that they like having the airport in the area, but that the road is already unsafe and introducing a curve in the road will only make it more dangerous. She stated that she often rides her horse along the side of the road and, during the winter, cars will often lose control and end up in the ditch. Evan Barrett stated that the design for each alternative is based on the local and state standards associated with the specific design speeds. Kent Grandlienard agreed this issue has been examined before but a satisfactory change could not be found and drivers should drive more slowly. John Renwick asked if guard rails were planned for the road. Evan Barrett and Chris Rossmiller stated that the road would be super-elevated to assist cars in cornering, appropriate signage would be posted, and other measures would be considered to maximize safety.

A member of the public asked if airport activity has been declining and, if so, why the runway was being extended. Chad Leqve stated that the proposed runway length is based on the type of operations that require a longer runway and not an increase in activity. This citizen then asked if an alternative has already been selected by the MAC regardless of the outcome of public input. Chad Leqve explained this meeting was part of the process to gather public input and then select an alternative based on the criteria presented and input received. This citizen then asked if the MAC has applied for waivers. Neil Ralston stated there is a process to apply for waivers if necessary. This citizen then asked if Mead & Hunt has been hired as an advocate for the MAC. Evan Barrett stated that Mead & Hunt has been hired to assist the MAC through the required state and federal environmental review process for the proposed improvements.

Marlon Gunderson asked if airport activity has decreased. Neil Ralston stated that numbers have decreased in the past but general stability in aircraft operations is expected in the future. Kent Grandlienard stated new aircraft often require longer runway lengths as technology is changing.

Evan Barrett closed the meeting at 8:14 P.M.
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<thead>
<tr>
<th>Name</th>
<th>Address</th>
<th>Phone or email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alison Griffin</td>
<td>513077th Ave N</td>
<td>814.540</td>
</tr>
<tr>
<td></td>
<td>Minneapolis, MN 55417</td>
<td><a href="mailto:alison.griffin@olson.com">alison.griffin@olson.com</a></td>
</tr>
<tr>
<td>Mike Madigan</td>
<td>2919 S. 72nd St.</td>
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<tr>
<td>Tom &amp; Mary Vierling</td>
<td>2825 Neal Ave</td>
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<tr>
<td>Dave Schultz</td>
<td>1440 N 8th St. Ave. WLT</td>
<td></td>
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<tr>
<td>Jennifer Foreman</td>
<td>2724 Neal Ave North</td>
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<tr>
<td>Jim Acorsen</td>
<td>2301 Neal Ave N</td>
<td><a href="mailto:molly@ktolison.com">molly@ktolison.com</a></td>
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<tr>
<td>Carl Haugen Bracken</td>
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<td>Molly K Olson</td>
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<td>Maren Gunderson</td>
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<td>Mick &amp; Laura Horschmitter</td>
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<td>Lori Gergen</td>
<td>2039 Neal Ave N</td>
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<td>Lynette Spitzer</td>
<td>2654 Neal Ave N</td>
<td>651-275-1457</td>
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<td>John Renwick</td>
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Thank you for your participation!
Lake Elmo Airport
Environmental Assessment (EA)/
Environmental Assessment (EAW) Worksheet

August 8, 2017 – Community Engagement Panel Meeting #3
Alternatives Evaluation Process & Identification of Preferred Alternatives
Agenda

• Proposed public event format changes
• Efforts to address stakeholder input
• Recap – Purpose & Need
• Alternatives evaluation process
• Identification of Preferred Alternatives
• Panel discussion
• 10-minute comment period
Proposed Public Event Format Changes

• Use of a facilitator
• Q&A format changes
• Top concerns sticker board at sign-in
• Improve readability of presentations
Efforts to address stakeholder input

- Updated frequently asked questions posted to website
- Baseline and forecast aircraft operations
- 30th Street North design alternatives
- Project schedule update
Baseline and Forecast Aircraft Operations

- 2016 MACNOMS flight tracking system data analyzed to establish baseline for noise analysis
- 25,596 total estimated aircraft operations in 2016 is consistent with the LTCP forecast for 2016
- Based on analysis of aircraft type information in MACNOMS, operations by the different aircraft classes were estimated
- These baseline and forecast operations by aircraft type will be included in the EA/EAW

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<th>2016 Baseline</th>
<th>2025 Forecast (Extended Forecast Scenario)</th>
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<td><strong>Total Operations</strong></td>
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30th Street North Realignment Alternatives

• The LTCP considered three concepts.
• Supplemental planning identified two additional concepts as presented at the May CEP meeting.
30th Street North Design Alternatives

- Met with West Lakeland CEP members and homeowners most affected by new Alternatives 4A & 4B
- Met with Bayport Fire Chief
  - Modeled specific vehicle turning movements for cul-de-sac
  - Identified specific concerns regarding availability of fire hydrants and potential mitigation measures
- Evaluated alternate designs to address three primary concerns expressed by the CEP and community:
  - Estimated construction cost
  - Compared design characteristics
  - Quantified travel time differences
- Based on project cost and initial CEP response, Alternatives 4A & 4B will not be considered further
Project Schedule Update

Note: Schedule updated August 8, 2017. Subject to change.
Recap – Purpose and Need

The **Purpose** of the project at Lake Elmo Airport is to pursue the following broader goals:

1) Address failing end-of-life infrastructure
2) Enhance safety for airport users and the general public
3) Improve facilities for the aircraft currently operating at the airport

The **Need** for the project at Lake Elmo Airport is based on the following specific objectives:

1) Improve the runway pavement conditions
2) Minimize incompatible land uses in the runway protection zones (RPZs)
3) Meet runway length needs for existing users
4) Upgrade the instrument approach procedures
Range of Alternatives Considered

FAA Guidance

• Alternatives considered should:
  • Represent the range of reasonable alternatives.
  • Provide a clear basis for choice among options.

• No requirement for specific number or range of alternatives.

• Generally, the greater the degree of environmental effects, the wider the range of alternatives that should be considered.

• An EA may limit alternatives to the proposed action and no action if there are no conflicts concerning alternative uses of available resources.

• A preferred alternative should be identified by the EA.

• The EA should briefly explain why certain alternatives were eliminated from further study.
Range of Alternatives Considered

• Five categories of alternative concepts will be considered by the EA/EAW:
  • No-Action Alternative
  • Primary Runway 14/32 Alternatives
  • 30th Street North Realignment Alternatives
  • Crosswind Runway 04/22 Alternatives
  • Instrument Approach Alternatives
No-Action Alternative

• Must be carried forward throughout the environmental review for comparison with the preferred alternative.

• Under this scenario, no improvements would be made beyond maintaining the existing airfield configuration.

• This alternative does not meet the Purpose & Need.
Primary Runway 14/32 Alternatives Evaluation Process

A. Criteria for Identifying Range of Alternatives
   - Avoid or minimize changes to airport use and aircraft flight patterns
   - Maintain runway orientations
   - Avoid or minimize land acquisition

B. Criteria for Screening Range of Alternatives
   - Compatible with a viable 30th Street N. realignment alternative
   - Meet the Purpose and Need
   - Conform to FAA policies

C. Criteria for Identifying Preferred Alternative
   - Practicability factors
   - Environmental factors

D. Preferred Alternative

No Action Alternative

For Evaluation Purposes Only
Primary Runway 14/32 Alternatives

• The LTCP considered five concepts.
• Supplemental planning identified three additional concepts.
Primary Runway 14/32 LTCP Alternatives

Figure 5-3: Alternative B Layout

Figure ES-5: Alternative B1 (Final Preferred Alternative)

Figure 5-4: Alternative C Layout
Primary Runway 14/32 Supplemental Alternatives
## Primary Runway 14/32 Alternatives Screening

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<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
FAA Policy for Implementing Displaced Thresholds

- The FAA considers the 65 DNL contour to be the threshold of significance for noise impact around airports.
- The 2025 60-DNL noise contour does not extend off airport property.
- AEDT DNL grid point analysis confirmed no change in DNL levels at the nearest residential area on extended runway centerline with a 300-foot displacement (less than 20-foot difference in altitude).
- Displacing the runway threshold as a noise mitigation tactic at Lake Elmo Airport is not consistent with FAA policy.

Note: 60 DNL shown for informational purposes only.
MAC Ongoing Efforts to Reduce Noise

Voluntary Noise Abatement Plan
• Preferred flight procedures
• Preferred runway use
• Designated maintenance run-up areas
• Nighttime training procedures

Fly Neighborly signs

Pilot Outreach and Resources
• Pilot Briefings
• Pilot Guides

Pilot/Community Events
• Lake Elmo Airport Father’s Day Pancake Breakfast
• Experimental Aircraft Association Chapter 54 events
# Primary Runway 14/32
## Comparison of Finalist Alternatives

<table>
<thead>
<tr>
<th>Criterion</th>
<th>No-Action Alternative</th>
<th>Alternative B</th>
<th>Alternative B1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Construction Cost</strong></td>
<td>$5.4 million</td>
<td>$8.6 million</td>
<td>$8.3 million</td>
</tr>
<tr>
<td><strong>Future Manning Avenue widening will trigger FAA RPZ review</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Wetland Fill Area (approx.)</strong></td>
<td>NA</td>
<td>2.32 acres</td>
<td>1.85 acres</td>
</tr>
<tr>
<td><strong>Wildlife Considerations: RW 32 Threshold to Nearest Wetland (approx.)</strong></td>
<td>400 feet</td>
<td>700 feet</td>
<td>700 feet</td>
</tr>
<tr>
<td><strong>Tree Clearing Area (approx.)</strong></td>
<td>NA</td>
<td>22 acres</td>
<td>20 acres</td>
</tr>
<tr>
<td><strong>Residential Parcels with Structures in Model Safety Zone A</strong></td>
<td>0</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td><strong>Residential Parcels with Structures in Model Safety Zone B</strong></td>
<td>2</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td><strong>Private Properties within 65 DNL in 2025</strong></td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

### Table 3-2: Primary Runway Alternatives Comparison Matrix

<table>
<thead>
<tr>
<th>Practicability Factors</th>
<th>No-Action Alternative</th>
<th>Alternative B</th>
<th>Alternative B1</th>
</tr>
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<tbody>
<tr>
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</tr>
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</tr>
<tr>
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<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>
30th Street North Realignment Alternatives

• The LTCP considered three concepts.

• Supplemental planning identified two additional concepts, which will not be considered further based on project cost and CEP input.

• Alternative 3 will be carried forward as the preferred alternative.
Crosswind Runway 04/22 Alternatives

• LTCP Preferred Alternative: Extend Runway 04/22 by 254 feet northeast

• There are no other alternatives that meet the same criteria used for identifying the range of primary runway alternatives
Instrument Approach Alternatives

• LTCP Preferred Alternative: Upgrade Instrument Approaches
• There are no other alternatives that meet the Purpose & Need Objective #4
Set of Preferred Alternatives

• Based on the preceding, the following alternatives will be carried forward as the preferred alternatives for full environmental review:
  • No-Action Alternative
  • Primary Runway 14/32 = Alternative B1
  • 30th Street North = Alternative 3
  • Crosswind Runway 04/22 = Extend Runway 04/22 by 254 feet northeast
  • Instrument Approaches = Upgrade Instrument Approaches
Discussion/Questions

• CEP Meeting #4 to be held sometime the week of October 16
• Topics for the next meeting will include:
  • Debrief of second public event
  • Review full range of environmental impacts associated with the set of preferred alternatives
Lake Elmo Airport  
Federal EA / State EAW  
Community Engagement Panel  
Meeting #4  
October 19, 2017  
6:00 P.M.

Agenda

1. Public Event #2 Debrief

2. Environmental Effects Overview  
   a. Air quality  
   b. Biological resources  
   c. Cultural resources  
   d. Farmlands  
   e. Hazardous materials & solid waste  
   f. Land use  
   g. Noise  
   h. Visual effects  
   i. Water resources  
   j. Cumulative impacts  
   k. Other NEPA categories

3. Next Steps

4. Panel Discussion

5. 10-Minute Comment Period  
   *For guests making a comment, please state your name and address.*
**LAKE ELMO AIRPORT FEDERAL EA / STATE EAW**

Community Engagement Panel

Meeting #4 Minutes

Baytown Community Center
October 19, 2017
6:00 P.M.

<table>
<thead>
<tr>
<th>Panel Attendees</th>
<th>Representing</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Renwick</td>
<td>Airport Tenant/User</td>
</tr>
<tr>
<td>Marlon Gunderson</td>
<td>Airport Tenant/User and City of Lake Elmo Resident</td>
</tr>
<tr>
<td>Mary Vierling</td>
<td>West Lakeland Township Resident</td>
</tr>
<tr>
<td>Dave Schultz</td>
<td>West Lakeland Township Supervisor</td>
</tr>
<tr>
<td>Kent Grandlienard</td>
<td>Baytown Township Supervisor</td>
</tr>
<tr>
<td>Stephen Buckingham</td>
<td>Baytown Township Resident</td>
</tr>
<tr>
<td>Keith Bergmann</td>
<td>City of Lake Elmo Resident</td>
</tr>
<tr>
<td>Ann Pung-Terwedo</td>
<td>Washington County Public Works Planner</td>
</tr>
<tr>
<td>Chad Leqve</td>
<td>Metropolitan Airports Commission Director of Environment</td>
</tr>
<tr>
<td>Neil Ralston</td>
<td>Metropolitan Airports Commission Airport Planner</td>
</tr>
<tr>
<td>Michael Madigan</td>
<td>MAC Commissioner District F</td>
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<table>
<thead>
<tr>
<th>Other Attendees</th>
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<tbody>
<tr>
<td>Dana Nelson</td>
<td>Metropolitan Airports Commission</td>
</tr>
<tr>
<td>Joe Harris</td>
<td>Metropolitan Airports Commission</td>
</tr>
<tr>
<td>Gary Schmidt</td>
<td>Metropolitan Airports Commission</td>
</tr>
<tr>
<td>Patrick Hogan</td>
<td>Metropolitan Airports Commission</td>
</tr>
<tr>
<td>Brad Juffer</td>
<td>Metropolitan Airports Commission</td>
</tr>
<tr>
<td>Evan Barrett</td>
<td>Mead &amp; Hunt</td>
</tr>
<tr>
<td>Colleen Bosold</td>
<td>Mead &amp; Hunt</td>
</tr>
<tr>
<td>Todd Streeter</td>
<td>Community Collaboration</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Public Observers</th>
<th>Resident of</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laura Kaschmitter</td>
<td>West Lakeland Township</td>
</tr>
<tr>
<td>Mick Kaschmitter</td>
<td>West Lakeland Township</td>
</tr>
<tr>
<td>Tom Vierling</td>
<td>West Lakeland Township</td>
</tr>
<tr>
<td>Pat Schultz</td>
<td>West Lakeland Township</td>
</tr>
<tr>
<td>Molly Olson</td>
<td>West Lakeland Township</td>
</tr>
</tbody>
</table>
The purpose of the meeting was to:

- Conduct a debrief of the August 17th public event and get the Community Engagement Panel’s (CEP’s) feedback on what went well and what could be improved for future public events.
- Present the preliminary results of the environmental effects of the proposed development (preferred alternative) and get feedback from the CEP on the material presented to incorporate into the presentation for the upcoming November 6 public event.
- Continue to equip CEP members to be the point of contact for information sharing, both to and from the community and MAC, and to respond to inquiries from their constituent groups.

The presentation was as follows:

A copy of this presentation can be found at: metroairports.org/General-Aviation/Lake-Elmo-Environmental-Assessment/21D-CEP-Meeting-Presentation-Slides-10-19-2017.aspx

Dana Nelson, MAC Environment Department, opened the meeting by welcoming everyone and thanking Kent Grandlienard for allowing the group to use the Baytown Community Center for the CEP meeting. She then reviewed the agenda, saying that she would debrief the second public event, then turn it over to Evan Barrett, Mead & Hunt (MAC’s consultant) Project Manager for the project, who would talk about the environmental effects overview. Evan noted that the team has set up the CEP meetings in a linear fashion to mirror the structure of the environmental review process, and walked through the topics covered so far (February – introduction to NEPA process; May – Purpose & Need and justification for the project; August – Alternatives). He stressed that tonight’s meeting is focused on the environmental effects of the preferred alternative and the results of the analysis completed over the past several months. Dana then continued with the agenda overview, stating the project’s next steps would be discussed next, followed by the Panel discussion and ending with the 10-minute public comment period.

Dana stated about 60 people showed up for the first public event and about 42 for the second. Community members from West Lakeland Township, Baytown Township and Lake Elmo comprised most of the attendees, with others coming from Stillwater, St. Paul, Pine Springs and other communities around the metro area. She noted that 18 written comments were received at the first public event, and only one at the second event. During the first public event, 37 people signed up for the project update email subscription list, with 17 additional signing up during the second event. She said that indicated there were likely new people at the second event that hadn’t been at the first.

Dana showed a slide recapping the agenda for the August 17th meeting. She then talked about some of the new things tried at the second public event and asked the CEP for feedback on how they worked, noting input was desired as the team prepares for the next public event on November 6 at Oak-Land Middle School. The items mentioned were: new venue – Oak-Land Middle School; hard copy agendas and presentation slides – Dana had heard at the meeting that was helpful for people in following along; “Top Concerns” board to facilitate some feedback at the onset of the meeting to bring into the large group discussion and address the primary concern of attendees at that meeting; scrolling FAQ slide.
about the project for the people that entered the auditorium early; facilitated presentation and Q&A; one-on-one engagement session/open house following group Q&A. Dana thanked all the CEP members who attended and helped out at the public event. She then asked for feedback as well as any tools or materials the CEP would like to see from the MAC to help with information-sharing with constituents, neighbors and community members.

Dana asked if the group liked the venue. The general consensus was favorable.

Mary Vierling asked if the format and presentation for the third event would be the same as the second. Dana said that was the plan. The doors will open at 6:00 with a presentation at 6:30. She said the Top Concerns board was not planned for the third event, but noted the plans haven’t been finalized so nothing is set in stone, and reminded the CEP that was part of the purpose of these meetings, so the group can talk about how the previous public event went and what could be done to improve it. As there are still several weeks before the next one, she stated that things can still be adjusted.

Evan asked if the group thought the segmented format of the meeting was effective, noting that was the team’s attempt to respond to previous comments from the CEP for having different opportunities for interaction. Ann Pung-Terwedo asked if they had a lot of people stick around for the one-on-one engagement session after the meeting. Evan responded that a lot of people stayed and asked questions. Ann confirmed that people got their questions answered? Evan said yes. Dana added that she knew at least one person arrived late and so they were able to talk with the project team to catch up on what they missed during that one-on-one time. John Renwick asked if the team learned anything at the one-on-ones? Evan replied that he had learned more about the concerns the community has and where they’re coming from. He couldn’t recall specifics but thought it was worthwhile to hear what people had to say and what questions they had. John said he was just wondering if any lightbulbs came on for anybody. Chad Leqve recalled that a lot of the questions went back to the justification and efficacy of the project. Stephen Buckingham noted that’s nothing new and said we’ve been saying that for two years. Chad responded that he was just noting it was still part of the dialogue. To that point, Chad asked the CEP if they felt there was information that could be shared from discussions in the CEP meetings or things the project team could be doing differently to help better improve the public’s understanding of the answer to that question. Stephen said don’t ask me to help give more understanding because I don’t know the answer to that question; I still don’t think it’s justified.

Chad noted one of the primary goals is to make sure the MAC is being transparent in these discussions, and is respecting people’s positions, understanding they might not be able to change those positions, but are being as transparent and clear as can be in their communications. Chad mentioned the project team has had several individual meetings and discussions with some of the nearby property owners, including those who may be most impacted by some of the 30th Street realignment alternatives, as well as with Molly Olson [West Lakeland Township resident]. He said those have been helpful, and noted Molly brought up a good point about listening and making sure people are feeling heard and that they’re being listened to. Chad reported this was a key takeaway for him from the meeting and expressed interest in any feedback in this area from the CEP.

Dana wrapped up the debrief discussion and invited the CEP to share any additional feedback they think of at any time with her via email or phone. She then turned the presentation over to Evan for the overview of environmental effects.
Evan then reminded the group of the funnel graphic depicting the alternatives evaluation process shown at the last CEP meeting and public meeting and recapped how the team arrived at a preferred alternative. He reminded the group of the no-action alternative (if the MAC were to maintain the current airfield configuration, with no upgrades, changes or expansion), which was located outside of the funnel as it does not meet the project’s Purpose & Need.

Stephen Buckingham asked why the CEP was never given an opportunity to comment on the Purpose & Need in the first place. Evan replied that was the topic of the second CEP meeting in May. Stephen said no, you told us the Purpose & Need at that time; we were not given the chance to have input into that. Evan replied the project team will have a draft environmental document in early 2018 and there will be a public review and comment period, a public hearing, and another CEP meeting after that has been released. Stephen said, no, Evan, you’ve based this entire evaluation on the basis of the Purpose & Need, but the Purpose & Need were established before this group was ever put together and we never had a chance to comment on whether we felt that Purpose & Need were appropriate. Chad Leqve stated that this group had a discussion about the Purpose & Need during the May CEP meeting. Kent Grandlienard said the discussions on the Purpose & Need started over two years ago. Dave Schultz said the Purpose & Need wasn’t clarified or classified as such two years ago. Kent said, but we discussed the cost effectiveness and the money being spent. Stephen said, Evan has put out a set of purposes and needs and has said that any plan they come up with has to satisfy these purposes and needs and those have pretty well defined what has to be the result. Stephen further said that perhaps if we’d had community input into it, there might have been some other purposes and needs that would have been included. Kent said that we [Baytown] had input but there wasn’t much response from the community. He reported that Baytown got one comment between five board members over a one-to-two-year period [noting that the one comment was from Stephen Buckingham’s wife] and two comments in favor of it. He said Baytown didn’t get much public comment, but West Lakeland did, and we had a meeting with the governor. Kent didn’t know what more there was to say on the topic as he felt that there was opportunity for public comment. Stephen said he was talking about something different. You’re talking about a generalized what should we be doing, but when we came into the first meeting of this panel, Evan presented a set of purposes and needs and said whatever we do has to satisfy these, and that was the first time we’d ever seen a specific list of criteria, and we had no opportunity to have input into what should be on that list of purposes and needs. Chad reassured Stephen that during the CEP meeting, when the Purpose & Need was discussed, if there would have been somebody that said we need to talk about these more, we need to have a discussion, the team and CEP would have had that discussion. Stephen asked, but did you suggest that we could do that? It was presented as though it was a done deal. Chad disagreed that was the case. Stephen reported that was the impression that he got at that CEP meeting. Dave added that his recollection was that it was a 2-hour meeting, and the project team took about 1 ¾ of it, leaving about 15 minutes at the end for discussion. He thought what would help is if the no action alternative was included in the Purpose & Need – to maintain the existing footprint as it is today.

Evan Barrett then noted that the MAC had a LTCP process where a lot of these same issues were discussed, and there was a generalized project that came out of that process – the preferred alternative – based on analysis of what the needs are at the airport. Dave Schultz said if you go back to 1966, your need back then was two parallel runways with two crosswind runways; if you’d done that back in 1966 we’d be sitting here today talking about right-sizing this airport and removing two runways, like you’re doing at Crystal. Stephen Buckingham said you keep talking about the needs for the airport and you say
you’re taking into consideration the needs of the surrounding community but we don’t hear anything about that. Evan said the presentation planned for tonight, which is on the environmental effects, is intended to provide transparency in terms of what this project means for this community, what it means for the resources in this community, for the environment and the community itself. That’s what this process is all about. We’ve designed the stakeholder engagement process so we’re talking to the community and providing information about what the effects of the project are, and that’s what we’re here for tonight. The foundation of the environmental assessment is the Purpose & Need, which grows out of the planning process. The planning process determines what those needs are, we took a fresh look at those needs that the MAC had identified and didn’t find anything that was fundamentally changed or should be reconsidered, because the needs were based on real data and real facts. Stephen replied, no, they were based on some data, perhaps some facts, some opinions, but again, it’s only taking into account aviation considerations; it’s not taking into account the surrounding community. Chad Leqve said, but that’s part of what this process is intended to do. Stephen said, but the facility is part of the community. Chad said the environmental review process is structured to meet federal requirements to make sure that the MAC does a couple of different things through the decision process as to what the final action might be. The first is the Purpose & Need – why are we even contemplating changes to this facility? It’s to provide safe, efficient and effective aviation facilities for the people that use it, which we’ve spelled out in the Purpose & Need. Then you look at all the different alternatives and options that we might be able to implement to meet that Purpose & Need. As we evaluate those, we have to look at all the environmental categories that Evan’s going to talk about tonight and see if there are areas that meet a level of significance in terms of impact such that they need to be mitigated – either as a component of the project or as other actions. If there is, is there a way to meet that Purpose & Need without creating that impact in the first place. If you can’t, and the impact is still there, and it’s to a level of significance, then you have to mitigate it. That’s what this process is intended to determine. One of the concerns early on was increased travel time on 30th Street. As we go through this process, clarity of issue is so important. Otherwise it’s like bad information in equals bad product out. Really honing in on the issues from the community is imperative to make sure that community discussions are as productive as they can be. We went back to the travel time issue on 30th Street. That was held up as a big concern, and that’s why we did the extra work we did, had Evan’s team look at if there were any alternatives that moved the needle in the right direction with travel time. We went through the exercise, and at the end of the day decided that the spot we’re at is where we’re going to stay. The other issue that came up last night with Molly Olson was noise. We’re hearing that as a big concern for the community. As we go through this process, we will learn tonight from Evan what the noise impacts are based on the federal criteria and what we have in our toolbox that can help us address it. Realizing that, as an airport, we are heavily regulated, and the way we can use our funds is heavily regulated, sometimes can create a difficult dynamic, but it doesn’t mean that there aren’t things we shouldn’t be doing to reduce that impact. We have a commitment to do that. Clarity of what the real issues are as we have this dialogue is so valuable so that we can do the best job we can to address them as best we can.

Stephen Buckingham said, I’ll reiterate my point, and that is if you look at the Purpose & Need everything in there is oriented toward aviation, not to the surrounding community. There are a lot more people in the surrounding community than there are aviators using that airport. There are a lot more automobiles travelling on 30th Street every day, than there are aviation operations at the airport. And yet, there was no consideration of anything but the aviation considerations. I think one of the needs should have been no rerouting of 30th Street. But that was not considered. Evan Barrett explained that one of the criteria was that there had to be a viable 30th Street realignment alternative that minimizes
environmental impact – that criteria was considered. Stephen further stated, you didn’t give us a chance
to have input into that. Stephen then asked Evan what he considered his job in this to be, asking, is your
job to do an independent environmental study to see what is best for the community or is it to justify
what it is that Chad and Neil want to do? Evan replied that his job is to comply with federal and state
regulations in terms of an environmental review of a project that the MAC has proposed, and to help
them do it in a way that considers community input, and ultimately results in an environmental
document that’s based on fact, solid reasoning and a full consideration in the spirit of the National
Environmental Policy Act. My intention here tonight is to present all the information we’ve collected on
the environment that the airport exists within. We understand the airport exists within a complex
community – West Lakeland Township, Baytown Township, and the City of Lake Elmo – but also in terms
of the environmental resources. Stephen replied that from his perspective, it appears Evan considers his
job to be to justify what it is the MAC has proposed doing.

Chad Leqve asked Stephen what he would like us to do at this point. Stephen replied that personally
he’d like to stop and go back to square one and let us have input into what the Purpose & Need for this
airport redesign are. Mary Vierling said the Purpose & Need were never mentioned in the LTCP. Evan
explained that in the LTCP process, it’s referred to as Facility Requirements. There’s a different set of
terminology used in the planning process versus the NEPA process, but in a lot of ways it’s the same
thing. The Purpose & Need provides the basis for what comes out of the forecasts in the LTCP,
interviews with people who operate at the airport. A lot of the product of the planning process was
distilled into the Purpose & Need statement, but there wasn’t a lot of new information that hadn’t
already been made public. Neil Ralston said you’d find very close alignment between the goals and
objectives that were set out to address in the LTCP and the Purpose & Need that was built for the
environmental process.

Evan thanked Stephen for his comments and reminded the group that any public comments received
during the comment period would be included in and responded to in the final environmental
document. In the interest of time, he then proceeded with the presentation on the environmental
effects. Neil added that he understands that the preferred alternative for many of the community
members is to repave the runway as-is with no expansion, but pointed out the original concept of the
plan was the original alternative with a 3,600-foot runway and a different realignment of 30th Street N.
that we heard was particularly unpopular and of concern. We did adjust the plan based on community
input. I understand it’s not to the full extent of what some of the community wanted, but we tried to
find closer to some middle ground on how do we address some of the biggest community concerns
while still doing what we believe is in the best interest of the aviation facility that we are tasked to
ensure its future prosperity. He said he understands we didn’t go nearly as far as some would like, but
struggles with the statement that there has been no community input.

Evan discussed the method for determining environmental effects. The project team uses the no-action
alternative as the baseline for comparison with the preferred alternative – the difference between the
two are the resulting environmental effects. He reminded the group that the no-action alternative does
not meet the Purpose & Need identified as part of this environmental assessment but is still being
considered throughout the document. He explained that the National Environmental Policy Act (NEPA) is
an umbrella that requires federal agencies to consider the effects of their actions. There are several
special purpose laws under the NEPA umbrella, such as the Clean Air Act or the National Historic
Preservation Act. The FAA identifies significance thresholds and factors for the different NEPA categories
to help determine if an effect (or impact) is considered significant.
Evan then went over the NEPA categories that were evaluated, how each was evaluated and the results of each area:

- **Air Quality** – minimal impacts during construction, but neither operational nor construction emissions would exceed the FAA thresholds
- **Biological Resources** –
  - Approximately 20 acres of on-airport trees will likely need to be removed to clear airspace surfaces associated with the new runway (unlikely FAA will determine this to be a significant impact).
  - Project team identified two federally-listed species (northern long-eared bat, a threatened species, and rusty patched bumblebee, an endangered species); northern long-eared bat may be present in the tree removal areas, so impacts will be avoided and minimized using US Fish & Wildlife/USDOT-recommended measures; the rusty patched bumblebee has documented habitat within 2 ½ miles of the airport, however there is no suitable habitat for this bee in the project impact area.
  - Project team identified a state-listed threatened species (Blanding’s turtle) that may be present in both wetland and upland areas, so impacts will be avoided and minimized using MnDNR-recommended measures.
  - With the avoidance and minimization efforts, there are no significant impacts per NEPA guidelines in this category.
- **Cultural Resources** –
  - Architectural history – Project team identified 13 historic age (50+ years) properties, but 12 were determined not to meet criteria of the National Register of Historic Places (NRHP). The railroad corridor may be eligible for the NRHP but is not affected by the project.
  - Archaeology – Project team identified two sites that may be eligible for NRHP, but they are not affected by the project. The FAA is also conducting nation-to-nation consultation with Native American Tribes as required for NEPA actions under federal law.
  - The FAA makes a determination of the effect based on these findings and sends it to the State Historic Preservation Office for concurrence. We anticipate they will make a determination of “no historic resources affected” in this category.
- **Farmlands** – approximately 43 acres of farmland would be converted permanently to aeronautical use; project team is consulting with US Department of Agriculture to determine significance of effects.
- **Hazardous Materials & Solid Waste** – project team identified 17 known hazardous materials sites within one mile of the Airport (on and surrounding), but none will be affected by the project. Groundwater contamination plume would not be affected due to water table depth.
- **Land Use** –
  - Residential – there will be minor changes to visual flight rules traffic pattern area (where aircraft circle when landing under visual flight rules conditions – this area extends about 1.2 miles off the end of each runway in all directions), but in terms of overall flight patterns over the area, there’s not a lot of difference. With the proposed development, there would be five houses in the current State Model Safety Zone A (typically prevents new structures), and 20 houses in the State’s Model Safety Zone B (typically imposes density restrictions, i.e., prohibiting small lot, high-density development or large
congregations of people). However, the MAC will convene a Joint Airport Zoning Board (JAZB) in the near future consistent with Minnesota Statutes. What comes out of that process is unknown at this time, but the zones could look different than the State’s model safety zones.

- Ground Transportation – design of realigned 30th Street N. can accommodate forecasted traffic volume and type; travel time will increase an average of 46 seconds in either direction; FAA will need to approve new road right-of-way because the road is on airport property.
- Wildlife Attractants – no new wildlife attractants created by project; tree removal and agricultural lease reductions are expected to reduce wildlife attractants on the airport.
- Ann Pung-Terwedo asked if it would be appropriate to talk about the Manning Avenue expansion in relationship to this expansion, that this project won’t have any impact on the expansion of Manning Avenue? Evan replied that he would discuss this when he gets to the Cumulative Impacts slide, as the team is aware that the Manning Avenue expansion is planned for the reasonably foreseeable future.

- Noise – The threshold for significance of noise is a 65-decibel day night average sound level (DNL). The 65 DNL contour is entirely contained on airport property for both the 2025 no-action and preferred alternatives. This is based on detailed modeling of specific aircraft types, specific runway use percentages, day-night splits, a lot of different assumptions and analysis that go into developing these contours that are based on flight tracking data the MAC maintains and supplemented by our own observations. Because the 65 DNL is entirely on airport property, there is no significant impact that needs to be mitigated in terms of aircraft noise associated with the project.
- Visual Effects – there will be lighting systems relocated and new lighting systems installed as part of the project. Evan showed and explained the three different types of lighting systems used on the airfield. Some of the lighting systems will move closer to the residential areas; however, lighting systems will only be fully operational (on and at full brightness) when activated by pilots. John Renwick stated some of these lighting systems are already on the runway today. Evan confirmed yes, on one or two of the runway ends (depending on the system in question), but the project is evaluating adding them to all four runway ends. He mentioned that the runway edge lighting is always on but set to low intensity and pilots can remotely activate those to be brighter when they need them. Keith Bergmann mentioned they are only on at night. Evan confirmed that was correct. The project will relocate and extend primary runway lighting systems, and will add these systems to the crosswind runway, which is currently unlit. Light screening benefits of trees along Neal Ave. are being evaluated. John Renwick said the runway edge lights are on all the time and asked if that was going to change. Evan responded that the facility directory lists them as set to low-intensity. Joe Harris confirmed the runway edge lights are on all the time at low-intensity. John stated there is currently no lighting on the crosswind runway and asked if it was really needed, then commented that he hesitates to ask the question. Evan replied that because that runway does not have any GPS approaches, at least runway edge lighting would be needed to get GPS approaches for the runway. To get the best possible approach procedures, the full lighting systems are typically needed for a full non-precision instrument runway (today it’s a visual runway). John joked that there’s one advantage to not having runway lights, as he’s heard from flight instructors doing tailwheel training: they use the crosswind runway because the student isn’t going to take out a runway light. Neil added
that another benefit to having a lit crosswind runway is that it can be used at night to balance out nighttime operations better, so that the ideal runway for any given wind and weather conditions can be used. Stephen Buckingham asked how many nighttime operations are there? Evan responded the team has estimated about 4 percent of operations are nighttime. There are also about 10 percent that take place during instrument flight rules conditions – when it’s really foggy or low ceilings where sometimes those lights would be keyed on because pilots need them to land. We’ve estimated about 15 percent of operations actually need the lights. The other 85 percent are flying in when it’s clear sky and they don’t need lights at all. Commissioner Madigan asked if the lights have been an issue for the neighbors? Have they been intrusive? Mary Vierling answered the strobes sometimes are intrusive. Dana asked whether Mary meant the airport beacon light (the white and green) or the strobes? Mary and Dave Schultz said the strobes. Dave clarified the white lights – the runway end identifier lights (REILs). Dave then asked if there could be an issue with the lights along Manning Ave. with triggering epileptic seizures with flashing lights and asked if there have been any studies done on that? Evan responded that was a good point but he didn’t know the answer to that question. Mary added that she has astigmatism and noted if she’s coming down Manning Ave. and if those strobes are on, she has to shield her peripheral view while driving. Dave noted it’s worse if you’re on 30th Street. Mary added they shoot right across the fields on 30th right into the homes. Commissioner Madigan asked if it was possible to screen that at all. Evan responded that’s what the team is exploring. Some of the trees identified for removal because they penetrate the airspace surfaces at the end of the runway, we are exploring to see if those trees could be left. The team is also looking at potential other mitigation efforts. Keith Bergmann asked whether the PAPIs and REILs are visible at ground level since they are angled up and aimed into the approach. Joe Harris said they are visible at ground level, but there are tolerance limits that affect where they might be seen from. Evan responded there are certain areas they’re aimed at but the light envelope is sufficiently large so you can see it on the ground. Same with the PAPIs – they’re aimed up but they’re not flashing like the REILs and typically aren’t as much of an issue. Ann Pung-Terwedo asked if the MAC could incorporate some berming or something with the topography to help shield the light effects? Evan responded, potentially. Neil Ralston said he’d be interested to see if there are some shielding options for REILs. He said he doesn’t know the answer to that but he’d be surprised if that issue hasn’t come up somewhere else before and wonders if someone else has found a better way to mitigate that. Evan offered there are fencing options too, depending on if the MAC could put a fence along 30th Street that isn’t an airspace issue, there might be a certain type of fence that also shields the light.

• Water Resources
  o Wetlands – from a regulatory perspective, wetlands are the primary impact associated with the project. About two acres of wetlands will be filled and those will need to be replaced elsewhere at a ratio of 2:1. Coordination is ongoing with the U.S. Army Corps of Engineers, Valley Branch Watershed District and other regulatory agencies for concurrence with boundary determination and jurisdictional determination. Expecting U.S. Army Corps of Engineers to take jurisdiction.
  o Surface Water – net increase of 550,000 square feet of impervious surface, meaning a lot more stormwater coming off the pavements and not infiltrating right where it lands. Structural controls and best management practices will be implemented to meet permit requirements from FAA, Minnesota Pollution Control Agency and Valley Branch
Watershed District. No anticipated significant impacts anticipated in this category that can’t be mitigated.

- **Cumulative Impacts** – looks at things that have happened to date in the vicinity of the airport, things that are happening on and around the airport right now, and reasonably foreseeable development on and around the airport. When you add those all up with the proposed project, what is that incremental impact? That’s what the cumulative impacts are. 1,720 parcels developed since 1964 within two miles of project. Continued urban development expected, along with Manning Ave. expansion from two to four lanes. Because wetlands are the primary impact from a regulatory standpoint associated with the project, the wetland impacts of the project will be compared with wetland impacts and permitted actions associated with past and reasonably foreseeable activity. This category is still being analyzed.

- **Other NEPA Categories**
  - Climate – limited potential for the preferred alternative to affect future climate conditions. There are some greenhouse gas emissions associated with this project but the Climate category does not have a hard significance threshold, so project team didn’t do detailed greenhouse gas emissions analysis further than what was covered in the Air Quality category.
  - Coastal Resources – none present
  - DOT Section 4(f) – this category includes public recreational or cultural resources the DOT has considered to be significant, such as parks, wildlife refuges and historic sites, but none of these resources are present on or adjacent to the airport.
  - Natural Resources and Energy Supply – this category evaluates if there are adequate resources locally to construct and operate the project, such as fill material, asphalt, energy required to move airplanes and construction vehicles, etc. Demand won’t exceed supply so there won’t be an issue in terms of natural resources.
  - Socioeconomics – no expected shifts in population, public service demands or economic activity; no low-income or minority populations in the area adjacent to the airport; no potential disproportionate health or safety risks to children.

Evan then directed the CEP to the table in the back of the slideshow handout summarizing the environmental effects. The items in green are the categories for which the project team has definitively identified the effects/impacts AND any required permitting, mitigation and/or associated actions. He said that, going forward, the discussion will focus in on the items in white, as the analysis for those categories wraps up and it becomes clear what those impacts and associated actions will be.

Evan wrapped up the presentation with next steps:

- **Public Event on November 6** – the presentation material will be similar to what was presented tonight
- **Next two CEP meetings** were planned for November and January, but based on the amount of material the team has to cover, they don’t believe there’s a need for two more meetings prior to the draft environmental document being published, so Evan proposed cancelling the November meeting and holding the next meeting in January. The CEP then compared schedules and settled on January 16th for their next meeting.
• Early 2018 – publish draft EA/EAW for public review and comment

Dave Schultz asked what the timing is between publishing the draft EA/EAW and the public comment period close date. Evan said best practices are usually to put the draft document out for about 45 days, then have the public hearing about 30-days into the comment period, and have another 15 or so days for public comment.

Evan then opened up the meeting for CEP discussion.

The CEP discussion occurred as follows:

Kent Grandlienard said he thought a JAZB already existed. He was on one 10+ years ago with a gentleman named John [from West Lakeland Township Board] and someone from Lake Elmo that met at the Lake Elmo City Hall. Neil verified that he was referring to a Joint Airport Zoning Board and Kent confirmed that’s what it was. Neil said this was news to him but he would look into it. Kent said it was when Bridget [Rief, MAC staff] was in charge of that aspect. Kent said they put together a formal board. Ann Pung-Terwedo didn’t recall formal establishment of the board or an official joint-powers agreement. Kent said they met for over two years, and thought Ann or one of her colleagues from Washington County was also involved. Ann said she didn’t think it was a formal joint-powers board, but a more informal, regional board. Kent said he thought it was a formal board. Neil said he would check in with Bridget Rief to find out more. Neil said whether it’s reconvening an existing JAZB or creating a new one, it will be a board with community representation as outlined in state statutes to develop a safety and land use zoning ordinance. Neil said he would go back and see if he could find any documentation.

Kent said a lot of the same items were being discussed at the time, including the runway expansion, although a longer runway was being considered at that time, and although it was not the primary focus there was discussion of diverting some commercial and/or corporate traffic from MSP and St. Paul Downtown to some of the smaller relievers.

Ann Pung-Terwedo said regarding cultural resources, the County has historic resource policies in the context of the current Comprehensive Plan 2030 and offered to share them with Evan and the project team. Evan thanked her and invited anyone aware of any other local regulations that it doesn’t appear the team has considered, to please let him know, so they can cover all the bases.

Kent said they were told by their attorney, Dave Magnuson, that when this process began a couple years ago that it didn’t require formal town board approval from West Lakeland to do any of this, but that township approval would be required to abandon a segment of the road. He suggested the team might want to look into that. He said part of 30th has to be vacated. Neil clarified it’s a prescriptive easement that has to be vacated. Kent said they were told that had to have town board approval. Evan asked if he said town board approval was required by both townships? Kent believed so, because they share the road right down the middle. Kent suggested the team look into what was required. Neil believed there have been discussions between the MAC’s attorney and the township’s attorney but he didn’t know the exact details, but knows it was regarding vacating a prescriptive easement, as there’s no right-of-way established for 30th Street.

Dave Schultz noted there was an article a few months back in the Minneapolis paper about Airlake and Lakeville that MAC would like Lakeville to annex the entire airport so they can provide sewer and water.
In talking with the township supervisor down there for the township, his impression was there were behind-the-scenes discussions going on between the MAC and Lakeville. Dave asked whether those same types of discussions going on out here with Lake Elmo regarding annexation of the airport out of the township and into Lake Elmo. Gary Schmidt [MAC Director of Reliever Airports] stated there were no behind-the-scenes discussion between the MAC and the City of Lakeville trying to work out a deal. He explained what happened was the airport commission wants to provide sewer and water to the airport, which Eureka Township can’t provide. The City of Lakeville does have sewer and water service. The MAC approached the City of Lakeville and asked if they would be willing to consider an annexation if the MAC petitioned the City. That was the extent of the discussion. From there, the MAC went directly to Eureka Township to try and work out an agreement. The MAC is about to petition Lakeville in the next 30 days to consider annexation.

Kent commented on that, saying it has long been a point of contention for Baytown Township and the City of Lake Elmo regarding discussions on airport sewer and water. They ended up not installing sewer/water along Manning and came down 17 instead. He said the Baytown town planner from TKDA is also the town planner for Eureka Township. He said they were told that Eureka Township and the City of Lakeville have a joint-powers agreement worked out like Baytown’s joint-powers agreement with the City of Bayport to provide water because they’re in the TCE contamination plume and they also have it for sewer for the St. Croix Prep School, and if that ever were to happen, those joint-powers agreements are an option without annexation. Gary said the MAC went down that road and Lakeville entertained the joint-powers agreement idea but Lakeville said the terms set by Eureka Township were not acceptable. Lakeville went back to the township and said if you’re willing to revise the terms, we’re willing to consider the joint-powers agreement, but Eureka Township would not change the terms. Neil added that there are no active negotiations right now to annex Lake Elmo Airport into the City of Lake Elmo. He said that Airlake is a unique situation because there is a hangar development area that people are interested in building if there were sewer and water, otherwise they’re going elsewhere so there’s a specific need there. He stated that is not the situation at Lake Elmo Airport. Dave Schultz added it looks like the FBO at Airlake is in Lakeville but most of the hangars are in the township. Neil confirmed that was correct due to a previous annexation.

Upon no further comments from the Panel at the time, Evan opened up the public comment period, stating the CEP could hold further discussion following the public comment period, if needed.

**The public comment period occurred as follows:**

Molly Olson stated the information comes at us like a firehose. She suggested there’s got to be a better way – perhaps taking questions throughout the presentation? She said back to Mr. Buckingham’s question about the impact on the community, she keeps hearing that the MAC is engaging the public, but stated what she’s seeing is the MAC just giving information and then defending its position and said that’s not what real engagement and real listening is all about. She asked where are the people, where are the residents, where is the community in all these slides? They’re clearly absent and have been in every single presentation. She said what she’s learned from one of the previous presentations is that the community and people are not part of your requirements and you really don’t care about the community; you really only care about the things that are required by state and federal law to look at. Yes, you’ve said you’ve done some tweaking here and there, but how much are you listening? She suggested for the next public meeting that it would help demonstrate some human concern to put up a
slide of the comments and concerns the MAC has heard from the community to help the public feel heard. She noted hearing slides about bats and turtles but nothing about the impact on property values and 30th Street. She stated noise is a big concern – her number one concern – but there are a lot of other concerns, too, and noted the community has a long list of concerns. She said it was insulting at the last public meeting to be given a sticker and told to choose only one top concern. And now, those things are off the table for further discussion. She mentioned some of the concerns that should be on that slide are quality of life, safety and many others that she and others in the room could help put together.

Molly Olson also said that the Easton Village residents across the street from the airport haven’t even been told about the airport development. Kent Grandlienard said yes they have; that’s absolutely not true. Molly said that’s not what they’re hearing from the residents when they’re buying the properties. She then asked Evan to go back to the slide showing all the new development around the airport since the 1960s and said she didn’t see Easton Village on there. She noted she’s not part of Easton Village but she cares about all her neighbors. Evan said it was based on County GIS data indicating when the parcels/lots were recorded, and that area in question has been subdivided since this data was compiled. Kent said every adjoining community is allowed to make public comment to the City. From Baytown’s perspective, on every single development along Manning Ave. in Lake Elmo, we’ve made it clear in our public comments that residents need to be aware about potential airport expansion, Manning Ave. four-lane expansion, and the trains, railroad whistles and train tracks. He said they call it “planes, trains and automobiles” and they’ve made that very clear in every comment to the City of Lake Elmo. If the developer or City isn’t sharing that with the residents, aside from them looking at the airport or the train tracks when they go out to potentially purchase a house, then that’s on Lake Elmo – not on the airport or MAC. Molly said, “Isn’t it convenient to defer that responsibility to somebody else – people that are probably not even in this room – it just tells me that there is no cumulative care about the cumulative community.” Kent said that Lake Elmo should be caring about the residents of their city. Molly agreed, but said is there no responsibility for anyone else in this room? Kent reiterated that Baytown gave comments. He wasn’t sure what West Lakeland did, but they know that as soon as all those houses are built, that Kent’s phone is going to ring. He gave the example when they built Inspiration in Bayport, which used to be in Baytown, he had people screaming at him over the phone because the train whistles were keeping them awake at night, and they were told when they bought their houses that those tracks weren’t used anymore. Kent told those people they were seriously misinformed. Those are the kinds of things that happen in developments that come up against airports, railroad tracks and now Manning Ave. – and they’re all going to complain about busy traffic and there will be stoplights that don’t exist today, and the train tracks are heavily used. He said he didn’t know what the solution is. He suspects that West Lakeland probably made similar comments. Dave Schultz noted he thinks there’s a loophole in this situation, where realtors are required by law to disclose this information, but he thinks the sales are being made by a developer or builder and they’re not required under the same statute to disclose some of this stuff. He said they’ve had two people come from Easton Village say they were not aware this was going on, and noted this has been going on for many years. Stephen Buckingham said that for all he’s said against the MAC tonight, he’s not blaming this one on them, but there was one person from Easton Village who was told the airport may be expanding or there’s a possibility of an expansion at some point in the future but was not told there were active discussions going on concerning it. Kent said, well they were lied to. Stephen agreed and said it was the developer. Kent said, “Some of it is buyer beware.” Chad Leqve weighed in saying there is responsibility on all sides of the table on an issue like this. He said he’s not shrugging responsibility, but the MAC doesn’t control the land use decisions around the airport,
and that Neil Ralston is the person at the MAC that reviews those plans and comments on them, and he touches on things like airspace zoning, noise and things like you’re talking about, and trying to convince the people who do have the authority to invoke some of the requirements. He said the MAC views its responsibility as trying to empower people to have the information available. For instance, he said if they know they’re moving in next to an airport, if they were to contact the airport, they would be directed to all the information the MAC has publicly available on their website for people to do evaluations of different properties around the airport. He said that in the hypothetical situation of a city that does not provide the information and disclosures they’re required to provide, the MAC still wants the plans for their airports out there and accessible to the general public so people are empowered to do their due diligence if they’re so inclined. He stated the MAC provides this information for existing operations and for what’s planned. He referenced a woman at the last public meeting who was concerned about the airport as it exists today, who just moved into a neighborhood near the airport. He noted her expectations of moving in across from an airport did not align with reality and she was quite frustrated. He said that’s unfortunate to hear, but Kent’s comment about responsibility resonates and he thinks that responsibility goes all the way around the table. He commented that everybody has a different influence and ability to do some of the specific things Molly is talking about as far as real estate transactions, noting that the MAC can comment and try to convince the city to do what they’re supposed to do, but the MAC doesn’t have the authority over those disclosures, and he suspected it was the same with the townships. Kent agreed it’s the responsibility of the realtors, the buyer and the communities. Kent gave an example of the TCE (groundwater contamination), he said they had to fight the real estate lobby to get a requirement that when someone purchases a piece of land in Baytown within a Special Well Construction Area, that they be made aware of that groundwater contamination (it’s a Superfund site) and the County agreed to put it on their deeds. But before that, the real estate lobby fought that, so people were building half a million or million-dollar houses and the last thing that goes in is the well, and they’re finding out they’re drilling the well into a contaminated aquifer with trichloroethylene (TCE) and carbon tetrachloride. And they’d say, well my realtor never mentioned it. He said, we couldn’t get them to require that as a disclosure on land before the house was built, and then the County came through and it’s required as part of the deed now, and West Lakeland has the same ordinance. Chad noted the MAC has dealt with this same thing at MSP when they opened up Runway 17/35, an 8,000-foot runway, in 2005. He noted the whole south metro area (Eagan, Bloomington, Apple Valley) for all intents and purposes didn’t know they had an airport north of them, and we took about 37% of the departures from MSP and put them on that runway going south and it was a similar thing. We tried to get out to the realtors to let them know about this.

Molly Olson empathized with the road blocks lobbyists create, but said her main point is the MAC needs a slide that acknowledges they’re aware of the concerns of the community. She said initially she stated Easton Village people are not being told and she understands now that should maybe be rephrased to say Easton Village people are not getting the message that this expansion is in full force. She offered she could help create that laundry list of concerns if the MAC had difficulty creating it.

Marlon Gunderson suggested that the Easton Village residents may end up better off with the runway moving further away from them. Kent offered that they’re not going to like the beacon. Marlon asked if that was moving. Neil asked if he meant the runway end identification lights? Kent said no, the beacon. Neil confirmed the beacon would not be relocated. Kent mused they wouldn’t like it as it would shine right in their windows. Neil said that’s an existing condition at the airport today.
Dave Schultz said to Lake Elmo’s benefit, they fought that and lost at the Supreme Court to the Metropolitan Council. He noted development has been forced on Lake Elmo. They look at where do you have a seller of open land. Stephen Buckingham noted it went to the Supreme Court twice. Molly Olson agreed that they fought the huge bureaucracy of the Met Council. Dave said if it wasn’t because of that, we wouldn’t be talking about Easton Village today.

Pat Schultz asked, regarding 30th Street, what number was being used to determine the traffic count and the forecasts and who are you going through? She noted that a car condo came into the township and they were using state numbers for what the count was on that road, and those numbers were significantly less than the study actually performed on that road, so it would be interesting to know which numbers the MAC used. She advised the team to be aware that there are numbers out there that are not accurate. Dave Schultz said this was the Chanhassen AutoPlex that was looking to place a facility like that south of 30th Street and they were using MnDOT numbers that accounted for 225 cars a day on 30th Street, and noted that is way low. He said Washington County did a traffic study that showed 1,500 cars a day on our side of 30th and over 100 an hour at rush hour (between 4:00 and 6:00 p.m.). Neil said they used the County’s data from Manning, which was in the 1,300-1,400 range in 2010, growing to 2,000 by 2030, and 1,500 cars in 2017 fits in that curve very well. Neil confirmed that data was for a 3-day period and the 1,500 was the average of that period? Dave confirmed that was correct. Stephen asked Dave if when he said “our side” he meant eastbound only on 30th Street? Dave said that was eastbound and westbound on the east side of Manning. Neil reiterated the team used the County’s data. Kent Grandlienard explained that the Met Council counts residences of people impacted by that road, so that if one person takes 25 trips back and forth on that road during a day, they’re not counted 25 times. Dave noted the Washington County study was done during the summer months, when school was not in session, so he wasn’t sure how that skewed the numbers.

Marlon Gunderson noted the team received a lot of criticism tonight and he wanted to state he thought the team was doing a great job and he appreciated the effort. As far as the Purpose & Need goes, he said it seems like, and noted maybe he was oversimplifying it, that the only Purpose & Need is to get the airport into federal compliance, and they’ve gotten away without having to do it for many years, because the runway has been fine, but now it’s at the end of its life, and so now you have to bring it into compliance or you won’t get your funding. Is the Purpose & Need anymore complicated than that? I’m not sure how you could take public input and change that Purpose & Need. Evan responded there are components of the Purpose & Need that are based on FAA standards in terms of the runway protection zones. If you are going to reconstruct a runway, and you can construct it in a location that has clear runway protection zones, the FAA is going to pursue that option, due to the size of the investment of constructing a brand new runway. The runway length is based both on FAA guidance and the needs of the types of aircraft using the airport. When we talk about the Purpose & Need, there’s pieces of it that are based on FAA standards, but the standards function in the context of what makes the most sense for the airport long-term. That’s what the LTCP determined was the right long-term plan to not only comply with standards but also invest the public money in a way that makes sense long-term. Chad Leqve pointed out that previous plans had the proposed runway as long as 3,900 feet, with the original preferred alternative in the LTCP previously 3,600 feet, and noted that over time there have been changes to what’s proposed at the airport to meet the needs of the operators, while balancing the concerns of the community, most recently going from 3,600 feet to 3,500 feet. Chad also looked up the May 25th CEP meeting minutes and noted there was a detailed discussion on the Purpose & Need. Stephen replied that there was a big discussion but you didn’t give us a chance to have any input. It was
presented as this is the Purpose & Need. Chad said he thought it was more of a discussion like we’ve had tonight. Marlon asked what there was to discuss if the Purpose & Need is to bring the airport into compliance, and asked Stephen if he was saying the MAC shouldn’t? Stephen said he thinks the Purpose & Need should take into account not only aviation interests, but also the concerns of the surrounding community. Marlon suggested Stephen was confusing the Purpose & Need with the plan. Stephen said no. Marlon said if you try to address that, you’re boxed in with what property do I own, how am I going to meet that Purpose & Need – there are a lot of ways to do that with messing around with the variables and they’ve been doing that for a couple years now, but you’ve never changed the Purpose & Need at all. The Purpose & Need is very simple: FAA compliance. And enhancing safety. Mary asked Marlon what’s your definition of FAA compliance? Marlon replied runway protection zones that don’t cross roads – it’s as simple as that. Dave Schultz stated the roads were here before the airport and runway were here.

Commissioner Madigan said the issue the MAC has is we’re trying to balance conflicting interests. One interest is increasing the margin of safety for the pilots operating at the airport. I think that’s an interest we all support and acknowledge. Second interest is minimizing the impact of the operation of the airport on the neighbors and accommodating their interests to the extent that we can. The third interest is increasing the efficiency and functionality of the airport, because that is something the MAC is charged with doing. We’ll probably never have agreement on how we balance those interests, but that is what this process is all about – it’s trying to balance those interests and minimizing the impact to the neighbors to the extent we can. Stephen said that goes back to the point a lot of us have made: you’re increasing the safety of the airport – that’s probably true – but you’re decreasing the safety of ground traffic on 30th Street for a lot more users. The people who have airplanes at that airport knew the length of the runway when they moved in – they knew what they were getting. They could have put their airplane somewhere else but they chose to put it at that airport. We’re not saying shut down the airport or make it less safe than it is; we’re saying keep it the same so we can keep 30th Street the same. Commissioner Madigan acknowledged Stephen’s argument and said you’re balancing it a certain way, but I’m just talking about what the process is.

Marlon pointed out that these expansion plans have been in place at the airport since the 1960s. Kent said you have to acknowledge that part is true. Stephen said the 1964 plan was based on projections that have not happened. Kent said, I know, but the airport owned that property. He said he heard a woman once say, when they were at a meeting at the governor’s office, “well how would I know that the airport owned that property on the south side of the road?” Kent said, you’d look at a plat map. Kent further said this parallel quandary we’re in about trying to talk about the environmental impact and the airport expansion is a whole other issue as far as he’s concerned that needs to continue to be waged on a different level, but it’s confounding the purpose of this committee as far as the environmental impact part of it. He said, if people want to continue to advocate with their legislators or whoever that the expansion isn’t necessary, that’s a different avenue, but he doesn’t think that was supposed to be the intent of this committee. He noted it seems like every meeting, that’s all we talk about – “should the expansion be allowed?” and whether you agree with it or not that’s really not the purpose of this environmental impact committee, right? Evan Barrett responded the purpose of the committee is stakeholder outreach, education, and making sure the MAC is transparent in what the plans are and what the environmental impacts of the plans are. Purpose & Need was one of the topics of one of the meetings; Alternatives was the topic of one of the meetings; and that’s all wrapped up in this question of “Is the project needed?” Evan said he thinks the purpose of the committee is dependent
on what the committee feels the purpose of the committee should be. Kent noted the long-term comprehensive plan has gone on before this as part of the whole argument either for or against expansion. Stephen said the name of this committee is community engagement panel and noted he didn’t hear anything about environmental in that. He said he thought this was to get input from the surrounding community into what was going on with the expansion plans. Kent noted the committee was specific to the EA/EAW. Chad Leqve said it serves both purposes and that Commissioner Madigan stated it well. He said if people have concerns, that’s what we want to talk about. He said it’s a balancing act and he doesn’t know that we’ll ever be able to balance them in a way where everyone around the table says, “I love it; looks great.” But at a minimum, we can have a dialogue to get to the best spot that we can get. He said that’s what the MAC is trying to do in this process. He acknowledged that involvement on the CEP doesn’t guarantee that we’re not going to hear comments and objections from some of the CEP at the end of this when we take public comments, but it’s important that we have the exchange, share information and try to work together to get the best scenario as part of this process. He said he doesn’t know that it’s reasonable to expect that any discussion like this, when there are concerns and views that are polar in some circumstances, is going to result in everyone being happy at the end. At a minimum, the MAC wants to make sure people have the information, that peoples’ thoughts and ideas are considered, and to the degree possible, that the team can try and do something to address those, like the additional work done on 30th Street or the noise concerns. Chad mentioned there are some things the MAC would like to look at with the pilot community and the noise abatement plan and continuing relationships with the tenants at the airport while working together with the community residents to have that dialogue – and noted these are good things that come out of these processes. He acknowledged Stephen’s concerns but said in fairness to the group and the dialogue that the CEP has talked about it, but that’s not to say that everyone agreed or was happy about it, but there’s value in the dialogue.

Mick Kaschmitter said the frustrating thing about this whole thing is why does the airport trump the community? Chad offered his thoughts on the MAC’s legislative charge to maintain transportation assets to provide a certain level of safety and utility. The MAC comes to the dialogue with this responsibility. That’s not to say that the aviation community and the airport are the only people that we consider in the process. Of course we consider the communities, but when we have our legislative responsibility, it’s very difficult to give everything to both sides of the discussion and to make everybody happy. For instance, he noted that initially the runway length was proposed to 3,900 feet, which was great for the aviation community, but then it was reduced to 3,600 feet, and now we’re at 3,500 feet. He noted there’s a little movement there, but he knows that doesn’t satisfy some of the community concerns. He noted, however, that he doesn’t believe we’ve been doing this exercise over the years in a way that’s been completely ignoring one part of the dialogue or discussion. Now if you’re saying you’re not hearing me or listening to me unless you do exactly what I want, then I could see how that might be a conclusion one would get to. But again, to the Commissioner’s point, it’s a balancing act and we’re trying to do the best job we can in balancing all these interests.

Molly Olson reiterated her idea to put up a slide with all the community concerns heard. She said that a few of us sitting in a corner could probably come up with a list of 25 concerns and you keep talking about only two.

Laura Kaschmitter said we’ve submitted over 180 letters to you – where are those letters saying our problems with it? They’ve never shown up on a slide. You say you welcome public comment, great, but
where is it on a slide? Marlon said every single one is available on the website. Laura replied we don’t want it on the website; we want it where you guys can see it. We’re having to look at all your slides; why can’t you look at our concerns on a slide? Mary Vierling asked where are the pros and cons? Laura asked where are the checks and balances of this? Chad Leqve said that’s a fair question and noted we’re roughly about at the halfway point of this process. He said we will get to a point where there’s going to be a formal review, a formal public hearing, and opportunities for everybody to submit comments and they’re all going to be responded to in writing and dealt with formally as part of this process. Laura said but you keep going forward but our concerns are never going forward. We’re having to submit the same complaints and concerns over and over again that are never being addressed publicly. You say you’ll get a letter and you read it. Okay, that’s nice, but why is it not being addressed? Chad offered that as part of this exercise we’re trying to address what we can while still fulfilling our statutory obligation for aviation infrastructure in the metropolitan area. To the degree that there is overlap between what you’re saying a segment of the community might want to see and what we can and are trying to do, while still meeting the Purpose & Need of the project, there are some areas where we may not be able to address some of the concerns that are raised. Keith Bergmann said I’m not sure if you’re hearing her though – she’s not saying you necessarily have to address all the concerns, just show that we’ve heard them. Laura said she just wants acknowledgement of what we are asking. Molly again reiterated her idea to show a comprehensive list of concerns on a slide. She suggested two sides of the slide: “here are the two things the MAC has considered (the road and the length of the runway) and here are the 25 others that are not within our Purpose & Need to care about these so we are ignoring these.” She said that’s basically the message she’s been getting. Keith said some of the meetings we’ve gone over some of these. For example, the road. At one meeting, we looked at five different plans for the road, and whether or not Baytown wanted a road for roundabouts or cul-de-sacs, then they got filtered and moved on. Not that they address all the concerns at every meeting, but they try to go back to some of them sometimes. Now, the MAC has moved forward past it and at this meeting, we’re not talking about those five different road proposals. Like it or not, they’ve moved past. Some of them have been addressed in different formats but not shown every time. Molly again reiterated, we want a comprehensive list of what has been presented and what you’re aware of that the community is not happy with, and what you’re going to address on that list and what you won’t. She said, I’m pretty confident that your pat answer that will be shown for most of them is “considered and not an issue,” which is pretty insulting, but at least acknowledge the concerns.

Kent asked the Kaschmitters, saying he knows they were impacted by the original road configuration, if they thought the people that are now on the north end of Neal and the south side of 30th on the corner like the new configuration better than the old one? He said his guess is probably not. Laura said they don’t like either. They don’t want the road changed at all – it’s not safe for us to have it changed and we don’t want it changed. It’s that simple. So Kent confirmed the option in their minds is don’t do anything with the road? Laura said you can repave the runway, you can do whatever you want just stay within the confines of the fence. Kent said he just wanted to find out because he figured the people on that corner probably like that the least, because now all the cars are going to come out in their area. Laura said, we’re right there as well. Kent said you guys have been gracious about being active and you got the initiative to have that change made through this process. Kent said he’s been disappointed at the turnout for the last public meeting. He acknowledged he’s heard the dots on the top concerns board may have been offensive to some, but he counted the dots on the board because it’s one way to gauge, and there were 34 dots on the board, and 17 were for the “no concern” of the proposal. He asked where
are all the other people who you’re saying are going to be so impacted by this? He said from his perspective, from Baytown, that they don’t care, because in 2 or 3 years the Township has heard nothing. He said he’s disappointed if there’s people who have feelings about it and opposing it that don’t come forward, because he doesn’t know how else we’re going to get public feedback, because we’ve got none on the Baytown side. He said he doesn’t know how you account for that. Referring to the last meeting, he said there were very few people there and only four from Baytown. Stephen said he and his wife weren’t there because they were on a vacation. Kent said even if you were there, that’d only be six people from Baytown, and there are over 1,600 residents. And again, your wife was the only person who ever made any comment to us during the comprehensive planning process, or came to a meeting.

Evan Barrett closed the meeting at 8:10 P.M. He thanked everyone for attending, for the comments, questions and discussion and invited everyone to the public event on November 6th at Oak-Land Middle School.
October 19, 2017 – Community Engagement Panel Meeting #4
Overview of Environmental Effects
Agenda

• Public Event #2 Debrief
• Environmental Effects Overview
• Next Steps
• Panel Discussion
• 10-minute Public Comment Period
Public Event #2 - Debrief

Public Event Attendees

Public Event #1 - May 11
Public Event #2 - Aug 17

Attendees by City/Township

- WLT 33%
- Lake Elmo 19%
- St. Paul 7%
- Stillwater 12%
- Baytown 10%
- Pine Springs 2%
- Other 17%
Public Event #2 - Debrief

Project-Specific Comments

- Public Event #1 - May 11: 18
- Public Event #2 - Aug 17: 1

Added Email Subscribers

- Public Event #1 - May 11: 37
- Public Event #2 - Aug 17: 17
Public Event #2 - Debrief

Public Event #2 Agenda

A. 6:00 Open House – Project Orientation (Cafeteria)
B. 6:30 Alternatives Presentation (Auditorium)
C. 7:00 Presentation Q&A (Auditorium)
D. 7:30 Community / MAC One-on-One Engagement Session (Cafeteria)
Things we did differently – how did they work?

• Venue – Oak-Land Middle School
• Hard copy meeting agenda for attendees
• “Top Concerns” board
• Hard copy presentation slides
• Scrolling FAQ slides
• Facilitated presentation and group Q&A
• Adjourn to one-on-one engagement session
Method for Determining Environmental Effects

- Preferred Alternative compared against **No Action Alternative** to determine effects for each environmental category

- **No Action Alternative** represents what would occur if MAC were to maintain the existing airfield configuration and runway lengths
Environmental Effects Overview

• NEPA categories considered in detail
  • Air quality
  • Biological resources
  • Cultural resources
  • Farmlands
  • Hazardous materials & solid waste
  • Land Use
  • Noise
  • Visual effects
  • Water resources
  • Cumulative impacts

• Other NEPA categories
  • Climate
  • Coastal resources
  • DOT Section 4(f)
  • Natural resources and energy supply
  • Socioeconomics
Air Quality

• Emissions were evaluated with reference to National Ambient Air Quality Standards (NAAQS) and Clean Air Act requirements
  • NAAQS pollutants include CO, NO\textsubscript{x}, SO\textsubscript{x}, O\textsubscript{3}, Pb, and particulate matter
  • Other pollutants identified in charts at right are provided by the FAA model for informational purposes

• Operational emissions
  • 2025 “with project” emissions comparable to 2016 baseline emissions
  • Will not exceed FAA Air Quality Handbook de-minimis thresholds for NAAQS pollutants
  • Considers taxi out, takeoff, climb out, approach, landing, and taxi in operations

• Construction emissions
  • Will not exceed FAA Air Quality Handbook de-minimis thresholds for NAAQS pollutants
  • Considers all construction activities

De-minimis thresholds are the minimum thresholds (in tons) for which a Clean Air Act conformity determination must be performed, for various criteria pollutants in various areas. In Washington County, these pollutants are CO and SO\textsubscript{x}. 
Biological Resources

• Tree removal
  • Approximately 20 acres of trees affected on airport property
  • Off-site trees are being evaluated in coordination with FAA
  • Dominant tree species have been identified
Biological Resources

• Federally-listed species
  • Northern long-eared bat (threatened species)
    • May be present in tree removal areas
    • Impacts will be avoided and minimized using USFWS/USDOT-recommended measures
  • Rusty patched bumblebee (endangered species)
    • Documented habitat within 2 ½ miles of airport
    • Airport is in low potential habitat zone per U.S. Fish & Wildlife Service
    • No suitable habitat in project impact area

• State-listed species
  • Blanding’s turtle (threatened species)
    • May be present in both wetland and upland areas
    • Impacts will be avoided and minimized using MnDNR-recommended measures
Cultural Resources

- Cultural resources (above and below ground) were evaluated with reference to the National Historic Preservation Act (NHPA) requirements
- FAA makes determination of effect and State Historic Preservation Office (SHPO) concurs
- Architectural history
  - 13 historic age properties within area of potential effect (APE)
  - Railroad corridor may be eligible for the National Register of Historic Places (NRHP)
    - Not affected by project
- Archaeology
  - Two sites may be eligible for NRHP due to association with Jacob Schmidt Brewing Company
    - Not affected by project
  - FAA consults with Native American tribes
Farmlands

• Farmlands were evaluated with respect to federal Farmland Protection Policy Act (FPPA)
• Approximately 38 acres of on-airport farmland would be directly converted
• Approximately 5 acres would be indirectly converted (uneconomic remnants)
• U.S. Department of Agriculture consultation in process to determine significance of effects
Hazardous Materials & Solid Waste

• Known hazardous materials sites identified and evaluated with reference to various federal and state legislative requirements

• 17 known hazardous materials sites identified within one mile of Airport

• None of the sites will be affected by the project

• Groundwater contamination plume would not be affected due to water table depth
Land Use

- Residential
  - Minor changes to visual flight rules (VFR) traffic pattern area
  - Runway 14/32 State Model Safety Zones
    - Three houses in Model Zone A
    - Ten houses in Model Zone B
  - Runway 04/22 State Model Safety Zones
    - Two houses in Model Zone A
    - Ten houses in Model Zone B
  - The MAC will convene a Joint Airport Zoning Board (JAZB) consistent with Minnesota Statutes
Land Use

- **Ground Transportation**
  - Realigned road can accommodate forecasted traffic volume and type
  - Travel time will increase an average of 46 seconds in either direction
  - FAA approval required for new road right-of-way on existing airport property

- **Wildlife Attractants**
  - No new attractants
  - Tree removal and ag lease reductions would mean fewer attractants
  - Site visit by certified wildlife biologist this week to confirm

30th Street Realignment
Noise

- 65 decibel day night average sound level (DNL) noise contour remains on Airport property under both No Action and Preferred Alternatives
Visual Effects

• Non-precision lighting systems
  • MIRL (medium-intensity runway lights)
  • PAPI (precision approach path indicator)
  • REIL (runway end identifier lights)

• Project lighting components
  • Relocate and extend existing Runway 14/32 MIRL, PAPI, and REIL systems
  • Install new Runway 04/22 MIRL, PAPI, and REIL systems
Visual Effects

- MIRL, PAPI, and REIL systems will move closer to residential areas
  - Distance from Runway 32 end to property line will be reduced from 2,400 to 1,900 feet
  - Distance from Runway 22 end to property line will be reduced from 2,250 to 2,000 feet
- Light systems will only be fully operational when “keyed on”
- Light screening benefits of trees along Neal Avenue are being evaluated
Wetlands

• Wetlands evaluated with respect to federal Clean Water Act and state Wetland Conservation Act requirements

• Approximately 1.97 acres of direct wetland impacts

• Mitigation requires replacement at 2:1 ratio if purchasing wetland credits within the same wetland bank service area

• Requires permits from U.S. Army Corps of Engineers & Valley Branch Watershed District
Surface Water

• Net increase of 550,000 square feet impervious surface
• Permits required from Minnesota Pollution Control Agency (MPCA) and Valley Branch Watershed District (VBWD)
  • Permits will require specific performance standards for on-site stormwater management
• FAA standards require stormwater detention facilities be designed to be drawn down within 48 hours of a storm
• Structural controls and best management practices will allow for meeting MPCA, VBWD, and FAA standards
• Minnesota Department of Natural Resources permit may be required for public water south of 30th Street
• An estimated 0.06 acres of wetland fill would occur in a floodplain
  • Net loss of floodplain storage is insignificant when considering the volumes associated with a 100-year event
  • No notable adverse impacts on natural and beneficial floodplain values
Cumulative Impacts

• Past, present, and reasonably foreseeable actions
  • 1,720 parcels developed since 1964 within two miles of project
  • Continued urban development expected, especially west of the airport
  • Manning Avenue planned to widen from two to four lanes

• Wetland impacts of project will be compared to recent and reasonably foreseeable permitted activity
Other NEPA Categories

• Climate
  • Potential for preferred alternative to affect future climate conditions is limited

• Coastal Resources
  • No resources present

• DOT Section 4(f)
  • No resources present

• Natural resources and energy supply
  • Demand for natural resources and energy will not exceed available supplies

• Socioeconomics
  • No shifts in population, public service demands, or economic activity
  • No low-income or minority populations affected
  • No potential disproportionate health or safety risks to children
<table>
<thead>
<tr>
<th>Environmental Impact Category</th>
<th>Impacts: No-Action Alternative</th>
<th>Impacts: Preferred Alternative</th>
<th>Required Permitting, Mitigation, and/or Associated Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Quality</td>
<td>None</td>
<td>Minimal impacts during construction</td>
<td>None</td>
</tr>
<tr>
<td>Biological Resources (including fish, wildlife, and plants)</td>
<td>None</td>
<td>Tree removal</td>
<td>Tree removal to occur during NLEB dormant season (October 1 – April 30) Implement April 2015 USFWS/USDOT NLEB avoidance and minimization measures Implement MnDNR Blanding’s turtle avoidance measures</td>
</tr>
<tr>
<td>Climate</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Coastal Resources</td>
<td>NA</td>
<td>NA</td>
<td>None</td>
</tr>
<tr>
<td>DOT Section 4(f) Lands</td>
<td>NA</td>
<td>NA</td>
<td>None</td>
</tr>
<tr>
<td>Farmlands</td>
<td>None</td>
<td>43 acres converted directly or indirectly</td>
<td>To be determined</td>
</tr>
<tr>
<td>Hazardous Materials, Solid Waste, and Pollution Prevention</td>
<td>None</td>
<td>None</td>
<td>Dispose of construction materials and other solid waste in accordance with state and local laws.</td>
</tr>
<tr>
<td>Historic, Architectural, Archaeological, and Cultural Resources</td>
<td>None</td>
<td>None</td>
<td>Awaiting SHPO concurrence with FAA determination of effect</td>
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<tr>
<td>Residential</td>
<td>Potential zoning conflicts</td>
<td>Potential zoning conflicts</td>
<td>Convene Joint Airport Zoning Board (JAZB) to develop an Airport Zoning ordinance</td>
</tr>
<tr>
<td>Ground Transportation</td>
<td>RPZ conflicts</td>
<td>Increased travel time on 30th Street</td>
<td>None</td>
</tr>
<tr>
<td>Wildlife Attractants</td>
<td>Wetlands in vicinity of runway approach</td>
<td>Wetlands in vicinity of runway approach</td>
<td>To be determined</td>
</tr>
<tr>
<td>Natural Resources and Energy Supply</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Noise and Compatible Land Use</td>
<td>None</td>
<td>None</td>
<td>Update voluntary noise abatement plan and hold educational briefings for pilots</td>
</tr>
<tr>
<td>Socioeconomics, Environmental Justice, and Children’s Health &amp; Safety</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Visual Effects (including light emissions)</td>
<td>None</td>
<td>Existing light system relocations and new light system installations</td>
<td>To be determined</td>
</tr>
<tr>
<td>Water Resources</td>
<td>None</td>
<td>1.97 acres direct wetland impact</td>
<td>Compensatory Mitigation Plan (assume impact will be banked) USACE 404 Army Corps Permit and Compliance with Minnesota Wetland Conservation Act MnDNR Public Waters permit</td>
</tr>
<tr>
<td>Stormwater</td>
<td>None</td>
<td>12.6 acres increased impervious area</td>
<td>Stormwater Pollution Prevention Plan Onsite Best Management Practices MPCA CWA Section 401 Water Quality Certification and NPDES permit VBWD permit</td>
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<tr>
<td>Floodplains</td>
<td>None</td>
<td>0.06-acre wetland fill area in floodplain</td>
<td>VBWD permit</td>
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<tr>
<td>Cumulative Impacts</td>
<td>None</td>
<td>Under evaluation</td>
<td>To be determined</td>
</tr>
</tbody>
</table>

Green shaded items represent categories for which impacts and associated actions have been definitively determined, and will not be revisited in subsequent CEP meetings.
Next Steps

- **November 6**
  - Public Event #3

- **December**
  - CEP Meeting #5 (proposed consolidation of November & January meetings shown in current schedule at right)

- **Early 2018**
  - Publish Draft EA/EAW for public review and comment
Lake Elmo Airport EA/EAW
Public Events
Meeting Documentation

The following pages contain agendas, handouts, minutes, informational boards, and presentation slides from public events held on the following dates:

- May 11, 2017
- August 17, 2017
- November 6, 2017
PUBLIC NOTICE
LAKE ELMO AIRPORT
ENVIRONMENTAL ASSESSMENT FOR PROPOSED AIRFIELD IMPROVEMENTS
PUBLIC INFORMATION MEETING

The Metropolitan Airports Commission (MAC) has commenced a joint Federal Environmental Assessment (EA) / State Environmental Assessment Worksheet (EAW) to study the environmental effects of proposed airfield improvements at Lake Elmo Airport. These improvements are identified in the Airport’s recently-completed Long-Term Comprehensive Plan. In accordance with its responsibilities under the National Environmental Policy Act (NEPA), the Federal Aviation Administration (FAA) requires the MAC to complete an EA in order to obtain federal funding for the improvements. The MAC is also responsible under State law for completing an EAW, which will be completed concurrently. During the EA/EAW process, numerous environmental categories will be reviewed. In addition to direct environmental effects, the process will consider the related social and economic effects. The EA process will involve extensive public outreach and opportunities for public involvement, including three public information meetings as the Draft EA is developed, followed by a public hearing immediately after public release of the Draft EA document.

The MAC will host the first public information meeting on:

Thursday, May 11, 2017
6:00 to 8:00 PM
Presentation beginning at 6:30 PM

Stillwater High School - 2nd Floor Rotunda and Forum Room
5701 Stillwater Blvd N
Stillwater, MN 55082

The meeting offers an opportunity for one-to-one interaction with MAC staff in an open house setting with an overview presentation beginning at 6:30 PM. During the meeting, community members can learn more about the proposed airfield improvements, Federal and State environmental processes and regulations, environmental analysis categories, how and why alternatives are considered, the anticipated project timeline, and opportunities for public input.

More information is available on the project website (https://www.metroairports.org/General-Aviation/Lake-Elmo-Environmental-Assessment.aspx), including how to receive periodic updates via our e-news subscription program, public event details, public project documents, answers to frequently asked questions, and information on how to provide public comment throughout the process.
Public Event #1
Meeting Minutes
Stillwater Area High School
May 11, 2017
6:00 – 6:30 P.M. – Open house with informational boards
6:30 – 8:10 P.M. – Presentation followed by Q&A

MAC/Mead & Hunt Attendees
Chad Leqve
Dana Nelson
Neil Ralston
Joe Harris
Melissa Scovronski
Brad Juffer
Amie Kolesar
Shelly Cambridge
Gary Schmidt
Mitch Killian
Michael Madigan
Evan Barrett
Laura Morland
Colleen Bosold

Representing
Metropolitan Airports Commission
Metropolitan Airports Commission
Metropolitan Airports Commission
Metropolitan Airports Commission, Lake Elmo Airport Manager
Metropolitan Airports Commission
Metropolitan Airports Commission
Metropolitan Airports Commission
Metropolitan Airports Commission
Metropolitan Airports Commission
MAC Commissioner District F
Mead & Hunt
Mead & Hunt
Mead & Hunt

Presentation slides and informational boards presented at this meeting, as well as the newsletter and frequently asked questions (FAQs) provided as handouts to the public, are available on the project website at https://www.metroairports.org/General-Aviation/Lake-Elmo-Environmental-Assessment/Overview.aspx.

The purpose of the meeting was to:
- Provide background information on the environmental process and the stakeholder engagement plan for proposed airfield improvements at Lake Elmo Airport.
- Respond to inquiries from community members.

Items discussed were as follows:
Chad Leqve, Director of Environmental Programs for the MAC, welcomed and thanked everyone for coming and mentioned one thing he hopes people take away from tonight’s discussion is the importance the project team is placing on the concept of collaboration as we go through this process. After introducing himself, Dana Nelson, the Q&A participants (Evan Barrett, Neil Ralston and Joe Harris)
and additional MAC staff and the MAC commissioner in attendance, Chad provided an overview of the agenda for the evening. Chad asked the audience to provide feedback (positive or negative) and ideas throughout the process, both on the project itself as well as on the format of this public event and what could make the public involvement process better.

Chad Leqve began the formal presentation, which included an overview of the MAC’s purpose and mission, including the legislative mandate, funding structure and system make-up; the primary role and characteristics of Lake Elmo Airport; a recap of the Lake Elmo Airport Long-Term Comprehensive Plan (LTCP) recommendations; an overview of the environmental review process, including National Environmental Policy Act (NEPA) and Minnesota Environmental Policy Act (MEPA) processes and requirements, and the three levels of environmental review; a brief overview of the components that go into developing a project’s purpose and need statement and potential constructs that may go into this project’s purpose and need based on the LTCP; an introduction to the alternatives analysis part of the process – they have to be adequate to meet the components of the purpose and need statement, the project team is currently working on determining that suite of alternatives, and each alternative will be developed in sufficient enough detail to adequately assess the costs, operational safety factors and environmental impacts of each; and an overview of the 14 environmental impact categories that will be evaluated.

Dana Nelson then took over the presentation and asked for a quick poll/show of hands on who was in the room as a resident of Lake Elmo (third largest crowd); West Lakeland Township (largest crowd); Baytown Township (second largest crowd); tenants/airport users (a handful of people); Stillwater residents (1 person). She then mentioned that this is a first-of-its-kind effort for the MAC to conduct a stakeholder engagement process of this magnitude and encouraged the audience to provide feedback throughout the process, whether on the meeting format or ideas about the project. The remainder of her presentation focused on the stakeholder engagement plan (SEP) and objectives; the community engagement panel (CEP) role, objectives and composition; the outreach messaging and platforms; and the three other planned public events. She shared that the project website is https://www.metroairports.org/General-Aviation/Lake-Elmo-Environmental-Assessment/Overview.aspx.

Chad Leqve came back up to discuss the project timeline for the environmental review. It is about a year-long process that is currently planned for completion in May of 2018. A printable schedule is available on the project website as well as a board out in the rotunda showing the timeline.

Chad Leqve discussed next steps: the next CEP meeting will be on May 25 at 6:00 p.m. at Lake Elmo Public Library. These meetings are open to the public. At that meeting, we will review tonight’s event to see what can be done better and review the comments received tonight. We’ll then talk about the purpose and need for the project as well as take a deeper dive on the alternatives analysis. The consultant/technical project team will be getting to work on the alternatives analysis over the coming weeks. At that, Chad opened it up for questions. He said the team would answer questions as best they can but also encouraged people to submit written questions on the comment forms, and offered that the project team would be in the rotunda by the informational boards following the Q&A for anyone who wanted to speak one-on-one.

The general Question & Answer session that followed is described below. *(Responses are indicated in italics.)*
May 11, 2017

Meeting Minutes

- Can you repeat when the CEP meeting is? **Chad Leqve responded it is May 25 at 6:00 p.m. at Lake Elmo Public Library.** Is it open to the public? Yes.
- What is the acreage of the airport? **Chad Leqve responded it is 640 acres.** Is that just the Baytown parcel? No, that’s the entire airport (MAC-owned property). I thought the RPZ extends across Manning Avenue. That is true but MAC does not own property within the RPZ west of Manning Avenue.
- What is the dollar amount of taxes the MAC pays to Washington County or the City of Lake Elmo? **Joe Harris responded that hangars and operators at the Airport pay a personal property tax based on their lease-hold area.** That exact information can be found on the county assessors’ website. Approximately $120,000 in personal property tax is collected from tenants and private businesses who have improvements at the Airport. The MAC does not pay any property taxes to the county or townships.
- How many people from the MAC live within one mile of the Airport? [No response/show of hands before next question was asked.]
- How many pilots live within one mile of the Airport? [No show of hands, and the questioner concluded no one has an answer for this, but an airport tenant reported that there are some pilots who do, but they are not here tonight. The questioner concluded it was not very many.]
- What was the original intent of the airport? Do you recall? I remember I was out here in 1964 when Ward Holliday was the airport manager and had a flight school here. **Chad Leqve responded that he thought the character of the airport has been primarily the same: a small, GA type facility, which is no different than what we anticipate to be the case as we look through the planning period of this planning process.** So, educational and recreational use? **Primarily.**
- Do you want to discuss the original charter of the reliever airport system and the fact that it was a specific design to separate traffic – business traffic from the large airport [MSP]? I think that drives a lot of the MAC philosophy, and people might not be familiar with that. **Chad Leqve explained that there’s a reason why MAC has an airport system: to promote and enhance air transportation within the metro area and regionally.** MSP is a major hub airport, major transportation center. Efficient operation of that facility (both from an airside and landside perspective) is predicated on separating the different demographics of traffic the best we can. This means keeping the larger aircraft and commercial operations at MSP, and moving smaller operators to other system airports to provide the infrastructure to accommodate that demographic. In the case of Lake Elmo Airport, that is small, piston-engine, less than 10 seat-type of aircraft, which we anticipate to be the case throughout the planning period. At an airport like St. Paul Downtown Airport, that’s more for larger, corporate jets – the 3Ms of the world and those types of operators. It really is a system and each airport has a role within it to make it effective and allow us to provide the services we are mandated to statutorily from an air transportation perspective. But there have been some jets that have come in on this airport? Absolutely – small jets. And you don’t deny that this extension is to accommodate more small jets? **Chad responded that it’s not necessarily fair to say it’s to accommodate them. You keep using the word piston. Chad explained the purpose of the extension is to ensure an adequate level of utility of the facility to the type of aircraft that already operate at the airport – to make sure the facility is right-sized for the demographic of operators that are already at the airport.** The original intent was not for that. It was for emergency purposes for small aircraft. **Chad responded, “I do not believe that is correct.” Questioner said “yes it was” and invited Chad to look it up. Neil Ralston clarified that the proposed 3,500-foot runway length is designed for...**
propeller-driven aircraft. Piston and turboprop aircraft are the design aircraft for the airport and a runway of that length. A runway designed for jets would be a lot longer than 3,500 feet.

- You talk about 26,000 operations. What does that mean? Take-offs and landings? Chad Leqve responded, yes, take-offs and landings.

- It [the FAQ handout] says “The mix of aircraft using a runway results from the individual decisions made by the pilot, who evaluate the available runway length and the conditions with reference to the performance characteristics of their aircraft.” Why can’t we just say, and be very firm about it, no jets are allowed to land here? We’ve got New Richmond, Downtown St. Paul, Fleming Field, Crystal and a lot of other airports. I’ve been in the area since 1958, and this airport was not made for jets. In selling real estate in the area for 25 years, we were always told, this is to accommodate small aircraft for local people. We’re not looking to invite pilots from other areas; this is for the farmers and residents of Lake Elmo and Baytown Township. Now we’re doing something that’s totally different. We’re worried about the infrastructure for 200 people – which is a concern – but we’re talking now about four different communities with residents in excess of 25,000. There doesn’t seem to be a level playing field here. We’re paying an awful lot of people to study this plan for almost a two-year period. That’s a lot of salaries for two years, a lot of tax money being spent while the citizens of Washington County have gone without roads that have been improved – we’ve all got terrible roads – we’ve been forced by the Metropolitan Council to expand our population by bringing in builders, new homes, city water and sewer that I bet nobody in this room wanted; we’ve had taxes shoved down our throat to pay for improvements we didn’t want, and we’re not getting the roads we need. And I’m not even talking about airport noise. That’s going to be a much bigger complaint for most people here. We’ve had helicopters, airplanes and many other things that are upsetting us. But why are we doing all this for 200 planes that are currently at the airport? Why aren’t we looking at the needs for all these people who live around it? That’s what I don’t understand. Why aren’t we just putting these 200 planes at different airports? Do we need the airport? Chad Leqve explained, in regard to restricting jet operations at the airport, Lake Elmo Airport like every airport in the MAC system and in fact nearly all airports in Minnesota, is a public-use facility. It’s a public transportation asset just like our interstate highway system. We use federal dollars to develop and maintain these facilities as public transportation assets. There are requirements levied upon us as the airport operator if we use federal funds to maintain this public asset. One of those is to provide equal opportunity and access to law-abiding operators to this transportation asset. A lot of the federal regulation that goes to these grant assurance provisions, as well as additional analysis that needs to be done for restrictions at airports in the US, was born out of a national debate around airport noise in this country all the way from airports the size of MSP down to Lake Elmo. It centered on curtailing operations or changing aircraft operations to reduce noise impacts. U.S. Congress said these are public transportation assets and people need access to them. What that means is, our federal funding is predicated on the fact that we operate this airport in a manner that is not an undue burden on interstate commerce or is arbitrary and capriciously managed in terms of equal access to the facility. So we cannot restrict the use of the airport by a legal aircraft that can and wants to fly in and out of that airport, much the same as if somebody who has license tabs on their vehicle wants to drive on a state highway or the interstate system – that’s a public transportation asset that they have access to. Are you saying you can’t restrict a jet? Correct, we cannot. If that jet is a legal jet (which, if it’s flying, it’s legal – more or less), we can’t restrict those operators from coming in
and out of this airport. Then maybe we should just shut the airport down. [Several people clapped.] Chad responded, that is a perspective, and explained that the MAC runs into the same issue at MSP, but in a different context. He said, “Sometimes when an issue pops up at MSP, we’ll be in a gymnasium of 150-200 people who are mad about nighttime noise around MSP. And they come up with a very reasonable idea, from their perspective, like the one you just came up with: If you’re concerned about aircraft noise and the airport bothers you, shut the airport; or, in the case of MSP, close it down at night – don’t allow flights into the airport at night. That is one perspective. But the reality is that the MAC has an obligation and a role that includes a lot of different stakeholders. Some of those stakeholders are just like you – a resident around the airport that has concerns with impacts from the airport. The other important stakeholder group that we have is our tenants – people who want to hangar their aircraft at a MAC airport; the family that wants to get a cheap flight to Cancun to go on a trip out of MSP but they want to fly out at 5:00 a.m. so they can get an extra day of vacation. We have a lot of different stakeholders that we, by virtue of the constitution of our organization have to be accountable to. So what we try to do in these processes – and I can’t guarantee, I’ll be very honest with you, that everybody is going to be 100% satisfied at the end of this process and completely happy with the outcome – but the one thing we are tirelessly dedicated to is making sure we have a process that we’re implementing and supporting where we can have these dialogues and do the best we can to find middle ground with all of our varying stakeholders, while trying to meet our legislative mandate as an organization at the MAC. We are not going to solve all of these issues tonight, but this is the beginning of a process. As Dana laid out, we have a strategy and different tactics we’re going to use to stay in communication, and we’re going to work through this together as a group of stakeholders to get to an end state at the end of this process. The issue of noise will be a discussion point. We’ll evaluate and look at the noise impacts associated with the different alternatives and what the possibilities might be. In response to the question of ‘Why are we using all these tax dollars for an investment at the airport when the community isn’t even keeping up roads around the airport,’ the MAC is user-funded so we don’t use any tax dollars. So the resources that go into planning, environmental evaluation or construction at the airport is a user-fee based funding model. These are not general funds or any type of tax dollars we’re using for our operation of the airport. We can’t speak to local units of government and their operations as it relates to the use of local tax dollars for infrastructure.”

- If the people who live in and around the airport were opposed to any expansion, would you continue on with your proposal of moving forward – yes or no? Chad Leqve explained, as part of this process, we have to evaluate if there are going to be significant environmental impacts with this action. If there are, we have to deal with those. We have to figure out how we’re going to work through those. As an example, as part of the discussion around the noise issue, one thing we have been talking about is reviewing our noise abatement plan when we’re doing the noise evaluation. This means looking at things we can do at the airport from an operational perspective in collaboration with all of our stakeholders – tenants, businesses on the airport, communities around the airport – to identify the real noise issues and determine if there are any things we can do collaboratively to reduce those impacts. We have had successes at other airports doing these things without having a heavy hand type of regulatory approach, which we don’t have the authority to do by virtue of federal law. We’ve had successes in this area at MSP with our airline partners, the FAA, etc. So yes, it would go through, even if there was a strong opposition to it? Chad explained that the MAC has a statutory obligation to make sure it is
maintaining adequate infrastructure for air transportation in the metropolitan area – that is undeniably part of the MAC’s function and role from a statutory perspective. If this process moves forward and there is an alternative that is clearly needed and if the MAC is going to maintain its commitment to the purpose for which the legislature formed it, then the MAC has to move forward with those things. However, Chad reiterated that we want to do it in a way that makes sure we kick over every stone to try to reduce any impact associated with that, and we really are dedicated to that as we move through this process.

- Are you saying, then, that the MAC’s only responsibility is to the aviation community and you have no responsibility to the residents around the airport? Chad Leqve responded, no, absolutely not and explained why he’d hope one wouldn’t make that analysis of the MAC. He pointed to what we’re doing here tonight, and said, “We’re doing this because we’re not an organization that’s like that. If you look at the MAC’s history in terms of how we operate relative to our vast array of stakeholders, if you look at the MAC objectively, when you look at our record of how we’ve dealt with things like this, when it comes to discretionary actions to try to be sensitive to and listen to the concerns of the residents around our airports, we have a pretty robust record. Not only at MSP but at our other reliever airports as well. This is your own assessment to make but I’d hope what you will take away from this meeting tonight is that we are committed to that as part of this process, because what we’re doing here tonight, believe it or not, in terms of federal requirements, is discretionary. That doesn’t mean it’s not important and that doesn’t mean it’s not a priority for the MAC. So in answer to your question, no I don’t think that’s categorically the way the MAC operates and I don’t think our record demonstrates that.”

- After living out here for 30 years, and this airport having comprehensive plans renewed every 10 years from 1965 plans, with all this expansion, and 200 residents on the airport and that’s been declining for the last 30 years, under the data practices act, I’d like you to release documents that show how much money you’ve already spent over the last two years for this plan, and the fact that the project is estimated around $19M and what’s your return on your investment for the next 25 years for your 200 residents? I think it’s a lose-lose all the way around versus just resurfacing the runway that exists without moving our roads. How do you accommodate this huge expense of MSP dollars for people that don’t use that runway? And our local community sees no benefit to this. How can you justify spending that kind of money and resources that you’ve done for an airport that’s becoming obsolete? Because we’ve got residents all the way around you. You shut down a runway at Anoka already, and you’re comparing our runway airport to the 83 airports around the state that, when you look at Google maps, there’s maybe one farmer for miles around those airports. So how do you justify that? Chad Leqve responded that in addition to the 200 based tenants, there’s transient traffic that comes through these airports that use these facilities. They’re public-use facilities – not private airports just for the people based at the airport – that’s an important distinction. He noted another thing to think about when talking about the value proposition of the airport is the concept of a system. It is a system for a reason, and part of that system is MSP. The airports in the system work in conjunction with one another to ensure the MAC is meeting its statutory mandate to provide safe and convenient air transportation and promote aviation in the metro area. He also noted Lake Elmo Airport provides economic value to the community. Chad then turned it over to Neil Ralston and Joe Harris to further respond to the questions and comments. The questioner then repeated his request for the MAC to disclose and publish this information under the data practices act and speculated that the MAC has spent millions already on this project. Melissa
Scrovonski responded that he would need to put this request in writing and that we wouldn’t have the information available tonight. Neil Ralston reported the information in question can be pulled together and provided, but that it was much less than the millions of dollars the questioner speculated. He explained that much of this work is done with in-house resources, and reminded the public that the money expended for these efforts is internally generated through the aviation system; we’re not using local tax dollars. I’m asking for where is the return on investment? For the amount of money you are going to spend on Lake Elmo, how are you ever going to receive a return on your investment? If you spent $4M upgrading a runway, how in the world is that airport even going to justify spending that amount of money? Chad Leqve responded that it’s important to remember it’s a public asset and there is a public service component to what the MAC does. He asked, “If we operated on the basis that every single public asset had to have a return on investment, what would happen to some of the infrastructure we have in this country? It’s an investment made for a public service for transportation. That’s a big component in what we’re talking about. It’s a transportation asset that’s available for public use, just like the interstate highway system.”

- When was the last time the runway was resurfaced/repaired and what do you anticipate the life of the new runway to be? Neil Ralston responded that the existing runway has been in position since the 1950s, and it’s been resurfaced several times but the base underneath the surface is past its useful life. He explained that we can’t keep repaving the existing runway infrastructure; we need to rebuild it from the dirt up, so we want to make sure we get the new replacement runway in the right place. The new runway life is a 20-50 year investment. And one of the primary reasons for moving forward is we have to address failing, end-of-life infrastructure at Lake Elmo Airport.

- We’ve seen significant groundwater problems, noise pollution problems from this airport. As you plan to take action regarding the runway, are you going to do anything about the sources of pollution that come from this airport at the same time, such as the groundwater situation? As part of the engineering aspects of rebuilding the runway, will you take advantage of that opportunity when the airport is shut down to remediate some of the environmental health issues? Chad Leqve responded that if we run into something during construction that is an issue or an impact, we will deal with it. Neil Ralston reported that the groundwater contamination issue that was identified in the area was not associated with the airport. Chad Leqve then noted that, regarding the groundwater and the filtration systems that the MAC installed in homes, it was determined to be a source offsite that had nothing to do with the airport. Chad also said, “If, in the course of conducting the environmental evaluation, and if we do construction at the airport, we encounter situations where there are impacted soils or something of the like, of course we will deal with those in an environmentally responsible manner as part of this effort. Part of the evaluation we’re going to be doing when talking about the affected environment is taking into account any preexisting conditions we should be thinking about as we embark on possibly preparing for something like this.”

- I don’t think it’s any secret that 3M has looked at Lake Elmo Airport as a possible place for which to bring its corporate planes, and has considered the airport unsuitable for their needs. As I listen to the concerns of my fellow residents, it bothers me that perhaps we’re going see more of this type of corporate use and you won’t be able to stop it because it’s legal. And to what extent that increases the traffic, noise, and so on that we will have to endure as local residents. Chad Leqve responded, if you look at the existing 3M fleet, they are big aircraft – big corporate
jets. They are going to need runway in excess of 3,500 feet to operate effectively, which is why they’re based at St. Paul Downtown Airport, because we have that over 6,000-foot-length runway at that airport to accommodate those operations. Joe Harris then stated that a big community concern with the Lake Elmo Airport proposal is that a 3,500-foot runway could introduce more jet traffic to the airport as well as maybe an increase in overall traffic as the population of the airport continues to grow. He noted that the MAC did a runway reconstruction at St. Paul Downtown Airport last summer in which the runway was shortened to 3,800 feet. He said, “By our calculations, 3M could actually use about 4,500 feet. 3M relocated to MSP as a result of not having at least a minimum of 5,000 feet. They were going to relocate if they lost even one foot at St. Paul. The reality of these large-scale corporate operators who are flying big jet aircraft that fly across the globe relocating to Lake Elmo – it’s not going to happen.”

Regarding the jet traffic issue, Joe acknowledged that small jets can land on 3,500 feet, and do so in the middle of nowhere in communities in which they need to provide service to a client or for whatever reason they need to fly in there. He acknowledged we have great nearby facilities, like New Richmond, Osceola, St. Paul Downtown, Anoka, Flying Cloud, that have had significant investments made to attract and accommodate those types of jet aircraft because they require NAVAIDs, and more significant runway and taxiway infrastructure (all the things that won’t be part of the future expansion at Lake Elmo) – is that you have a service provider at those airports that can accommodate the needs of not only the passengers but the aircraft itself. He reported that we don’t even have jet fuel at Lake Elmo today, nor will we require the operator to have jet fuel for sale if or when this project goes forward. However, he noted, we could have a service provider change in which the current business owner may sell and the new service provider may elect to sell jet fuel to accommodate turboprop aircraft like King Airs, similar to what Governor Dayton flies around. Joe also mentioned that the hangar inventory at the airport wouldn’t accommodate a 3M fleet. He said a lot of what’s changing in the general aviation (GA) world is similar to computer technology: “If you don’t have wireless in a building like this, you’re not maximizing the students’ learning. Teachers aren’t able to use tools to advance the learning process. A lot of the GA airplanes at Lake Elmo today have been in existence for 40-50 years. Not only are some of our pilots retiring, those aircraft are soon going to be in museums as well. The new technology GA airplanes out there – the ones that are made in Duluth like the Cirruses that can be half a million dollars each, you start outfitting them and they can be upwards of three-quarters of a million or a million dollars, these are single-engine, 4-person piston aircraft that can fly ranges – single pilot – 1,000 miles. At an airport like Lake Elmo at 2,850 feet, it’s not a real option for them because they can’t use their aircraft to max utilization. These improvements will allow us to almost catch up to where the industry is now, with the future evolution of the aircraft as well as the pilot. It’s kind of two-pronged. Certainly they can operate at 2,850, but with some of the lighting systems and instrumentation that we don’t have, they’re having to make a stop in between to get to their destination point. We have several people at the airport now that own these aircraft that are able to make four or five stops in communities that aren’t served with commercial air service by basing out of Lake Elmo right now, so we’re seeing that population slowly grow. When a hangar does come for sale at Lake Elmo, there are two or three buyers already looking to purchase it so there still is a high demand, quite frankly because we’ve got a great airport and this is a great community to be part of. Our pilot community that’s here, they’re here because they want to better understand what the community thinks of your airport because they want to walk down this road together to make it all work. We want to share with
you, who we are, and give you a better understanding of the activities that are at the airport and I’m hoping some of the pilots here will share a little about their story and how they use the airport, because it is turning over a leaf from recreational hobby – and we still have a lot of that out there – but a lot of the airplanes are used for a business purpose, and I believe will be going forward in the future.”

- A number of people have had a lot of questions about the demographics and statistics used. A couple I’ve heard: “26,000 operations” (landings and takeoffs) and “10-seater” (Chad Leqve clarified “less than 10 seats”). What is the breakdown of the 26,000, because when I hear a King Air, I know it’s a King Air – it makes a huge difference between a recreational Cessna and a King Air. When it comes down to the usage in the area for the noise impact, that differential is night and day. It has to be a minute percentage right now, and when you say that the use is moving from recreational to business use – that’s the first time I’ve ever heard that in these meetings – in terms of going from rec to bus use, a lot of people in this area have homes and have made investments in this area, you’re making them based on what the current conditions are, and going from 1% King Air to 20% King Air makes a huge impact on our investments and quality of life from an environmental standpoint. In terms of demographics, I see that big 10-seat, I don’t hear a lot of 10-seaters taking off at Lake Elmo, I’d love to know what that breakdown is. Chad Leqve responded, when we talk about those 14 categories we’ll evaluate as part of this analysis, one of those is noise. Chad asked the questioner to write down some of these specific things he’s interested in and concerned about on a comment card so we can bring it into the environmental analysis. He reminded people that we’re at the beginning of this process and these are the kinds of things we want to hear. He acknowledged that noise is an issue people are concerned about, and that the environmental impact categories and noise will definitely be one of the topics at the third public event. Chad explained to the public that by submitting questions and concerns in writing, we can try and hit on some of those things during that meeting.

- The $120,000 of property taxes from Airport usage that you quoted earlier – in terms of total operating budget, does any of that comprise money that comes from pass-through [transient] traffic [those who do not lease hangars at the airport]? Do they pay any sort of compensation? What’s the breakdown? Do you have an economic model of the airport that’s available? Joe Harris answered that anybody who does business at the airport pays our tenant fixed base operator, who provides the service, who then pays 1.5% of gross receipts to the MAC. This would include those who are coming in and purchasing fuel, maintenance services, and ground handling services, or paying an apron fee (i.e., paying to park their aircraft). Obviously it’s complex, is there any way you can just publish the economic model? Joe answered yes, we can put together a pie chart and make that available.

- You’ve used words like collaboration and communication and stakeholders. In terms of collaborating with the community, I know from speaking with a lot of people here, a lot of people are upset because it’s 13 people on this commission [Community Engagement Panel] but there’s really not anyone that’s on the other side; well there are a couple people from the other side of the voices. Is there any way to even it out in terms of having some of these questions – there’s a couple sticking points, like eliminating jets, if that’s a possibility, or keeping the same length – great, we’d love you to improve the airport but can you keep it at the same length? I think there are a lot of people who would buy into that. It’s increasing it which would increase new jet traffic, new King Airs, all those kinds of increases are what are really rubbing people the wrong way. You talk about collaboration, is there any way to meet in the middle in a
negotiation? Right now it feels like there’s a lot of power on one side and it’s “this is what we’re going to do but we’ve got to go through this process.” Chad Leque answered, regarding the composition of the Community Engagement Panel, our intent was to make sure we had all the major stakeholder groups represented. Really, an important part of the process/intent of this group was to make sure the flow of information was getting to the right people. They are ambassadors to the process from their respective stakeholder groups. Those meetings are open to the public – they are not closed meetings. Chad continued, saying “I heard you say collaborating and then you mentioned not extending the runway. Going back to the mission the MAC has as an organization, we’re looking at the existing airport infrastructure. If you go back to our statutory mandate to provide efficient, effective and safe infrastructure within the metro area for air transportation, as part of the purpose and need process we are going to vet what is really needed at the airport. What’s the purpose of what we’re doing? Do we need the extra runway length to be sure we’re providing adequate services to ensure effective, efficient and safe operations at the airport? The LTCP evaluated that and demonstrated that, although the FAA advisory circulars say that based on the design aircraft, we could go up to 3,900 feet, in terms of providing real utility, the planning process brought it back to 3,600 feet. We went through the LTCP process and there was discussion and dialogue with the community, a lot of concern about intersecting Neal Ave. at a new location with 30th St. We cut another 100 feet off the runway extension, all while trying to stay true to what the legislature tells MAC it’s supposed to be doing. I’m not suggesting that you were suggesting this, but I don’t know that it’s fair to say that in this case, effective collaboration somehow equates to no runway extension.” I don’t mean to say that, but in terms of the legislative mandate you have, there’s a difference between operating a safe environment for recreational flyers versus growing it to accommodate business travel, as your person said. Chad responded, saying, “I think it’s important to point out what is in the statement that Joe Harris made regarding business use in terms of the significance of that, and the impact of noise: A Cirrus aircraft is a 4-person airplane; a high-wing Cessna 172 is a 4-person airplane – the GA small aircraft. What Joe was saying is that with new technology in those small, composite airplanes, you can start to get speeds at altitude that make them very useful for longer-range flights. But the noise impact on the ground is really no different than the high-wing Cessna 172. It’s a similar discussion we’re having at MSP with advanced system airframe technology and engine technology and noise – bigger doesn’t always mean noisier. In the case of Lake Elmo Airport, it’s not a build-it-and-they-will-come scenario for bigger airplanes. It’s a build-it-to-get-better-service-to-those-that-are-there scenario when you look at it in the long run. The design family of aircraft is not changing. It is what it is today out there. We might see some shifting – but not seismic – a shift in the demographic of aircraft. But it’s really about making sure that we’re being responsible as an organization in meeting that efficiency and safety component of the service we’re supposed to provide to the flying public.”

- I’m a pilot from Lake Elmo Airport and I just wanted to put a face to an airport tenant. I know I may not be the most popular person here, but I’ll do my best. I’m a second-generation pilot. My father was a pilot – not professionally – but for his business. I just want to throw out there the business example. He had a consulting engineering business as an environmental engineer serving small communities, working on water treatment facilities around the five-state area. He used a small jet to fly him and his engineer around to these small towns to serve them. The small aircraft was not a King Air – it was either a Cessna 172 or a Bonanza or something smaller – single-engine aircraft. It’s just an example that when we talk about the business traveler –
people may not necessarily understand that the business traveler may be in a small aircraft, and that’s understandable. But I’m telling you it is true in my particular case. Subsequently, we located our medical design and manufacturing company in Stillwater, specifically so we had access to a local airport to fly a small aircraft to serve local community hospitals in the five-state area. I just wanted to give a counter example – a real-world example that does exist. I do appreciate and understand your concerns of the large aircraft, and I would share that concern as well; I think it’s reasonable to be concerned. I just want to say that when you’re looking at commerce, it’s not necessarily big aircraft. It might be the Cessna 172, the Bonanza, the Cirrus – small aircraft, 4- to 6-seat, single-engine, relatively quiet aircraft – just to put a face on that. The other thing I wanted to mention, and John Renwick is here – he’s on the Community Engagement Panel – and he and I spend a lot of time figuring out and talking about how we can collaborate as stakeholders to be respectful to the community with respect to airport noise. We are very sensitive to that as well and we want to do everything within our power to positively impact operational things we can do to reduce the impact of noise. I live right by Hwy 95 and every spring the motorcycles come up and I call the sheriff pretty much every weekend because they’re heading through town with vehicles that are intentionally modified to be loud. That’s what really infuriates me. This is not commerce, this is somebody who intentionally modified their vehicle to be loud, which I feel is very disrespectful. As pilots, we do our best to be respectful of the community and will continue to do so regardless of this plan, to look at what we can do from an operational perspective to reduce the impacts. If you have feedback, we’d love to hear from you. If there’s a particular loud aircraft you hear every Saturday morning at 6 a.m., let us know, because we can actually go talk to them and suggest they do it at 7 or 8 a.m. Even though there might not be a way of restricting that behavior from a legal perspective, normally when you talk to a pilot at Lake Elmo and tell them they’re being disrespectful, they change their behavior. That’s more of the character of the pilot and operator at Lake Elmo.

- I would like to say under your affected environment bullet points, one of the things you did not address are roadways. And that’s what a lot of people in the room have issues with – your reconfiguration of 30th Street N. That should be addressed in that topic. And who pays for the road? Chad Leqve responded that, absolutely, roadways will be addressed as part of the alternatives analysis and will be a discussion point.
- Will property values be addressed? Chad Leqve clarified, “in terms of noise?” In terms of decreased property values because of noise. Chad responded that those are issues we’ll have to address – that’s typically something that comes up through this process.
- I think you failed to develop a purpose and a need. You’re developing a plan for the future. That plan is to accommodate a different operator that can bring in jet fuel and the runways are designed so you can bring in bigger planes. Fixed-wing aircraft or high-wing aircraft doesn’t take that much runway to take-off and land in. Chad Leqve responded that the purpose and need discussion will be a topic of our next public event, so we’ll take up that discussion in much more detail in July, and stated that this was a good ending point for the question-and-answer session, as we’ve reached the end of the meeting time.

Chad Leqve reminded the audience that the project team would be available in the rotunda if anyone had further questions or wanted to speak one-on-one.

The meeting adjourned at approximately 8:10 p.m.
Welcome!

Public Event

Environmental Assessment
Lake Elmo Airport
Metropolitan Airports Commission (MAC)

- Owns and operates seven airports within 35 miles of downtown St. Paul and Minneapolis, including MSP and six general aviation airports
- Public corporation created by the Minnesota Legislature
- Provides and promotes safe, convenient, environmentally sound and cost-competitive aviation services to its customers
- Operates via user fee-based funding

Airports Owned & Operated by the Metropolitan Airports Commission

Environmental Assessment
Lake Elmo Airport
Lake Elmo Airport (FAA Identifier: 21D)

- Integral part of the MAC’s General Aviation Airports system
- Accommodates personal, recreational and some business aviation users
- Primarily serves and will continue to serve small, propeller-driven aircraft with less than 10 passenger seats
- Only public airport in Washington County

According to the Minnesota State Aviation System Plan published in 2013, 21D is one of 83 Intermediate Airports in the state.

<table>
<thead>
<tr>
<th></th>
<th>MN Intermediate Airports</th>
<th>Lake Elmo Airport</th>
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<tbody>
<tr>
<td></td>
<td>Average Number</td>
<td>Rank Among MN Intermediate Airports</td>
</tr>
<tr>
<td>Total Based Aircraft</td>
<td>31</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; of 83</td>
</tr>
<tr>
<td>Annual Operations</td>
<td>10,108</td>
<td>4&lt;sup&gt;th&lt;/sup&gt; of 83</td>
</tr>
<tr>
<td>Primary Runway Length</td>
<td>3,654 feet</td>
<td>79&lt;sup&gt;th&lt;/sup&gt; of 83</td>
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</table>

Source: Airport IQ 5010 Airport Master Records.
Project Overview & Objectives

- Address failing infrastructure that’s at the end of its life
- Enhance airfield safety
- Improve facilities for the aircraft currently operating at the airport

A supplemental planning analysis will be conducted as part of the EA/EAW to verify the LTCP aircraft operations forecasts, runway length determinations and development alternatives.
Public Event

National Environmental Policy Act (NEPA)

Initiate the Environmental Process

- Will the project have significant environmental effects?
  - YES
  - MAYBE
  - NO

Categorical Exclusion (CatEx)

- Are there extraordinary circumstances that merit further review?
  - YES
  - NO

Environmental Assessment (EA)

- Will the action have significant environmental effects?
  - YES
  - NO

Environmental Impact Statement (EIS)

- What are the significant environmental effects of the proposed action that cannot be avoided, minimized, or mitigated?
  - YES
  - NO

Environmental Assessment (EA)

- Are there extraordinary circumstances that merit further review?
  - YES
  - NO

Finding of No Significant Impact (FONSI)

Record of Decision (ROD)

Stakeholder Engagement

1. Scoping
2. Purpose and Need
3. Alternatives Analysis
4. Affected Environment
5. Environmental Consequences
6. Mitigation

Environmental Assessment
Lake Elmo Airport
Environmental Analysis Categories

- Air Quality
- **Biological Resources** (including fish, wildlife, and plants)
- Climate
- Coastal Resources
- Department of Transportation Act, Section 4(f)
- Farmlands
- Hazardous Materials, Solid Waste, and Pollution Prevention
- Historic, Architectural, Archeological & Cultural Resources
- Land Use
- Natural Resources and Energy Supply
- Noise and Compatible Land Use
- Socioeconomics, Environmental Justice, and Children’s Environmental Health and Safety
- **Visual Effects** (including light emissions)
- **Water Resources** (including wetlands, floodplains, surface waters, groundwater, and wild and scenic rivers)
Minnesota Environmental Policy Act (MEPA)

- **What is it?** MEPA requires an environmental review process, similar to the federal NEPA process, to be used by local governments to analyze the potential environmental effects of proposed projects.

- **What does it require?** An Environmental Assessment Worksheet (EAW) is required by MEPA for construction of a new paved airport runway less than 5,000 feet long.

- **How will it be accomplished?** We will prepare the Federal EA and State EAW concurrently, as they share many of the same informational requirements. We will then complete the standard EAW form and submit it as an appendix to the Federal EA.
Anticipated Environmental Assessment Timeline

- **MAC Adopted Lake Elmo LTCP** (September 2016)
- **EA Process Begins** (February 2017)
- **Analysis of Impacts and Alternatives** (Spring-Fall 2017)
- **Draft EA Public Review** (Winter 2018)
- **Final EA & FAA Determination** (Spring 2018)

For more detail, see the Stakeholder Engagement Plan on the project website. Schedule is subject to change. Any significant schedule updates will be published on the project website and distributed to e-news subscribers, as appropriate.

Public Event

Environmental Assessment
Lake Elmo Airport
The MAC is committed to a transparent and open community involvement process and has established a Community Engagement Panel (CEP) for this project. This is an advisory panel representing a diverse group of community stakeholders, including government representatives and staff, airport users, and local residents.

Stay Involved!

- Sign-up to receive updates via our e-news subscription program
- Check out the project website for up-to-date information
- Attend the four public events to learn more about the project
- Share your thoughts via the “Contact Project Team” tab of the website or on the comment forms at the public events

Project Website

www.metroairports.org/General-Aviation/Lake-Elmo-Environmental-Assessment.aspx
Lake Elmo Airport
Environmental Assessment (EA)/Environmental Assessment (EAW) Worksheet

May 11, 2017 – Public Meeting
Introduction to the Environmental Assessment Process
Agenda

• MAC Purpose & Mission
• Recap – Long-Term Comprehensive Plan (LTCP)
• Environmental Process Overview
• Stakeholder Engagement Plan
• Next Steps
• Questions?
Metropolitan Airports Commission

- Public corporation created by Minnesota Legislature
- Owns and operates airports within 35 miles of downtown St. Paul and Minneapolis
- MSP International Airport
- Six general aviation airports
- User-fee based funding
- Limited property taxing authority unused since 1960s

We provide and promote safe, convenient, environmentally sound, cost-competitive aviation services for our customers.
Board Makeup

• Gov. appoints chairman and 12 commissioners (8 metro, 4 outstate)
• Minneapolis and St. Paul mayors each appoint one
Legislative Mandate to Effectively Enable Aviation

(1) promote the public welfare and national security; serve public interest, convenience, and necessity; promote air navigation and transportation, international, national, state, and local, in and through this state; promote the efficient, safe, and economical handling of air commerce; assure the inclusion of this state in national and international programs of air transportation; and to those ends to develop the full potentialities of the metropolitan area in this state as an aviation center, and to correlate that area with all aviation facilities in the entire state so as to provide for the most economical and effective use of aeronautic facilities and services in that area;

Minn. Stat. § 473.602
Lake Elmo Airport

Primary Role of Lake Elmo Airport

- Integral part of the regional Reliever Airport system
- Accommodates Personal, Recreational, and some Business Aviation users
- Design Aircraft is and will continue to be small, propeller driven aircraft with < 10 passenger seats
- Role not expected to change in forecast period
- Only public airport in Washington County

Existing Facility & Activity Level Overview

- ~200 Based Aircraft
- ~26,000 Aircraft Operations
Long-Term Comprehensive Plan (LTCP)
Planning & Development Process
Steps 1 through 11
LTCP: Meeting the Objectives

Planning Objectives

• Addresses failing end-of-life Infrastructure
• Enhance safety
• Improve operational capacity for design aircraft family

Addressing the Objectives: Proposed Project

• Relocate Runway 14/32 by shifting 615 feet to the northeast and extending to 3,500 feet, including all necessary grading, clearing, and runway lighting.
• Realign 30th Street North around the new Runway 32 Runway Protection Zone (RPZ) and reconnect to the existing intersection with Neal Avenue.
• Construct a new cross-field taxiway to serve the new Runway 14 end, including taxiway lighting and/or reflectors.
• Convert existing Runway 14/32 to a partial parallel taxiway and construct other taxiways as needed to support the relocated runway, including taxiway lighting and/or reflectors.
• Reconstruct Runway 4/22 and extend to 2,750 feet, including necessary lighting and taxiway connectors.
• Establish a new non-precision approach to Runway 14 end and upgrade existing Runway 4 approach to RNAV (GPS).

“The Purpose of the 2035 Long-Term Comprehensive Plan (LTCP) is to identify future facility needs at Lake Elmo Airport for a 20-year period ...... It will also provide a road map to guide the MAC’s development strategy for Lake Elmo Airport over the next 5-10 years.....”
Environmental Review
Planning & Development Process
Steps 12 through 14
Environmental Process Overview

• Federal and state environmental review is required before the project can be funded and implemented

• Federal Environmental Review:
  Federal Aviation Administration (FAA) follows its policy and procedures for compliance with the National Environmental Policy Act (NEPA) and implementing regulations issued by the Council on Environmental Quality. This applies to actions that include grants, and any related federal action.

• State Environmental Review:
  The MAC is the Responsible Governmental Unit for ensuring that the requirements identified by the Minnesota Environmental Policy Act (MEPA) are met in accordance with the associated Environmental Quality Board implementation guidance.
National Environmental Policy Act (NEPA) – FAA Order 1050.1F

• FAA Order 1050.1F provides the Federal Aviation Administration’s (FAA) policies and procedures to ensure agency compliance with the National Environmental Policy Act (NEPA)

• Three levels of review:

  Categorical Exclusion “CATEX”: A CATEX is a category of actions that do not individually or cumulatively have a significant effect on the human environment, and for which, neither an EA nor an EIS is required. If an action is on the FAA CATEX list – and extraordinary circumstances do not exist – it is eligible for a CATEX.

  Environmental Assessment (EA): An EA must be prepared when the proposed action does not normally require an EIS and:

    (1) does not fall within the scope of a CATEX; or

    (2) falls within the scope of a CATEX, but there are one or more extraordinary circumstances

  Environmental Impact Statement (EIS): An EIS must be prepared for actions significantly affecting the quality of the human environment when one or more environmental impacts would be significant and mitigation measures cannot reduce the impact(s) below significant levels.
Federal Environmental Process

1. Scoping
2. Purpose and Need
3. Alternatives Analysis
4. Affected Environment
5. Environmental Consequences
6. Mitigation
Minnesota Environmental Policy Act (MEPA)

- MEPA requires an environmental review process, similar to the federal NEPA process, to be used by local governments to analyze the potential environmental effects of proposed projects.
- AOEE Statute and mandatory categories require Environmental Assessment Worksheet (EAW) (see Minnesota Rules 4410.4300)
- Because a Federal EA is being completed, it can fulfill the informational requirements of a State EAW (see MR 4410.1300 and 4410.3900)
- For Lake Elmo Airport, the MAC is both the responsible government unit (RGU) and the project proposer (see MR 4410.0500 and 4410.4300)
Purpose and Need

• Purpose and Need Components:
  • Provide the required runway length necessary to meet design aircraft needs.
  • Prevent existing incompatible uses in the Runway 14/32 runway protection zones (RPZs).
  • Replace failing runway and taxiway pavement.
  • Provide adequate runway to taxiway separation.
  • Resolve hangar penetrations to Runway 14/32 transitional surface.
  • Provide adequate and modernized instrument approach capability for users.
Alternatives Analysis

• Compare and evaluate alternatives for meeting the Purpose & Need.
• Alternatives will be developed in sufficient detail to allow an evaluation and comparison in terms of cost, operational and safety factors, and environmental issues.
• Analysis will be completed for all alternatives identified in the LTCP, and rely on information from the LTCP, as well as any refined versions of the preferred alternative developed under the Supplemental Analysis.
Environmental Analysis and Cumulative Impacts

- Affected Environment
- Environmental Considerations:
  - Air Quality
  - Biological Resources (including fish, wildlife, and plants)
  - Climate
  - Coastal Resources
  - Department of Transportation Act, Section 4(f)
  - Farmlands
  - Hazardous Materials, Solid Waste, and Pollution Prevention
  - Historical, Architectural, Archeological, and Cultural Resources
  - Land Use
  - Natural Resources and Energy Supply
  - Noise and Compatible Land Use
  - Socioeconomics, Environmental Justice, and Children’s Environmental Health and Safety
  - Visual Effects (including light emissions)
  - Water Resources (including wetlands, floodplains, surface waters, groundwater, and wild and scenic rivers)

- Cumulative Impacts - The NEPA process requires projects that are connected, cumulative and similar (common timing and geography) be considered. The planning window and geographic limit to consider will be determined during preparation of the EA.
Stakeholder Engagement Plan: Objectives

• The MAC formulated a project-specific stakeholder engagement plan to achieve the following objectives:
  • Strengthen its relationships with stakeholders
  • Foster collaboration
  • Build stakeholder trust and support
  • Proactively identify areas of interest and concern
  • Support and document a thorough and effective process
  • Formalize a system for reaching a wide variety of stakeholders
  • Develop a model for future similar processes
  • Create opportunities for MAC Board members to recognize stakeholder engagement in the EA/EAW process
  • Streamline agency review
Interested Public and Community Engagement Panel (CEP)

- **Interested Public**: Members of the public who have an interest in the EA/EAW have a role to play and a responsibility for its outcome.

- **Community Engagement Panel (CEP)**: The CEP is an advisory board representing major community stakeholder groups that is more closely involved in the EA/EAW project than the public at large.
Community engagement Panel (CEP)

CEP Role:
Serves several important functions including:

- Representing a broad range of stakeholder groups in the EA;
- Receiving information about the EA/EAW and sharing it with constituencies;
- Providing input to the EA/EAW as the voice of key stakeholders; and
- Providing technical advice to the M&H Team.
## CEP Membership

### 21D Community Engagement Panel

#### Membership Roster

*21 February 2017*

<table>
<thead>
<tr>
<th>Representation</th>
<th>Name</th>
<th>Position</th>
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<tr>
<td>AIRPORT USER/TENANT (2)</td>
<td>John Renwick</td>
<td>Airport User/Tenant</td>
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<td></td>
<td>Marlon Gunderson</td>
<td>Airport User/Tenant</td>
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<td>MAC STAFF (2)</td>
<td>Neil Ralston</td>
<td>Airport Planner</td>
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<tr>
<td></td>
<td>Chad Leqve</td>
<td>Director of Environment</td>
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<tr>
<td>CITY OF LAKE ELMO (2)</td>
<td>Stephen Wensman</td>
<td>Planning Director</td>
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<td>Keith Bergmann</td>
<td>Resident</td>
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<td>BAYTOWN TOWNSHIP (2)</td>
<td>Kent Grandlienard</td>
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<td>Stephen Buckingham</td>
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<td>WEST LAKELAND TOWNSHIP (2)</td>
<td>Dave Schultz</td>
<td>Board Member</td>
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<td></td>
<td>Mary Vierling</td>
<td>Resident</td>
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<td>MAC COMMISSIONER (1)</td>
<td>Michael Madigan</td>
<td>District F, Lake Elmo Airport</td>
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<tr>
<td>GREATER STILLWATER CHAMBER OF COMMERCE (1)</td>
<td>Robin Anthony</td>
<td>Executive Director</td>
</tr>
<tr>
<td>WASHINGTON COUNTY PUBLIC WORKS (1)</td>
<td>Ann Pung-Terwedo</td>
<td>Senior Planner</td>
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*MAC Metropolitan Airports Commission*
Messaging

**Messaging Strategies:**

- Use of plain language – minimizing the use of acronyms and technical jargon that would likely be unfamiliar to a public audience
- Providing definitions of unfamiliar or technical terms when used in project messages
- Providing explanations of aviation terms and regulations and airport operations that are relevant to project messages
- Using easy-to-understand graphics, tables and charts in addition to narrative descriptions
- Reviewing public comments received in response to public messaging and providing additional explanation or clarification when needed through follow up outreach.
Outreach Platforms

• In-Person Presentations
• Special presentations for elected officials
• Project Newsletters
• Project Website
• GovDelivery
• Public Notifications
Lake Elmo Environmental Assessment

Overview

Subscribe for updates!
Click to sign up

Subscribe to monthly updates. Links to regulations and information pages.

In 2016, the Metropolitan Airports Commission (MAC) completed a study that recommended the construction of a second runway at the Lake Elmo Airport. The $54 million project, scheduled for completion in 2019, will enable the airport to accommodate an additional 10,000 takeoffs and landings during the next 20 years. Specifically, the LCO (Lowest Cost Option) proposes the following enhancements:

- Runway extension and related improvements totaling $25.9 million
- Resurfacing existing runways and taxiways
- Construction of a new taxiway
- Development of a new airport terminal
- Environmental compliance

The project is designed to meet all federal and state regulations and to minimize any environmental impacts. The MAC has selected Black & Veatch, Inc., to provide these environmental documentation services.

The MAC recently completed a Lake Elmo Environmental Assessment (EIA) study. If approved, the project will be funded in part by the Federal Aviation Administration (FAA). The EIA study and the project are currently under review by the Minnesota Pollution Control Agency (MPCA).

The project is expected to begin in late 2017 and is scheduled for completion in 2019. For more information, please visit the project website at www.metropolitanairports.com/LakeElmoEnvironmentalAssessment.

The Metropolitan Airports Commission is committed to minimizing any environmental impacts associated with this project. Information on the project's impact on the environment will be available during the construction phase.

The Environmental Process

The MAC's Environmental Policy Act (EPAA) process is designed to ensure that the environmental impacts of the proposed project are minimized. The project is expected to be completed in 2019 and will be monitored to ensure compliance with all federal and state regulations.

The MAC is committed to ensuring that the Lake Elmo Airport remains a vital asset to the region. The project is expected to enhance the airport's capacity and support the economic development of the area.

For more information, please visit the project website at www.metropolitanairports.com/LakeElmoEnvironmentalAssessment.
Stakeholder Engagement Plan: Public Events & Outreach Platforms

• Public events will be held at four key project milestones:
  • Introduction to the Environmental Assessment process
  • Purpose & Need and Alternatives
  • Environmental Effects
  • Draft EA Public Hearing

• Project messaging platforms include the following:
  • Project webpage
  • Monthly project updates and periodic newsletters
  • GovDelivery email subscriber list
  • Press releases
Next Steps

• CEP Meeting May 25, 2017
• Topics for the CEP meeting will include:
  • A recap of the first public event
  • Initial work on Purpose & Need and Alternatives
• Complete Purpose and Need
• Complete Alternatives Analysis
• Public Meeting #2 – July 2017
Public Event #2
for the Lake Elmo Airport Environment Assessment (EA) and State Environmental Assessment Worksheet (EAW)

August 17, 2017 – 6:00-8:00 pm
Oak-Land Middle School

Agenda – Design Alternatives

A. 6:00 Open House – Project Orientation (Cafeteria)
   Visit with MAC representatives to learn about the airport EA activities

B. 6:30 Alternatives Presentation (Auditorium)
   Learn more specifics regarding the alternative scenarios being considered

C. 7:00 Presentation Q&A (Auditorium - See reverse side for format)
   Questions regarding the alternative options presented

D. 7:30 Community / MAC One-on-One Engagement Session (Cafeteria)
   Discuss concerns, ideas and opportunities with MAC representatives

Previous Public Engagement Meetings

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
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<tbody>
<tr>
<td>May 11, 2017</td>
<td>Introduction to the Environmental Assessment Process</td>
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Summary

Presentation provided overview of: MAC regulatory responsibilities per FAA and state legislative mandates, Lake Elmo improvements purpose and needs; introduction to analyzing alternatives; the environmental analysis categories; and the stakeholder engagement plan.

Attendee concerns included aircraft noise, 30th Street North relocation considerations, pilot safety, airfield lighting, project funding, and environmental effects.

Future Public Meetings (Dates and times to be determined)

November 2017
March 2018
MAC Aviation Responsibilities

The Metropolitan Airports Commission (MAC) is mandated by the state legislature to oversee the operation and ongoing maintenance of 7 metro airports including the Minneapolis-St. Paul International Airport and 6 reliever airports: St. Paul Downtown, Anoka County-Blaine, Flying Cloud, Airlake, Crystal, and Lake Elmo.

The MAC’s responsibilities, among many others, include overseeing the efficient, safe, and economical handling of air commerce throughout the metropolitan aviation system. Much of this work focuses on enhancing safety, complying with federal design standards, and improving operational capabilities for aircraft pilots, consistent with MAC’s statutory mandate.

Public Engagement

It is essential we receive constructive input, concerns and ideas to assist us in providing an airport meeting the needs of our regulatory mandates, the aviation community, and local community stakeholders.

Presentation Q&A Format and Public Comments

Public engagement has been and will continue to be an important consideration for the MAC during this project. Immediately after the meeting’s formal presentation, attendees may ask questions related to the presentation. We understand you may have additional questions requiring more detailed responses that are not possible during the presentation Q&A.

For us to gain the most from public input, we encourage talking with a MAC representative during the One-on-One Session after the presentation so we may hear from everyone and have those detailed discussions around your ideas and concerns.

Presentation Q&A Format

To allow as many people as possible to have a chance to comment on the presentation during the Q&A period, we ask you to please keep your questions or comments to two minutes so we can provide time for other presentation questions. We expect all participants will be respectful of one another and of each other’s comments. MAC representatives will be available to provide additional information during the One-on-One Session following the presentation.
Almost 75 years ago, the State Legislature created the MAC to promote efficient, safe, and economical handling of air commerce and to fully explore how the seven-county metropolitan area could be developed as an aviation center. This means the MAC is responsible for ensuring our airports are as safe as possible, their infrastructure is up to regulations and standards, and that they are accessible to pilots. The MAC is also responsible for promoting the state’s environmental policies and minimizing exposure to noise and safety hazards for airport neighbors.

### Purpose & Need for the Airport Improvements

**Why is the MAC proposing these improvements?** The airport’s most recent Long Term Comprehensive Plan (LTCP) identifies deficiencies with the existing airfield. The LTCP provides the foundation for the environmental review’s Purpose & Need statement, which establishes goals and objectives that explain, in clear terms, why the project is needed. The purpose of the Lake Elmo Airport improvements are threefold: update the airport’s failing infrastructure; enhance safety for airport users (pilots) and neighbors; and improve operational capabilities for the types of aircraft using, and expected to use, the airport.

The airport improvements will address the following deficiencies (the “need”): existing runway pavements are deteriorating and, for safety’s sake, need to be replaced; the primary runway has incompatible land uses within its runway protection zones (RPZs) including a railroad and two public roads; the existing runway lengths do not meet the needs of current aircraft operators and their aircraft; and the airport lacks the most current navigational technology for landing aircraft.

### Project History 1966 to 2017

- **1966** /first Plan (planned to extend the existing primary and crosswind runways to 3,200 and 3,500 feet, respectively, and construct two new runways—a 3,900-foot and 2,750-foot—making it a four-runway airport)
- **1965**
- **1975**
- **1985**
- **1995**
- **2005**
- **2015**
- **2017**

#### 1966 Plan update
(planned to extend the primary runway to 3,900 feet and extend the crosswind runway to 3,200 feet)

#### 1976 Plan update
(preserved the 1966 four-runway airport concept)

#### 1992 Plan update
(recommended a relocated and extended primary runway initially to 3,300 feet, then ultimately to 3,900 feet; removed future parallel crosswind runway)

#### 2008 Plan update
(planned to extend the primary runway to 3,900 feet and extend the crosswind runway to 3,200 feet)

#### 2015 Plan update
(planned to extend the primary runway to 3,600 feet, then reduced it to 3,500 feet based on community input)

#### 2017 EA/EAW
(for the extension of the primary runway to 3,500 feet and the crosswind runway to 2,750 feet)

*ongoing
**How is the MAC fulfilling its responsibility to minimize exposure to noise and safety hazards for airport neighbors?** The 2015 LTCP Update process began with an examination of the previous plan (2008), which recommended an initial 3,200-foot primary runway, with an ultimate extension to 3,900 feet, and a 3,200-foot crosswind runway. The 2015 planning process determined that a 3,900-foot runway is not necessary to meet the objectives of the plan for enhancing safety and improving operational capabilities, and rather recommended extending the primary runway to 3,600 feet and the crosswind runway to 2,750 feet. These lengths are based on FAA guidance and manufacturers’ performance charts for several aircraft using Lake Elmo Airport. In the end, after receiving additional community input, the final recommended primary runway length was and is 3,500 feet, a length that will sufficiently serve the aircraft types operating at the airport today – but with a higher margin of safety. This shorter runway length also allows 30th Street North to tie in with the existing four-way intersection at Neal Avenue North and eliminates the need for a new intersection – a point of concern for the community. Additional 30th Street North concepts were added during this environmental review in order to address the primary concerns expressed by the Community Engagement Panel: travel time and safety. The new concepts effectively reduce travel time compared with the original plan, and softened the curve; however, the proposed concepts were not supported by some members of the panel who expressed concerns about introducing a cul-de-sac and potentially a round-about in the roadway design.

**Impacts from a Relocated & Extended Primary Runway**

The airport improvements call for the primary runway to be relocated 615 feet to the northeast and extended by 650 feet to the southeast. These runway improvements are not expected to change the types of aircraft using the runways nor the frequency of flights. In the relocated and extended primary runway scenario, the federal threshold for significant noise impact does not reach any residential homes and remains on airport property. The MAC has a voluntary Noise Abatement Plan in place to promote aircraft operating procedures that help reduce aircraft noise in the neighborhoods surrounding the airport. The details of this noise abatement plan will be revisited as part of this environmental review. The improvements are designed to increase the margin of safety for and accommodate the needs of aircraft operating at the airport today. The runway’s final length would not be sufficient to meet the requirements of most large aircraft. (See the *Typical Runway Length Requirements for Different Types of Aircraft* infographic in the newsletter.) The realigned primary runway will not substantially change aircraft traffic patterns, nor do we anticipate that these changes will have an impact on property values. We are not aware of any property devaluations that can be attributed to recent airport improvements at the Flying Cloud or Anoka County-Blaine airports. Neighborhoods exist near both airports and, in both cases, the runways were extended to 5,000 feet to accommodate increases in corporate jet activity.

The final runway length and location minimize impacts to wetlands, wildlife, trees, and residents when compared with other alternatives that meet the Purpose & Need. A full analysis of environmental impacts will be presented at the public event, tentatively planned for November 2017.

**Note: no local sales or property taxes will be used to fund airport improvements.**

**Impacts from a Realigned 30th Street North**

The proposed plan calls for 30th Street North to be realigned around the runway protection zone (RPZ), effectively lengthening the road. While this requires the street to have a reduced speed limit (to 30 miles per hour), drive times are expected to increase less than one minute in either direction. The realigned road has been designed to meet local and State department of transportation standards for a 30-mph road, given existing and expected traffic levels. The realignment does not result in additional traffic on Neal Avenue. The MAC will pay for construction of the realigned section of 30th Street North, which would move the current shared boundary between West Lakeland and Baytown Townships fully into West Lakeland’s jurisdiction. However, the Baytown Township draft 2040 Comprehensive Plan document states: “Baytown has offered to continue the current shared maintenance if the land area between the relocated road and the Baytown Township boundary becomes part of Baytown Township after the roadway is relocated. The boundary relocation would result in the entire airport remaining in Baytown Township.”

**Note: no local sales or property taxes will be used to fund the 30th Street North realignment.**

**FAQs Updated**

Based on input received at the public event in May 2017, we have updated the frequently asked questions (FAQs) on the project website. Please visit the website listed below for more information.

**Project Website**

[www.metroairports.org/General-Aviation/Lake-Elmo-Environmental-Assessment.aspx](http://www.metroairports.org/General-Aviation/Lake-Elmo-Environmental-Assessment.aspx)
LAKE ELMO AIRPORT FEDERAL EA / STATE EAW

Public Event #2
Meeting Minutes
Oak-Land Middle School
August 17, 2017

Agenda

• 6:00 – 6:30 P.M. – Open house with informational boards and an opportunity to visit with MAC representatives to learn about the Lake Elmo EA/EAW activities.
• 6:30 – 7:00 P.M. – Presentation on the specifics regarding the alternative scenarios being considered
• 7:00 – 7:30 P.M. – Presentation Q&A regarding the alternative options presented
• 7:30 – 8:00 P.M. – Community/MAC one-on-one engagement session to discuss concerns, ideas and opportunities with MAC representatives

MAC/Mead & Hunt Attendees         Representing
Chad Leqve                        Metropolitan Airports Commission
Dana Nelson                      Metropolitan Airports Commission
Neil Ralston                     Metropolitan Airports Commission
Joe Harris                       Metropolitan Airports Commission, Lake Elmo Airport Manager
Patrick Hogan                    Metropolitan Airports Commission
Melissa Scovronski               Metropolitan Airports Commission
Brad Juffer                      Metropolitan Airports Commission
Amie Kolesar                     Metropolitan Airports Commission
Gary Schmidt                     Metropolitan Airports Commission
Michael Madigan                  MAC Commissioner District F
Evan Barrett                     Mead & Hunt
Colleen Bosold                   Mead & Hunt
Stephanie Ward                   Mead & Hunt
Chris Rossmiller                 Mead & Hunt

The attached report represents this writer’s interpretation of items discussed during the meeting. Any corrections or additional information should be brought to our attention for clarification.

Presentation slides and informational boards presented at this meeting, as well as the agenda, newsletter and a handout provided to the public, are available on the project website at www.metroairports.org/General-Aviation/Lake-Elmo-Environmental-Assessment/Documents-and-Links.aspx.

August 17, 2017
Environmental Assessment | Lake Elmo Airport
The purpose of the meeting was to:

- Present the alternative scenarios being considered for proposed airfield improvements at Lake Elmo Airport.
- Provide an opportunity for community members to ask questions, discuss concerns and share ideas with MAC representatives and for MAC representatives to respond to inquiries from community members.

Items discussed were as follows:

Chad Leqve, Director of Environmental Programs for the MAC, welcomed and thanked everyone for coming. After introducing himself, he introduced key project team members who comprised the Q&A panel: Dana Nelson (MAC Manager of Noise & Environmental Programs, who is heading up the stakeholder engagement efforts), Evan Barrett (Mead & Hunt project manager), Neil Ralston (MAC aviation planner) and Joe Harris (Lake Elmo Airport Manager).

Chad then noted that the MAC is trying to evolve and improve the stakeholder engagement process based on previous community feedback, and pointed out some changes made for this event. One change that Chad mentioned is a top concerns sticker board at the sign-in table – each attendee had the opportunity to place one sticker next to their top concern regarding the proposed improvements at Lake Elmo Airport, and the concern with the most stickers will be addressed following the alternatives presentation. Another change is addition of a moderator for the evening to help make sure that all voices are heard and everyone has a chance to ask their questions and get a response.

Chad then introduced the moderator, Todd Streeter. Todd has served the St. Croix Valley area in a variety of roles, including as President/Executive Director of the Greater Stillwater Chamber of Commerce; Mayor of the City of Lake St. Croix Beach; cofounder and chair of the Lower St. Croix Valley Foundation; and a board member of the Stillwater-Oak Park Heights Convention & Visitors Bureau. Chad stated the MAC has been impressed with his record and hopes the community finds what he brings to the process beneficial. He then turned it over to Todd.

Todd thanked everyone for coming and taking time out of their schedules to be at the meeting. He stressed that all questions, input, concerns and comments should be heard. He introduced the agenda for the evening and pointed out information regarding the Q&A on the backside of the agenda. He also stated that the Q&A should be specific to the alternatives information covered during the presentation, so everyone has an opportunity to learn about the new information being presented. He also pointed out the handout has information about some of the other concerns that have been expressed in past meetings. Finally, he introduced the one-on-one engagement session opportunity following the Q&A session for community members to speak directly with MAC representatives about questions or concerns beyond those related to the presentation. He closed by stating that all of these efforts are being made to try to get as much information to and feedback from everyone at tonight’s meeting. He then turned it over to Evan Barrett.

Evan Barrett, Mead & Hunt’s project manager and lead aviation planner for the environmental assessment, began the presentation, acknowledging that many people in attendance have followed the Long-Term Comprehensive Plan that was completed last year, and noted that this is a continuation of that process. He thanked those people for their continued interest in the project. He also acknowledged that others may not be familiar with the project and that this might be a lot of new information for
those people. He encouraged those people to talk to him or other MAC representatives after the presentation.

He then gave a presentation covering:

- The project timeline – where we’ve been, what’s been accomplished so far, and where we’re going
- An overview of the purpose and need (or the justification) of the project
- The range of alternatives that are being considered in this Environmental Assessment (EA)/Environmental Assessment Worksheet (EAW)
- The alternatives evaluation and screening process, and the resulting preferred alternatives that came out of that process
- Next steps – the team will be evaluating the environmental effects for the preferred alternatives. Evan also announced the next Community Engagement Panel (CEP) meeting will be October 19th and the third public event is tentatively scheduled for November.

A copy of this presentation can be found at: metroairports.org/General-Aviation/Lake-Elmo-Environmental-Assessment/21D-Public-Event-presentation.aspx

Evan thanked everyone for attending and said he looked forward to questions during the Q&A session or the one-on-one engagement session in the cafeteria. He then turned it back over to Todd.

Todd then said that before the Q&A session began, the team would like to address the top concern community members voted on from the top concerns sticker board at sign-in. He turned it over to Dana Nelson.

Dana stated that she was actually going to address the number two concern on the board, as the item that got the most votes on the board was “I don’t have concerns related to these improvements.” The number two concern identified was “justification for the project.” Dana mentioned this idea came out of some feedback from the CEP and is a concerted effort to try and understand why people are taking time out of their personal schedules to come to these meetings and learn more about the project. She said the MAC has heard a number of concerns and they boil down to these three areas.

Dana mentioned that Evan had touched on the Purpose & Need of the improvements in the presentation, which is essentially the justification. The justification came out of a series of deficiencies identified in the Lake Elmo Airport LTCP; the first being that the pavement needs to be replaced; the second being that the runway protection zones (RPZs) have some land uses within them that the FAA considers incompatible. The FAA wants to see airports controlling the RPZs for both the safety of those using the airport and the safety of those on the ground. Those things, at a minimum, need to be addressed. The RPZ issue is the reason the MAC is considering the shift of the runway to the northeast. This would put those RPZs on MAC property; it’s a plan the MAC has always intended to implement, which is why the MAC bought property to line up a primary runway in that configuration so the MAC is best using the property it already has to control those areas off the runway ends. The third element of the justification is to better accommodate the users that are using the airport today – that’s the reason for extending the primary runway. She pointed out a graphic in the newsletter and on one of the boards in the cafeteria showing the runway length requirements for different types of aircraft. She noted this was some of the methodology and science that went into establishing the preferred runway length of 3,500 feet, which had initially been set at 3,600 feet in the LTCP. The MAC heard significant community concerns about that length during the LTCP process, and the preferred alternative was updated through
that process to 3,500 feet. The last element of the justification is to update the navigational technology for arriving aircraft to make sure that the MAC airport system stays up to date with today’s technologies. She then turned it back over to Todd for the Q&A. Todd reminded the audience that the handout received at sign-in has information that should answer many questions regarding the top community concerns.

Todd then opened the Q&A session and informed the audience that a staff member would be walking around with a microphone for people to use when asking their questions so all can hear. He requested that those asking questions state their name and address and keep questions or comments to two minutes each so that the panel could get through everyone’s questions. He stated that if time ran out during the Q&A, there would also be the one-on-one engagement session following for further questions and discussion.

The presentation Question & Answer session that followed is described below. (Responses are indicated in italics.)

- Ann Bucheck, resident of City of Lake Elmo. When you’re talking about how you’re going to go ahead into the environmental assessment you said you were going to use B1 as your thing to look at, aren’t you also going to look at no change at all beyond maintaining what is there today? Evan Barrett responded that the no action alternative is essentially a no build alternative beyond what’s existing at the airport today. He said there’s no alternative on the table that would involve doing nothing whatsoever as far as maintaining the airport. Ann responded, then you should be using that also as your comparison – that’s what you said at the beginning. But then you got to the end and you didn’t include it. I’m hoping that you will be including that. Evan responded yes, and explained that the no action alternative will provide the baseline. It will compare the environmental effects of maintaining the airport as-is (what’s being referred to as the “no action alternative”) to those of Alternative B1 and the other preferred alternatives on the list. He also stated that the no action alternative was included on the Preferred Alternatives slide near the end of the presentation listing the alternatives that would be carried forward for full environmental review.

- Molly Olson, resident of West Lakeland Township. I’m wondering if you can clarify that answer a little bit more. It’s very confusing for me. At the last meeting I went to, all the community members there were in agreement that your language of “no change or no action” was very confusing for the average person, and I was hoping that I would see a different terminology in this presentation. You’re not speaking to the FAA that uses that terminology. It seemed like you’d said that was not going to happen (just repairing the runway as is), but now in your answer to her it sounds like you’re saying it is an option? It’s very confusing. Evan Barrett responded that the no action alternative is the same as a no build or a no expansion alternative, if you want to think of it that way. He said “no action” is a term the FAA requires we use in these documents. He explained the intent of the no action alternative is to provide a baseline for comparison with the preferred alternative, as the preferred alternative must be compared to something in order to identify what the environmental effects are. The no action alternative provides that basis for comparison. Evan noted that the no action alternative does not meet the purpose and need, but will be evaluated across that full range of environmental categories that the federal and state regulations require we look at.
Rick Weyrauch, Baytown Township Supervisor. I would just like to try and answer her [the previous] question. I’m on the Baytown Township Board. The no action/no change alternative is included here [referring to the presentation slides handout]. Evan Barrett responded, “correct. It is included in all the tiers of analysis. We have it in the Tier B table and Tier C table for comparison purposes.” Rick then said, but it had four categories where it did not meet the objectives, so that’s why it did not filter down through for the middle analysis, correct? Evan reported that it’s still included in the Tier C analysis even though it doesn’t pass that Tier B test. He pointed out that it’s outside the funnel [graphic]. Rick then said, but I do have a question as well. You have a certain amount of wetlands that you have being filled in for both alternatives? Evan Barrett asked if he was referring to the finalist alternatives in the Tier C evaluation? Rick responded, yes. Evan then confirmed, yes, that’s right. Rick asked, do you have to offset and provide wetlands in some other place? What’s the environmental cost for filling in that wetland? What’s required to get permission to do that? Evan responded that there’s a permitting process under the US Clean Water Act that requires replacement of any wetlands that are filled in. For a federal action of any kind, there are certain ratios that have to be applied. For this area of the state, the replacement ratio is 2.5 to 1. For example, the Tier C analysis table for Alternative B1 shows a wetland impact (fill area) of 1.85 acres. He explained that you’d take that number times 2.5, which would be 4.625 and basically that’s the number of acres that would need to be replaced somewhere else. He said there are different ways to accomplish that. Ideally, they’d be replaced within the same watershed, to provide the same function as those existing wetlands. He then reported we have not gotten to the point yet of identifying exactly what we’re proposing to do as mitigation, but that will be considered in the coming months as part of this process.

Jack Ritt, resident of Baytown Township. As far as the wetland issue is concerned, it’s a lot easier for a duck or a goose to find a new home, relocate, then it is for the poor citizens that are affected by the expected changes. That’s a comment. The one-on-one that we’re invited to go to is just nothing more, or less than, a divide-and-conquer, as far as I’m concerned. This is really, I think, a ruse. Let me give you an example. I had a company, and we decided about 20 or 30 years ago, that we were going to have uniforms. We had 100 employees and you can imagine the variety of opinions they had. It’s like if you had five economists in this room, you could get five different answers. The only way to minimize that and make everyone happy was to pick out three styles of uniforms: two that we didn’t like, and one that we did like. And you know what was amazing? All the employees picked the one that we liked, because the other ones were so bad. I think that’s what’s going on here and people don’t realize what’s really happening. All of this has been predetermined and I think it’s very unfair to the community welfare that exists today and going forward. This expansion is not necessary – and I agree with you – the runways need improvement, there is no question they need to be upgraded, but I think this expansion goes way beyond what is necessary. We have a new bridge across the river now, it’s a lot easier if you want to get to a big airport with bigger planes and more safety, it’s just a few minutes from here by air. That’s the end of my comment. Todd Streeter thanked him for his comments.

Jack then said, I do have one more question. On a waterway, a sailboat has a right of way over a motor boat. In the air, how about the balloonists that use the air around here – how are they affected by your proposal? Joe Harris answered that the balloons have the right of way and that the balloons that operate near Lake Elmo Airport will not be impacted by the proposed expansion.
• No name or address given. Does this mean we will have more jet traffic over our homes? I live in West Lakeland. Dana Nelson responded that is not the intent of the proposed improvements. She stated that there are a handful of small jet operations that take place at this airfield over the course of a year, and that is not anticipated to pick up to a great degree. Right now, it comprises less than one-tenth of a percent of the operations, and it is anticipated in the next 20 years to still be around one-tenth of one percent, and concluded by saying it’s not a drastic increase in the jet traffic that we’re expecting. She stated “the jets we do anticipate would be the small, lighter-type jet operations, nothing like what a 3M would bring – a Gulfstream or a Learjet or anything like that – it would be probably a Mustang if you’re familiar with those types of small, under 10-seat light jet aircraft.” Neil Ralston then reiterated that the length the MAC is proposing for this runway is designed for small, propeller-driven airplanes. He said, “If we were designing a runway for regular use of larger, corporate jet aircraft, we would certainly be proposing a longer runway length than we’re proposing. That’s not what we’re intending to do with this runway. It’s to accommodate propeller-driven airplanes with less than 10 passenger seats, which is a category of aircraft designated by the Federal Aviation Administration.”

• Barry Dayton, resident of the City of Stillwater. I’m a pilot/aviator currently based out of Lake Elmo. Just a comment, I want to say that I know there is no jet fuel available on the field today and I believe there are no plans for adding jet A or jet fuel in the foreseeable future, am I correct in that? Joe Harris responded that that was correct; you cannot purchase jet fuel at the field today, and he was not aware of any future plans of making jet fuel available at the airport.

• Brad Cornell, resident of West Lakeland Township. Looking at the plans and your $8.3 million construction cost, how is it justified to spend almost $800,000 in planning – I asked for the data back in May which you provided me the information of $326,000 for the initial planning, and now $401,000 for Mead & Hunt to do the environmental impact, how can you justify spending almost $1 million just to get to the point where we are today, to spend another $8.3 million to an environment, a community that doesn’t want this expansion and leave our 30th Street straight. It affects 1,700 people a day and that’s been documented by Washington County traffic. You’re affecting a ton of people for 200 aircraft. I’ve tracked the drive time, it’s 20 minutes, door to door, to New Richmond, one stoplight, two stop signs. How can you justify this kind of expense? I can see the justification to do this rework, shut down the runways, they get new runways, do the renovation just to replace the existing runways but those pilots are going to go somewhere else cause they’re not going to sit and wait for that amount of time. How can you justify this for the community? Chad Leqve answered, regarding this question of the catalyst for the project in the first place, it really goes to the MAC’s legislatively directed mandate to support aviation in the metropolitan area; which is to provide adequate and safe facilities for purposes of air transportation – both of passengers and cargo. He made the comparison that much like MnDOT is the purveyor of street transportation infrastructure in the state of Minnesota, the MAC (within the metropolitan area) is charged with the duty to make sure there exist adequate facilities for those that want to utilize air transportation. He explained that, because these airports are considered public assets, the MAC maintains them as such. They are public assets, though, that do not use general tax dollars. He noted that money that’s used to plan, develop and maintain these facilities is generated by aviation. He further stated the money that goes into the planning work referenced in the question comes from the very people that use the facilities the MAC maintains in their airport system. Regarding the questions about the expense the MAC puts into planning projects
like this, they take them seriously, and he didn’t think this was unique to airports. He said, “By doing that, we want to make sure we’re using the best amount of expertise that’s available in that space to do an adequate job of evaluating truly what are the needs and what is the most efficient way to do it, while minimizing our environmental impact, and that’s where we look to firms like Mead & Hunt and others that we partner with, much like cities do when they do their planning work – to take a look at what the options are, to evaluate them from an environmental perspective. There’s nothing unique here, I believe, with regard to this type of a relationship and this type of a team when it comes to a project like that.” Chad also mentioned that a portion of the budget referenced in the question, regarding planning, goes to some additional resources as it relates to the MAC increasing its efforts to be better at engaging the public. He referenced his opening remarks, in which he noted the MAC is trying to evolve as the process moves along. He said, “For those of you at the first meeting, I asked for your patience, and your partnership if you’re willing, with us as we go through this process, because we really are trying to evolve it and make it better. And to do that, we have brought to bear some additional resources with the budget. Mr. Streeter is a great example of that.” He said the MAC wants to be responsive in these processes, to people who have concerns with what the MAC is doing, and that they make sure that they are turning over every stone and doing all they can to be creative to try to reduce the impacts as much as possible while still providing adequate infrastructure at their airport facilities for the travelling public and people using their aircraft at the airport. He then noted that “When we talk about the evolution of the concept of expansion at Lake Elmo Airport – it’s been a long journey.” He referenced one of the boards at the open house and a graphic in the handout shows the discussion dates back to the 1960s. At that time, it was anticipated a 3,900-foot runway would be needed at Lake Elmo Airport to meet the needs of the aircraft category Neil Ralston talked about earlier as defined by the FAA – the less than 10 seat, light aircraft category. He continued, “Now if we move through time, to the point we’re at today, that 3,900 feet, as you see this evening, has shrunk – for good reason – as part of a process – the public process. That 3,900 feet, going into the last long-term comprehensive plan, was sized back to 3,600 feet, as you saw tonight in option B, and then before the conclusion of that process was again cut back to 3,500 feet. That was, in large part, in response to some very valid concerns that were raised by the community, with regard to the 30th street realignment, and specifically the intersection with Neal Avenue and where that was occurring, in the environment of the airport. This has been a long dialogue. It’s had a lot of twists and turns, but I do believe, if we take a look at the record (as I was mentioning to one individual tonight who was sharing valid concerns about the airport, it was clear there was nothing I was going to say that was going to make her comfortable with what we’re looking at here at the airport because it’s not the no action alternative – and I understand that), it’s not been a black and white process. It’s been a process that’s evolved over time, and it’s resulted in a scaled back option in terms of providing adequate facilities for our aircraft operators at the airport to provide them with an additional margin of safety, a little more ability to provide a bit more utility for the aircraft that they’re operating—maybe to carry a little more fuel than they do today with the shorter runway, and also reconstruct the runway at the same time, and to Dana’s point, provide RPZs that are clear and have no obstructions in them. So there’s a lot of different targets we’ve been trying to hit in the process. There are tangible points in this process where you can say that there actually were things that happened because of the dialogue. It’s a fact if you look at the record. The most recent one we touched on this evening, but the one before that – going from 3,600 to 3,500 feet, was a direct
accommodation by the MAC to try to do what we can to get the 30th Street alignment right. We went a step further with the CEP and we had a very candid dialogue with the community engagement panel about what are the things we should look at with regard to the 30th Street alignment to try and make it more palatable, make it more acceptable to the community. As Evan pointed out today, two things were raised: travel time and safety. So the planning team went on a mission to look at new designs, they actually found options that moved those needles in the right direction. They decreased the travel time, they improved the field of view needed to navigate intersections. We brought that back to the CEP and after weighing it, talking about it, the decision was that we didn’t want to move forward with those alternatives and we respected that, but we put the time and resources in to be responsive to that committee, and that takes resources, as you’ve pointed out. It’s a difficult task sometimes in that it is a balancing act.” He reiterated that the MAC comes to the discussion with a mandate from the Legislature that cannot be denied; however, it is very clear in the MAC’s legislation that as well as making sure that they have adequate facilities that are safe, they’re also supposed to try to reduce the environmental impact. He noted that, as the Director of Environmental Programs at the MAC, that is something he takes very seriously. He went on to share one of the things discussed at the last CEP meeting are efforts that are being undertaken to design and implement enhancements to the voluntary noise abatement plan at Lake Elmo Airport. Dana Nelson’s team is already working on implementing communication materials for the pilot community at the airport that highlight the MAC’s voluntary noise abatement plan, such as inserts they can put in their pilot logbooks for reference while they’re using their aircraft. He noted that Joe Harris, the airport manager, has been nice enough to put funds into developing signs that will go up on the airfield requesting that pilots fly neighborly. Chad said the point is that these things don’t happen in a vacuum, and that his hope is that “once we get through the process, whatever the result is, we can have a continuing dialogue between the MAC and our community partners on how we can continue to advocate for neighborly operation of the airport. You have our commitment we will continue to do that, as a member of the community. We’ll continue to try to work through the issues and do the best job we can in meeting a lot of stakeholders’ concerns and issues on the topic.” Neil Ralston then clarified that between the planning and environmental [funds spent] it’s closer to $750,000 than $1 million. He also pointed out there are requirements the MAC must meet based on mandates from the FAA regarding planning and environmental work, such as airport layout plans, engineering drawings, forecasting and getting survey data out on the airfield, to name a few. He commented that that work is not cheap and said he didn’t believe the MAC was being frivolous with their planning money. He speculated that those who do this type of work would probably think that with the money the MAC is spending, they’ve actually got a lot of value out of a fairly small amount of funds when compared to what other airports do and how they do it.

- John Krack, resident of Fridley. I fly out of Anoka County-Blaine Airport. Next month will be the 50th anniversary of getting my pilot’s license. I’ve flown out of MAC airports for almost all those 50 years. I’ve been through probably three or four of these long-term comprehensive plans and this one is far and away the most comprehensive, the most thorough and the most transparent that I’ve ever seen. Previously what would happen is MAC would come up with a plan, they’d hold a hearing to get some input, they’d go back and make a few tweaks to the plan, and then pretty much do what they wanted to do. But I’ve seen what they’re doing now with Lake Elmo, what they’re doing with Airlake and also with Crystal, and they’re taking the feedback, they are
August 17, 2017

Meeting Minutes

making changes and they are trying to walk a fine line between their mandate and the concerns and the utility of the local communities and stakeholders. So, this is a process and in my experience, my observations, this is much more open than what’s been done in the past. So we are very fortunate to have MAC’s commitment to work with the communities, work with the other stakeholders to at least try and come up with a viable solution for these airports. Back in the day, these airports were out in the boon docks so to speak, nobody much cared about what happened and what we did and what kind of airplanes were on them, but as the communities have grown around the airports and we’ve also seen the airport tenants and people become more sensitive to the issues, MAC has made a commitment to work with the communities – and by the way, the pilots, we get it – we realize that we have to be good neighbors and be flexible how we operate our aircraft, how much noise we generate, what we fly over, because we realize these people are our neighbors – that you folks are our neighbors, and it’s important we maintain those relations. And I applaud MAC for making the commitment and/or making both financial and the administrative commitments to be as transparent as they are, and to work with the communities to come up with solutions to the concerns. And I should say that I speak for myself and not for the MAC.

- Mick Kaschmitter, resident of West Lakeland Township. I’ve been very, very, very involved in a neighborhood group that’s been in place for a couple years, we’ve engaged the major stakeholders in this and I just wanted to dispel the rumor to everybody: we have never proposed, we’ve never really discussed, nor would we want the airport to close. I think that’s a rumor that’s out there and I just want to make sure that everybody knows that we have never proposed or been for that. Also, I guess, to cut to the chase, do whatever you have to do on the airport grounds, but leave 30th Street alone. That’s our primary concern and we just don’t want it, at all.

- Dave Schultz, West Lakeland Township Supervisor. I have a comment. It sounded like MAC was taking and giving us something by going from 3,900 feet down to 3,600 feet. By today’s standards, 3,900 feet would not be allowed, as that original 3,900 foot plan had 30th Street going through the RPZ and putting in a 3,900-foot runway, so there’s no way that 3,900-foot runway would be an option today. Second, the runway protection zones are shrunken down from the 3,600-foot plan to what they are today – same size they are today, as you showed on the runway. So that’s how things have gotten smaller – going from 3,600 to 3,500 you’ve also shown the RPZs as they are current today. So, just a comment. Thank you.

- Ann Bucheck, resident of City of Lake Elmo. I have two questions. One is when you’re talking about the no build alternative, would that include redoing the runway so that it’s in good shape for the pilots, and you also include upgrading the instrument approach procedures, because I don’t think that anyone is opposed to that, and maybe that should be included in your proposals. The other thing is, I would like to know what size jet could land at the airport today. Evan Barrett answered the first question, saying that the no action (or no build) alternative does include reconstructing the runways to bring them up to a safe, operable and long-term usable condition. It does not include upgrading instrument approach procedures due to obstacles in the approaches to some of the runway ends. There are also minimum requirements for runway length the FAA looks at in terms of types of approach procedures, so the runway length plays into that as well. In answering the second question, Evan referred back to what Dana Nelson had discussed earlier in the evening, that it is the very smallest class of jets that are out there, most would be less than 12,500 pounds, like the very-light jet Citation Mustang, or the Eclipse.
manufacturer makes a similar type of aircraft. He noted that, in some situations at a very low payload or fuel load, there are some smaller business jets above 12,500 pounds, that may be able to use the runway, but they would have to take off nearly empty, so the runway wouldn’t have much use to them. They could land on it, but then they couldn’t take off unless they offload fuel, passengers or cargo. He explained, that’s where the usefulness of the runway becomes limited for those jet aircraft. Neil Ralston added that there was a board in the lobby showing Runway Length Needs, acknowledging that not everyone would necessarily know what the names of the different aircraft are, and said the board shows photos of some of those types of aircraft that were being talked about. It was also pointed out that the runway length graphic is in the August newsletter that was also handed out at the sign-in table. Neil then emphasized that the runway length is designed for the small propeller-driven airplane fleet, not a jet fleet. Ann then questioned, and if it’s expanded, if you extend the runway, will there be bigger jets coming in? Neil clarified that his previous response was in regard to the proposed, extended runway length of 3,500 feet, reiterating, “The runway length we are proposing is designed to meet the needs of propeller-driven airplanes. That does not mean that a jet might not choose to land on it once in a while, like they do today, but it is not intended for regular use by jet aircraft.”

- [Name inaudible], Pilot based at Airlake. I’ve been a pilot since 1969. I grew up in South St. Paul. South St. Paul has had a 4,000-foot runway since I can remember and the jet traffic out there is very minimal. We’re talking about a 3,500-foot runway, so it’s just not a factor.

- No name or address given. I don’t understand the importance of the airport, first of all, and what it does for our community. Why would we want to authorize the additional jet traffic and you say well, it will be occasional, but you know how occasional goes.

- Michael Wilhelmi, Resident of Stillwater. I’m here at the request of a couple of citizens with concerns. I had a really nice chat with Neil, thank you very much. He answered a lot of my questions, but I had a couple questions I was hoping you could address. Some of the comments we heard that MAC has a legislative mandate you must meet – you have no choice, you also are limited by a railroad on the north, Manning Ave. on the west and 30th St. on the south, and the frustrating thing is as you’re trying to meet your mandate as we kind of heard tonight, it seems like the easiest of all those things is to kind of push on the neighbors. I’d like to explore a little better, like to ask you to explore, the runway impact zone – in my conversation with Neil, apparently, it was a 2012 rule that things had to be moved out or certain land uses could not be considered to be in the runway impact zone. Has there been any conversation, or are you aware of any waiver that’s been done anywhere in the United States that would allow for something to happen? Honestly, I think some of the neighbors – what they’re saying is that with 30th Street, those changes affect 1,700 people a day using that road, and I don’t know how many more aircraft will be able to use this airport more safely as a result of the construction. Evan Barrett asked for further clarification on what the specific question was – if it was regarding guidance regarding the new rules on the runway protection zone? Michael admitted he hadn’t been very clear and further clarified his question: I was curious if the MAC had explored if there are there any waivers in the United States at any other airports that are doing/have done something essentially what you’re trying to do, that allow the airport to have a railroad in the RPZ? Evan replied that the FAA’s policy generally is that if there’s an alternative that provides a clear runway protection zone that’s feasible and practical, then that’s the alternative you should pursue, all other things being equal. In this particular case, at Lake Elmo, there are alternatives that are feasible and practical, that do clear those runway protection zones. Again, the runway
protection zone is a big piece of the Purpose & Need and why the runway is moving. But, that’s being weighed among other factors, and when the FAA looks at this, when they look at our RPZs, and they may say in this situation there might be something else that outweighs the need to clear that RPZ, they may consider it. But it really depends on a mix of variables. In this particular case, because there are multiple alternatives that would result in clear RPZs that meet the Purpose & Need and avoid other environmental impacts, when compared with the other alternatives, that’s clearly going to be the alternative that the FAA is going to recommend, and at the end of the day, the Environmental Assessment is a federal FAA document, and so they do have a say in what the preferred alternative is. Michael then asked, regarding the feasibility, I understand that both the MAC and FAA will look at feasibility and say, well we can move this road, and we can still meet our mission – that’s your job, that’s what you have to do. But, the neighbors would say that’s not feasible. I’m not only asking for a waiver for the railroad tracks, but I’m also curious to know if the MAC has studied moving the railroad tracks rather than moving the street. If those are the things that are bounding you, if that is something that was examined as well. Evan Barrett responded that he believed the LTCP had an alternative that looked at realigning Manning Ave., but it was pretty significant in terms of impact. Neil Ralston clarified that the LTCP showed the possible realignment of Manning Ave. that would have to be evaluated if the existing runway stayed in place, but it was not presented as an alternative. He further stated that the LTCP did not look at relocating the railroad tracks. Chad Leque then reiterated what Evan Barrett had stated earlier – that this is a federal document – both an environmental assessment to meet the requirements of the National Environmental Policy Act as well as a state EAW which meets the state’s environmental policy. He said he had no doubt that the question of the 30th Street realignment is going to likely be a theme through the end of this dialogue, including the public hearing, which means there will be public comments on the topic that will have to be responded to, and ultimately, a decision document will have to be issued by the FAA. He further stated the position by the FAA to date has been clear, but that the questions should continue to be asked in the context of this project as it goes forward. He said it’s not completely outside the bounds of possibility that, in certain circumstances, as things evolve, the FAA may look at things differently. He couldn’t say that’s going to be the case here, and said “it doesn’t feel like it’s going to be the case at this point, but I’ve seen it happen.” He reiterated that’s why these dialogues are important and that’s why a public hearing is going to be important – for everybody to come and get their thoughts and concerns on the record. He said, at the end of the day, it’s the FAA that has to issue the approval document on the environmental assessment. He further stated the ongoing dialogue the MAC has with the FAA about those kinds of community questions and concerns is designed into the planning process, and said those are the types of questions he’d expect to be asked and answered during a public comment period. Neil added that, even if the runway could be shifted a little bit further north, there would still be a bend in 30th Street. He noted it may be a little less of a bend, but there would still be a bend, and that leaving 30th Street in place with a clear runway protection zone would result in an extremely short runway.

Todd Streeter then encouraged community members to head into the cafeteria to meet with the project team and continue the dialogue in the one-on-one engagement session.
Meeting Minutes

The Q&A adjourned at approximately 7:40 p.m. The one-on-one engagement session ended at approximately 8:15 p.m.
Presentation at 6:30 in Auditorium. Questions & Answers to Follow.

Open House in Cafeteria

Environmental Assessment
Lake Elmo Airport
Anticipated Environmental Assessment Timeline

For more detail, see the Stakeholder Engagement Plan on the project website. Schedule is subject to change. Any significant schedule updates will be published on the project website and distributed to e-news subscribers, as appropriate.
Purpose & Need Goals

The **PURPOSE** of the proposed improvements:

1. Address and attend to the airport’s failing, end-of-life infrastructure;
2. Enhance safety for airport users and neighbors; and
3. Improve facilities for the types of aircraft using, and expected to use, the airport.

The **NEED** for the proposed improvements:

1. Existing runway pavements are deteriorating and, for safety’s sake, need to be replaced.
2. The primary runway has several incompatible land uses within its runway protection zones (RPZs), including a railroad and two public roads.
3. The existing runway lengths do not meet the needs of current aircraft operators and their aircraft.
4. The airport lacks the most current navigational technology for landing aircraft.
Minimize Incompatible Land Uses in the Runway Protection Zones (RPZs)
Environmental Assessment
Lake Elmo Airport

Runway Length Needs

<table>
<thead>
<tr>
<th>Aircraft Type</th>
<th>Existing Runway 14/32 Length: 2,849'</th>
<th>Proposed Runway 14/32 Length: 3,500'</th>
</tr>
</thead>
<tbody>
<tr>
<td>CESSNA 340</td>
<td>2,800'</td>
<td>3,200'</td>
</tr>
<tr>
<td>BEECH BARON 58</td>
<td>2,800'</td>
<td>3,200'</td>
</tr>
<tr>
<td>PILATUS PC-12</td>
<td>3,500'</td>
<td>3,500'</td>
</tr>
<tr>
<td>BEECH KING AIR 200</td>
<td>2,800'</td>
<td>3,250'</td>
</tr>
<tr>
<td>SOCATA TBM 700</td>
<td>3,650'</td>
<td>4,000'</td>
</tr>
<tr>
<td>CITATION MUSTANG</td>
<td>3,490'</td>
<td>3,700'</td>
</tr>
<tr>
<td>CITATION EXCEL</td>
<td>2,670'</td>
<td>3,205'</td>
</tr>
<tr>
<td>CITATION X</td>
<td>2,670'</td>
<td>3,205'</td>
</tr>
<tr>
<td>GULFSTREAM IV</td>
<td>4,700'</td>
<td>4,700'</td>
</tr>
</tbody>
</table>

NOTE:
Propeller-driven aircraft runway lengths are based on accelerate-stop distances and jet-driven aircraft runway lengths are based on balanced field length takeoff distances, as identified in the respective aircraft performance manuals. Accelerate-stop distance is the length required to accelerate from a full stop to near lift off speed and then decelerate to a full stop. Balanced field length considers the accelerate-stop distance along with other safety factors as required for federal certification of these larger aircraft types. Lengths are calculated for a temperature of 82.3°F, a field elevation of 933 feet above mean sea level, and typical takeoff flap settings.
Runway Alternatives Evaluation Process

Criteria for Identifying Range of Alternatives
- Maintain runway orientations
- Avoid or minimize land acquisition
- Avoid or minimize changes to airport use and aircraft flight patterns

Criteria for Screening Range of Alternatives
- Meet the Purpose and Need
- Conform to FAA policies
- Compatible with a viable 30th Street N. realignment alternative

Criteria for Identifying Preferred Alternative
- Practicability factors
- Environmental factors

Preferred Alternative

No Action Alternative
For Evaluation Purposes Only
Range of Alternatives

Primary Runway "No Action" Alternative

Primary Runway Alternative "A"

Primary Runway Alternative "B"

Primary Runway Alternative "B1"

Primary Runway Alternative "B2"

Primary Runway Alternative "D"

Primary Runway Alternative "E"

Primary Runway Alternative "C"

Environmental Assessment
Lake Elmo Airport
# Evaluating the Range of Alternatives

### TIER B: Criteria for Screening the Range of Alternatives

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Purpose &amp; Need Objective 1</th>
<th>Purpose &amp; Need Objective 2</th>
<th>Purpose &amp; Need Objective 3</th>
<th>Purpose &amp; Need Objective 4</th>
<th>Conform to FAA Policy</th>
<th>Viable 30th Street Realignment Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>No-Action</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>Alternative A</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
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</tr>
<tr>
<td>Alternative B</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Alternative B1</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Alternative B2</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>YES</td>
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<tr>
<td>Alternative C</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
</tr>
<tr>
<td>Alternative D</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
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<td>NO</td>
</tr>
<tr>
<td>Alternative E</td>
<td>YES</td>
<td>NO</td>
<td>YES</td>
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</tr>
</tbody>
</table>
Public Event

Finalist Runway Alternatives "B" & "B1"

Finalist Runway Alternative "B"

Finalist Runway Alternative "B1"

Environmental Assessment
Lake Elmo Airport
# Evaluating the Finalist Alternatives

## TIER C: Criteria for Identifying the Preferred Alternative

<table>
<thead>
<tr>
<th>Criterion</th>
<th>No Action Alternative</th>
<th>Alternative B Relocate 700' and Extend to 3,600'</th>
<th>Alternative B1 Relocate 616' and Extend to 3,500'</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Practicability Factors</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction Cost</td>
<td>$5.4 Million</td>
<td>$8.6 Million</td>
<td>$8.3 Million</td>
</tr>
<tr>
<td>Logistical Factors</td>
<td>Future Manning Avenue Widening will Trigger FAA RPZ review</td>
<td>30th Street N Realignment Options are Limited</td>
<td>None</td>
</tr>
<tr>
<td><strong>Environmental Factors</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wetland Fill Area (Approx.)</td>
<td>NA</td>
<td>2.32 Acres</td>
<td>1.85 Acres</td>
</tr>
<tr>
<td>Wildlife Considerations: RW 32 Threshold to Nearest Wetland (Approx.)</td>
<td>400 Feet</td>
<td>700 Feet</td>
<td>700 feet</td>
</tr>
<tr>
<td>Tree Clearing Area (Approx.)</td>
<td>NA</td>
<td>22 Acres</td>
<td>20 Acres</td>
</tr>
<tr>
<td>Residential Parcels with Structures in Model Safety Zone A</td>
<td>0</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Residential Parcels with Structures in Model Safety Zone B</td>
<td>2</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Sensitive Land Uses (i.e., Residential) within 65 DNL (2015)</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>
PUBLIC EVENT #3 – ENVIRONMENTAL EFFECTS

Meeting Objective: Present the outcome of the detailed evaluation of environmental effects for the proposed airport development alternative that was presented on August 17, 2017.

Agenda:

6:00 Welcome and Orientation
   Visit one-on-one with project team members about the environmental review process

6:30 Environmental Effects Presentation
   Hear the outcome of the environmental effects for the proposed airport development

7:00 Presentation Q&A
   30 minutes will be allotted for audience questions. See format below

7:30 Community / MAC One-on-One Engagement Session
   Opportunity to discuss environmental concerns, ideas and opportunities with project team members

Presentation Q&A Format
After the presentation, audience members will have an opportunity to ask questions about the materials and information presented.

To allow as many people as possible to comment on the presentation during the Q&A period, we ask you to please adhere to a few guidelines:

1. State your name, residence, and if this is your first meeting before you ask your question;
2. Ask a question pertaining to the content presented this evening;
3. Keep your questions or comments to two minutes; and
4. Be respectful of one another and of each other's comments.

To be sure we meet the objective of the meeting, if you have questions about other topics, members of the project team are happy to answer those one-on-one immediately following the group Q&A session.
Why does the MAC hold public meetings?
It is essential we receive constructive input, concerns and ideas to assist us in providing an airport that can best serve its purpose and users while reducing its effects on our neighbors. The MAC is committed to facilitating opportunities for public input and to addressing ideas and concerns, to the degree possible, throughout the environmental review process. Ultimately, our job is to provide an airport that meets the needs of our regulatory mandates and the aviation community, while reducing the burden to the local community.

As a reminder, tonight’s public meeting is the third of four offered as part of this project’s environmental review process. A summary of the May 11 and August 17 meetings are below.

**May 11, 2017  Introduction to the Environmental Assessment Process**
Presentation provided overview of: MAC regulatory responsibilities per FAA and state legislative mandates, Lake Elmo Airport improvements purpose and needs; introduction to analyzing alternatives; the environmental analysis categories; and the stakeholder engagement plan.

**August 17, 2017  Purpose & Need and Alternatives**
Presentation of: The justification (“Purpose and Need”) for the airport improvements; criteria used to evaluate the design alternatives; introduction to the various design alternatives; and conclusion on the preferred development alternative.

What has been done with input from the community?
- The Frequently Asked Questions were updated on the project website to answer public questions and concerns
- The project team developed design alternatives to address primary 30th Street North concerns (safety and travel time)
- A deeper evaluation was conducted into runway length needs
- Additional personnel and resources have been dedicated to continue improving on meeting facilitation, informational materials, and public input opportunities
- Meetings were held between the project team and local experts on emergency response, individual residents, and community leaders to better understand and address concerns
- A pilot briefing will be held with based pilots to talk about noise abatement strategies
What role does the MAC play?
The MAC is mandated by the state legislature to oversee the operation and ongoing maintenance of seven metro airports including the Minneapolis-St. Paul International Airport and six reliever airports: St. Paul Downtown, Anoka County-Blaine, Flying Cloud, Airlake, Crystal, and Lake Elmo.

The MAC’s responsibilities, among many others, include overseeing the efficient, safe, and economical handling of air commerce throughout the metropolitan aviation system. Much of this work focuses on enhancing safety, complying with federal design standards, and improving operational capabilities for aircraft pilots, consistent with MAC’s statutory mandate.

Like most large-scale, public-serving entities, MAC conducts long-term planning every few years. A Long Term Comprehensive Plan (LTCP) is an infrastructure planning tool that offers a look into the future and acts as a roadmap for future improvements, like runway repairs, structural needs, usage demands, and so on. Following a transparent and participatory planning process that determines which projects to undertake and when, the MAC takes on the role of seeing that environmental and permitting requirements are met and that surrounding communities are involved and heard throughout the project process.

If airport improvements are identified through the LTCP, a federal and/or state environmental review may be necessary to evaluate their environmental effects. Many state and federal rules govern the environmental process. On the federal side, the environmental review is conducted in accordance with the National Environmental Policy Act and needs to be approved by the Federal Aviation Administration. The state environmental review needs to conform to state statutes in accordance with the Minnesota Environmental Policy Act. Given its complexities and scope, environmental review processes often involve the public.

Completion of environmental reviews does not authorize construction. Before any construction can begin, the airport improvements must first be depicted on an FAA-approved Airport Layout Plan and compete for funding through federal and/or state grant programs.
LAKE ELMO AIRPORT FEDERAL EA / STATE EAW

Public Event #3
Meeting Minutes
Oak-Land Middle School
November 6, 2017

Agenda
- 6:00 – 6:30 P.M. – Open house with informational boards and an opportunity to visit with project team members to learn about the Lake Elmo EA/EAW activities.
- 6:30 – 7:00 P.M. – Presentation on environmental effects of the proposed airport development
- 7:00 – 7:30 P.M. – Presentation Q&A regarding the environmental effects information presented
- 7:30 – 8:00 P.M. – Community/MAC one-on-one engagement session to discuss environmental concerns, ideas and opportunities with project team members

MAC/Mead & Hunt Attendees

<table>
<thead>
<tr>
<th>Name</th>
<th>Representing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chad Leqve</td>
<td>Metropolitan Airports Commission</td>
</tr>
<tr>
<td>Dana Nelson</td>
<td>Metropolitan Airports Commission</td>
</tr>
<tr>
<td>Neil Ralston</td>
<td>Metropolitan Airports Commission</td>
</tr>
<tr>
<td>Joe Harris</td>
<td>Metropolitan Airports Commission, Lake Elmo Airport Manager</td>
</tr>
<tr>
<td>Brad Juffer</td>
<td>Metropolitan Airports Commission</td>
</tr>
<tr>
<td>Amie Kolesar</td>
<td>Metropolitan Airports Commission</td>
</tr>
<tr>
<td>Gary Schmidt</td>
<td>Metropolitan Airports Commission</td>
</tr>
<tr>
<td>Michael Madigan</td>
<td>MAC Commissioner District F</td>
</tr>
<tr>
<td>Evan Barrett</td>
<td>Mead &amp; Hunt</td>
</tr>
<tr>
<td>Colleen Bosold</td>
<td>Mead &amp; Hunt</td>
</tr>
</tbody>
</table>

The attached report represents this writer’s interpretation of items discussed during the meeting. Any corrections or additional information should be brought to our attention for clarification.

Presentation slides and informational boards presented at this meeting, as well as the agenda, newsletter and a handout provided to the public, are available on the project website at www.metroairports.org/General-Aviation/Lake-Elmo-Environmental-Assessment/Documents-and-Links.aspx.

The purpose of the meeting was to:
- Present the environmental effects of proposed airfield improvements at Lake Elmo Airport.
- Provide an opportunity for community members to ask questions, discuss concerns and share ideas with project team members and for project team members to respond to inquiries from community members.
Items discussed were as follows:

Todd Streeter, moderator for the meeting, introduced himself and welcomed everyone. He stated this is the third public meeting of the Lake Elmo Airport environmental review process and introduced the agenda for the evening. He mentioned that the presentation and handout materials from tonight’s meeting are all available on the Lake Elmo Airport project website. He went over the presentation Q&A format listed on the agenda and asked people to follow those guidelines during Q&A, and invited people with questions on material not covered during the presentation to seek out project team members during the one-on-one engagement session following the presentation Q&A. He then turned it over to Chad Leqve (MAC Director of Environmental Programs).

Chad welcomed and thanked everyone for coming, and stated he hopes the dialogue this evening is helpful in getting everyone up to speed on where the project team is at in the process of evaluating the environmental effects of the proposed development at Lake Elmo Airport. He presented a slide with a summary of the concerns raised by airport neighbors, which was developed in response to a suggestion made by a community member at the last Community Engagement Panel (CEP) meeting. He said it was a good idea because it helps the project team to maintain focus and sensitivity to the concerns of the community. He pointed out that the concerns shown on the presentation slide serve as the foundation for a lot of the resources available to the public, such as the Frequently Asked Questions on the project website and the project newsletters. He stated this is an example of the dialogue that’s taking place, and wants the public to know their concerns are being heard and the project team is doing what it can to address those concerns while also meeting the Purpose and Need of the project. He also mentioned the environmental review process has a public review component built into it. There will be a public review period once the draft document has been published, along with an opportunity for the public to provide comments and share ideas and concerns for formal response and consideration in the planning process. He stated the project team will formally respond to those comments in the final document. He then turned it back over to Todd.

Todd then introduced Evan Barrett (Mead & Hunt project manager), who he said would be giving tonight’s presentation on the environmental effects.

A copy of this presentation can be found at: metroairports.org/General-Aviation/Lake-Elmo-Environmental-Assessment/21D-Public-Event-3-11-06-2017.aspx

Evan introduced himself as an airport planner for Mead & Hunt, who is helping the MAC complete the environmental review for the Lake Elmo Airport improvements. He welcomed and thanked everyone for coming and mentioned that there’s a handout of the presentation so the public can follow along. He said this meeting is a continuation of a process that has been underway since the beginning of the year. This is the third of four public events. The first was an introduction to the environmental process; the second covered the project’s Purpose and Need and alternatives. Evan said tonight he would be covering the environmental effects of the preferred alternative. He said the team is in the process of evaluating the preferred alternative against a list of environmental impact categories defined by federal and state regulations. He then explained the environmental effects evaluation process. The FAA identifies significance thresholds and factors for the different National Environmental Policy Act (NEPA) categories to help determine if an effect (or impact) is considered significant. He explained that NEPA and the Minnesota Environmental Policy Act (MEPA) provide the umbrella under which we evaluate
these effects. There are several special purpose laws under the NEPA and MEPA umbrella, such as the Clean Air Act, the Endangered Species Act or the National Historic Preservation Act.

Evan then went over the NEPA categories that were evaluated in detail, how each was evaluated and the results of each area thus far:

- **Biological Resources** –
  - Approximately 20 acres of on-airport trees will likely need to be removed for the new pavement associated with the runways and taxiways as well as to clear airspace surfaces associated with the new runway.
  - Project team confirming with the FAA that there are no off-site trees that will need to be removed.
  - Project team identified two federally-listed species (northern long-eared bat, a threatened species, and rusty patched bumblebee, an endangered species); northern long-eared bat may be present in the tree removal areas, so impacts will be avoided and minimized using US Fish & Wildlife/USDOT-recommended measures; the rusty patched bumblebee has documented habitat within 2 ½ miles of the airport, however there is no suitable habitat for this bee in the project impact area.
  - Project team identified a state-listed threatened species (Blanding’s turtle) that may be present in both wetland and upland areas, so impacts will be avoided and minimized using MnDNR-recommended measures.

- **Air Quality** – Minimal impacts during construction, but neither operational nor construction emissions would exceed the FAA thresholds of significance.

- **Cultural Resources** – Project team did field surveys of historic age (50+ years) structures on and surrounding the airport and an archaeological survey (shovel testing). The FAA has made a determination of no effect to cultural resources and has sent that determination to the State Historic Preservation Office for concurrence. The FAA is also conducting nation-to-nation consultation with Native American Tribes as required for NEPA actions under federal law.

- **Farmlands** – Roughly half of the acreage of the airport is currently leased for agricultural use. Approximately 43 acres of on-airport farmland would be converted permanently to aeronautical use; project team is consulting with US Department of Agriculture to determine significance of effects.

- **Hazardous Materials & Solid Waste** – project team identified 17 known hazardous materials sites within one mile of the Airport (on and surrounding), but none will be affected by the project. Groundwater contamination plume would not be affected due to water table depth. Solid waste generated by the project will be disposed of according to applicable laws and regulations.

- **Land Use** –
  - Evan noted that a significant amount of his presentation at the last public event was on residential and ground transportation land use effects because it was a key evaluation criterion for comparing the different alternatives and selecting the preferred alternative. This was because the team made a concerted effort to make sure that the selected alternative balanced the land use effects and came up with a solution that minimizes these effects.
  - Residential – there will be minor changes to visual flight rules traffic pattern area (where aircraft circle when landing under visual flight rules conditions – this area extends about
1.2 miles off the end of each runway in all directions), but in terms of overall flight patterns over the area, there’s not a lot of difference. Project team evaluated MnDOT’s recommended State Model Safety Zones to evaluate the effects of the various alternatives. The MAC will convene a Joint Airport Zoning Board (JAZB) consistent with Minnesota Statutes prior to the project being implemented.

- Ground Transportation – design of realigned 30th Street N. can accommodate forecasted traffic volume and type; travel time will increase an average of 46 seconds in either direction.
- Wildlife Attractants – tree removal and agricultural lease reductions are expected to reduce wildlife attractants on the airport.

- Noise – The threshold for significance of noise is a 65-decibel day night average sound level (DNL) associated with annual usage of the airport. It does not measure the sound of specific aircraft events. It is an annual average based on number of operations, type of aircraft, time of day, runway ends used on a regular basis, etc. Project team modeled that based on historical data and forecasted operations. The 65 DNL contour is entirely contained on airport property for both the 2025 no-action and preferred alternative scenarios. Evan mentioned that the 65 DNL is the outermost solid line on the presentation graphic. The outermost dotted line is the 60 DNL contour, which is not considered a significant noise impact, but was evaluated and will be included in the environmental document for informational purposes.

- Visual Effects – there will be lighting systems relocated and new lighting systems installed as part of the project. Evan showed and explained the three different types of lighting systems used on the airfield. Some of the lighting systems will move closer to the residential areas; however, lighting systems will only be fully operational (on and at full brightness) when activated by pilots. The project will relocate and extend primary runway lighting systems, and will add these systems to the crosswind runway, which is currently unlit. The project team is looking at ways to make sure the lights have as little effect on the neighbors as possible. Some options may include customized light settings, light baffles, and different options for fencing.

- Water Resources
  - Wetlands – from a regulatory perspective, wetlands are the primary impact associated with the project. About 2 acres of wetlands (several portions of small wetlands located throughout the airport) will be filled and those will need to be replaced elsewhere at a ratio of 2:1. With about 2 acres of wetland impact, that means about 4 acres of replacement wetlands somewhere else.
  - Surface Water – net increase of 550,000 square feet of impervious surface associated with runways, taxiways and 30th Street N., meaning more stormwater coming off the pavements and not infiltrating right where it lands. There are a lot of federal, state and local performance standards and requirements the MAC will be required to meet in the design of the stormwater runoff – these will be identified in the environmental document. It is the project team’s opinion all these standards and requirements can be met with structural controls and best management practices.

- Cumulative Impacts – This category provides a context for the proposed action in terms of past, present and reasonably foreseeable future actions within a reasonably close geographic area to the project. The environmental document will characterize the things that have happened to date in the vicinity of the airport, things that are happening on and around the airport right now, and reasonably foreseeable development on and around the airport. The primary ones the
The project team has identified significant development around the airport over the past 50 years – 1,720 parcels developed since 1964 within two miles of project, continued urban development expected especially west of the airport, and Manning Ave. expansion from two to four lanes. All of these things have a cumulative effect over time that needs to be represented and disclosed in the environmental document.

Evan then directed the audience to the table in the back of the presentation handout summarizing the environmental effects. The items in green are the categories for which the project team has definitively identified the effects/impacts AND any required permitting, mitigation and/or associated actions. The project team is still evaluating the categories in white – he said 75-80 percent of the analysis on those has already been completed but the project team is coordinating with various government agencies and determining any voluntary mitigation that the MAC may want to undertake. For these categories, there may be additional information included in the final environmental document that is not represented here, but, in general, this table gives a good overview of the team’s findings of the effects that will be in the document.

Evan then covered next steps: He mentioned the project team has met with the Community Engagement Panel (CEP) four times over the past year and will be meeting next with the CEP on January 16th. At that meeting, the project team will give the CEP a final overview of what will be in the environmental document. The team will then publish that document shortly thereafter for public review and comment. Approximately a month after the publication of the draft for review, the project team will hold a public hearing. Anyone from the interested public can submit written comments at any time during the comment period or submit oral statements for the record at the public hearing. Those statements will be included in the final environmental document and addressed/responded to. At the end of the process, a final federal Environmental Assessment (EA)/state Environmental Assessment Worksheet (EAW) will be issued. The FAA makes the finding on the EA and the MAC on the EAW.

Evan closed by saying this is the process we’ve been going through for the past year and there are a couple more months to go. He thanked everyone for their participation in the process as well as for attending tonight’s meeting and said he looked forward to questions during the Q&A session.

Todd then reiterated that this public process is still ongoing with further opportunities for public review and comment during the review period and public hearing. He opened the Q&A session and informed the audience that a staff member would be walking around with a microphone for people to use when asking their questions so all can hear. He requested that those asking questions state their name and city/township and keep questions or comments to two minutes each so that the panel could get through everyone’s questions.

The presentation Question & Answer session that followed is described below. (Responses are indicated in italics.)

- Dave Schultz, West Lakeland Township Supervisor & CEP member. I have some concerns here. I’ll rattle them all off and you can address them how you’d like. You spoke about tree removal and bats and that they wouldn’t be affected. I’m not sure that’s exactly true. Yes, you’re going to take the trees out while the bats are in hibernation in caves, but when they come back the trees are gone and that will technically affect them. At a previous meeting, you had made a reference about the number of aircraft at the 60% capacity or load level and I’d asked how many
of those planes are based out here today. Is there one plane or are there six or 16? I'm still waiting to find out how many aircraft here today are at 60% capacity before they can take off, where they can’t be at 95%. Where in your process are you going to visit the Valley Branch Watershed? I know you have it in your plan that you’re going to do it; I attended a meeting last week at Valley Branch and they were not aware of what you’re proposing. You may have talked to the Barr Engineering engineer representing Valley Branch but the Valley Branch managers were not aware of any of this. One resident made a comment to me that these are wants—these aren’t needs. If they want something, maybe they shouldn’t be based here. You spoke about soil types. Have you done any borings? Do you know what soils are below the first couple feet of ground? Might want to look at that. There was a comment about RPZs here in the past and I got curious and I went and looked at MSP and from the map I was able to determine it looks like 494 goes through the RPZ for 17/35. Is that true? How do you mitigate water at a 2:1 ratio in some other part of the township/county/state? You may mitigate it, but that doesn’t handle the water. I also have a concern if you’re supposed to take and, if I’m correct, keep 1.1 inches of rainfall on MAC property during a rain event, how is this addressed in the winter months when the ground is frozen? Last year at Christmastime we had a 1” rainfall and so I was curious how this would be addressed? Evan Barrett started with the tree removal and bats question, with Dave’s point being that the trees would not be there when the bats returned. He noted that Dave had a point there. Evan then said he should have mentioned this at the beginning of his remarks, is that these significance levels and factors—in some cases there’s a significance threshold the FAA has identified for certain categories. For example: noise. It’s a very hard line, quantitative threshold: 65 DNL sound level. In the case of the northern long-eared bat and tree removal, while there are still technical factors to consider, there isn’t a hard line in terms of how they define significance. The FAA has to make a determination—for any species that may be affected—on the likelihood of any significant effect. The FAA coordinates with the US Fish & Wildlife Service (USFWS) to make sure that the USFWS agrees with the FAA that there is no significant effect. The FAA has submitted that determination to USFWS and USFWS’ concurrence will be in the final environmental document. Evan then said he’d focus on Dave’s environmental-related questions and suggested they follow-up on the others afterward. Evan said he was disappointed to hear Valley Branch Watershed District (VBWD) wasn’t aware of the proposed improvements. He said the project team has been working closely with VBWD’s engineer and also with Washington County Soil & Water and other similar agencies like Minnesota Board of Water & Soil Resources. The team had soil scientists from all three of these entities out in the field with the project team a few weeks ago to take a look at the wetlands the project team has delineated. He expects that at the November 9th meeting the Board will concur with the wetland boundaries the team has identified. Evan said if there are certain people from the VBWD that aren’t aware of the project, he’d be happy to speak with them and bring them up to speed, but the team has been working closely with VBWD. Regarding soil types, Evan said the team has not done any soil borings as part of this project but has looked at available soil data the USDA makes available, as the project team had to make a determination on whether or not areas that would be affected by the proposed project constitute prime farmland and that’s dependent on the type of soil out there. He said Mead & Hunt’s engineers have looked at the 30th Street realignment, which is the area he believes has been brought up as an area of concern in terms of soil types, and they believe the geotechnical conditions are such that there’s not going to be any issues as far as the soils. Regarding the question on replacement of the wetlands at a
2:1 ratio, Evan said that in the case of airports, wetlands are considered wildlife attractants. So while ideally you would replace a wetland right next to the wetland you’re impacting, from an airport perspective, that’s not the best option, because it’s not as safe. He noted it is common for projects like this—not only for airport projects but also highway projects and other projects—to purchase credits from wetland banks that restore or create new wetlands elsewhere to replace the function of that wetland. He said it does not alter the fact that if you’re taking away that wetland, you’re taking away potentially an area that’s holding water during high-storm events. You mentioned the 1.1” requirement that the VBWD has and the team is considering that very closely in the design of this project. If the project can’t meet that standard, the project won’t be permitted. So, the MAC must meet that standard—there’s really no way around it.

- Norm Jones, resident of West Lakeland Township (mentioned this was his first meeting). Six months ago, I started learning to fly, and was shocked to do the math and figure out that if I wanted to put my whole family in the plane—which was the plan—on a hot summer day, and expect to live, that wouldn’t a good idea on our short runway. So thank you for doing this. I’ve had a discussion with a neighbor or two who wasn’t a pilot and he was wondering, “why do we need to do this,” but I explained that if your road engineer tells you that you need a stoplight instead of a stop sign because your road now needs to be safer, you don’t argue with the road engineer: it’s safer. My question is will all the runway length be usable or will be there be a displaced threshold, backing off some? If there is a displaced threshold, is it too late to add more length to compensate for that? Neil Ralston, MAC Airport Planner, responded that the full 3,500 feet on replacement Runway 14/32 will be usable pavement—no displaced threshold.

- Mike Wilhelmi, Resident of Stillwater. With respect to the ponding that was built for the Easton development for their runoff, that development is somewhat new and I don’t know how long the plans were in place or if they ran them past you before they went forward, but is there any concern about birds being at the ponds and then flying through your RPZ? Evan Barrett responded that wildlife attractants are hazardous at airports and there are certain measures airports can take to discourage wildlife, so the team will have some recommendations on measures that can be taken not only in the new development but also in areas on the airport that may attract waterfowl and other types of wildlife. The FAA has a standard that within 48 hours of a rainfall or significant precipitation event, that any storm water detention facilities be designed to drain in that timeframe. Neil Ralston then added that, regarding Easton Village and the corresponding Village Park Preserve development that will be going in south of Easton Village, the MAC did review those plans and had significant comments on the storm water retention. The MAC worked with USDA Department of Wildlife to give the designers some recommendations on how to minimize the attractiveness of those ponds to waterfowl—largely making them narrow and deep, and they also asked that the developer not plant lawns along the back side of the pond but have it be native grasses that are less attractive to the waterfowl. He then said, yes, in an ideal world we wouldn’t have retention ponds across the street from the airport but that being said, we did work with them to minimize the attractiveness of those ponds—by design—to waterfowl. He then pointed out that the runway being proposed moves further away from those ponds than the existing runway is today.

- Molly Olson, resident of West Lakeland Township. I’m a pretty new resident; not happy about this. Can you refresh my memory about the mission statement and goal you have created for the CEP? Dana Nelson thanked Molly for her question and responded that, as part of this process, the MAC wanted to make a concerted effort to create a plan that was intended to reach
out to a wide variety of stakeholders, so the team put together the Stakeholder Engagement Plan. Part of that was convening a Community Engagement Panel (CEP). The Stakeholder Engagement Plan (SEP) set forth the CEP membership and who the team reached out to incorporate into that panel. It included community leaders who were part of the long-term comprehensive planning process, Washington County, airport users who were part of the planning process as well, a couple MAC staff members, Stillwater Chamber of Commerce, and the MAC Commissioner who represents that area. She said there is a lot of description on what the CEP was intended to do in that Stakeholder Engagement Plan, which is available on the project website. Dana said she’d be happy to provide a copy to anyone interested in it. She said there isn’t a specific objective of the CEP laid out in the Stakeholder Engagement Plan and noted this is the first time the MAC has convened a CEP and is learning throughout the process. She stated they would include an objective statement for future CEPs. She also offered that if the CEP would like to discuss this during their next meeting, it could be added to the discussion agenda.

Molly said, I’m asking the question because it seems to me it’s being portrayed as “oh look at us, we’re engaging the public and we are interested in what they have to say,” but the few I’ve attended seem to be talking at the people, and not really trying to arrive at clear solutions that will achieve win-win solutions for the hobbyists at the airport, the MAC and their desire to spend money vs. the impact of the community. The second question I have is on this big spreadsheet here which, as I understood it, this is an outline of what will be provided to the federal government to get your final approvals in your report – is that right? If I understood that right—that this is everything that’s going to be in your report—I’m wondering where in here has anything to do with how the people feel about this and the impact that the people that live around it feel? It doesn’t look like that’s included in here.

Evan Barrett responded that the table is a summary table of the environmental analysis categories that the project team is required to look at under the National Environmental Policy Act and what their findings are going to be. He said that’s going to be supported by a lot of detailed information—and he acknowledged he rushed to get through a lot of information in a short period of time here this evening—but said the team’s intent in providing this information in this forum is to provide that overview so that when members of the public go to look at the draft document that is published early next year, that it’s not going to be as difficult to process or find what you’re looking for. He said that part of the intent of this whole stakeholder engagement process is to provide that baseline of understanding of what the project team is doing, but also to listen and make sure they understand what the concerns of the community are. He stated there’s no requirement under the National Environmental Policy Act to do this stakeholder outreach process; this is something the MAC chose to do because they believed it was important based on what they’d found during their previous planning efforts. It was an important goal for the MAC to implement a process like this that allowed for these sorts of questions, comments and dialogue. Chad Leqve then added, on the topic of community concerns and what the team has heard throughout the dialogue, he’d started the meeting with the list of topics, and acknowledged that Molly was the one who brought that idea up at the last CEP meeting. He said, “You’ve been a passionate advocate for making sure we have a process that really listens and isn’t talking at people, and you’ve been consistent in your advocacy for that and attending meetings and maintaining a keen eye toward that concept. We are trying. As Dana said, we’re doing some things that are new for MAC staff, and admittedly, there’s some learning that’s occurring along the way and I would characterize your thoughts and ideas at the last meeting as a learning for us on some of the things that would
be effective and helpful in communicating and engaging with the public.” He thanked her for that. He also said the process is designed to give answers to the questions that people have, and the team is trying to do that in a few different ways – FAQs on the website, for example. As he mentioned at the beginning of the presentation tonight, there is a formal component of this environmental review process that is focused on the public’s comments. Any member of the public can submit a written comment or testify at the public hearing for the document. That testimony and those written comments will be included in the record that will be before the respective organizations that need to make a determination on the final environmental documents. He referenced what Evan Barrett had stated earlier, that those organizations are the FAA on the federal side (under NEPA) and the Metropolitan Airports Commission on the state side (under MEPA). He said the project team is making an effort to do more than the bare minimum, which per federal NEPA requirements is just doing the public comment period. He said the team is trying to take and respond to comments as best it can throughout the process, and, when possible, try to address some of those issues and concerns as part of the planning process. He reiterated, “We’re not done yet in terms of formal opportunities for comments and responses to questions. That’s still an important part of the planning process that lies before us before any determination is made on these documents.”

- Mike Wilhelmi, Resident of Stillwater. I have a question about the grant process you’re following and the program that you’re going to use to get the funding to execute the project. I know there are some fairly strong constraints about how the program must be designed in order to draw down that FAA funding, and I think we’d talked about this at a previous meeting, about asking for a waiver of where the RPZs would be – if it could be that the MAC and the community got together and said, with the space that we have, it’s going to be hard for us to have the length we think is necessary for the flying public, would it be possible for you to ask the FAA for a waiver to allow the RPZ to be over the railroad tracks or over 30th Street? Chad Leqve responded that the team has engaged the FAA on that topic because it’s the catalyst for the whole discussion on the rerouting of 30th Street. As part of the CEP efforts, Chad reached out to the FAA again to ask if there are any options that would lessen the need for some of the rerouting being considered as part of the project. The position received from the FAA was “no.” He said they stood firm on that. He reported that some of this dialogue took place back when the team was evaluating other options for the design of the 30th Street reroute, focusing at that time primarily on travel time because there was a concern on safety services and increased travel time with the realignment of 30th. He noted the team also engaged the FAA on that topic following the last public meeting when this question was brought up, just to reconfirm their position on this issue. Mike said he just wanted to confirm they’d asked more than once. Chad confirmed that they had.

With no further questions, Todd Streeter then closed the Q&A and encouraged community members to meet with the project team and continue the dialogue in the one-on-one engagement session.

The Q&A adjourned at approximately 7:25 p.m. The one-on-one engagement session ended at approximately 8:00 p.m.
1. Is the environmental category relevant to the proposed development?
   - **YES**: No Further Analysis Required
   - **NO**: Environmental Category Relevant
     - Collect Data
     - Evaluate Effects
     - Determine Required Permitting/Mitigation

2. Are effects "significant" based on FAA-established thresholds and factors?
   - **YES**: No Further Analysis Required
   - **NO**: Significant Effects Considering FAA Evaluation
     - Federal Aviation Administration (FAA) Conducts Environmental Impact Statement (EIS)
Proposed Development
"Preferred Alternative"
## Preliminary Summary of Environmental Effects

### Air Quality
- **Effects:**
  - Baseline Alternative (No Expansion Alternative): None
  - Preferred Alternative: Minimal impacts during construction
- **Required Permitting, Mitigation, and/or Associated Actions:** None

### Biological Resources (including fish, wildlife, and plants)
- **Effects:**
  - Baseline Alternative (No Expansion Alternative): None
  - Preferred Alternative: Tree removal
- **Required Permitting, Mitigation, and/or Associated Actions:**
  - Tree removal to occur during NLEB dormant season (October 1 – April 30)
  - Implement April 2015 USFWS/USDOT NLEB avoidance and minimization measures
  - Implement MnDNR Blanding’s turtle avoidance measures

### Climate
- **Effects:**
  - Baseline Alternative (No Expansion Alternative): None
  - Preferred Alternative: None
- **Required Permitting, Mitigation, and/or Associated Actions:** None

### Coastal Resources
- **Effects:**
  - Baseline Alternative (No Expansion Alternative): N/A
  - Preferred Alternative: N/A
- **Required Permitting, Mitigation, and/or Associated Actions:** None

### DOT Section 4(f) Lands
- **Effects:**
  - Baseline Alternative (No Expansion Alternative): N/A
  - Preferred Alternative: N/A
- **Required Permitting, Mitigation, and/or Associated Actions:** None

### Farmlands
- **Effects:**
  - Baseline Alternative (No Expansion Alternative): None
  - Preferred Alternative: 43 acres converted directly or indirectly
- **Required Permitting, Mitigation, and/or Associated Actions:** To be determined

### Hazardous Materials, Solid Waste, and Pollution Prevention
- **Effects:**
  - Baseline Alternative (No Expansion Alternative): None
  - Preferred Alternative: None
- **Required Permitting, Mitigation, and/or Associated Actions:** Dispose of construction materials and other solid waste in accordance with state and local laws.
## Preliminary Summary of Environmental Effects

<table>
<thead>
<tr>
<th>Environmental Analysis Category</th>
<th>Effects: Baseline Alternative (No Expansion Alternative)</th>
<th>Effects: Preferred Alternative</th>
<th>Required Permitting, Mitigation, and/or Associated Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Historic, Architectural, Archaeological, and Cultural Resources</td>
<td>None</td>
<td>None</td>
<td>Awaiting SHPO concurrence with FAA determination of effect</td>
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<tr>
<td>Land Use</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residential</td>
<td>Potential Zoning Conflicts</td>
<td>Potential Zoning Conflicts</td>
<td>Convene Joint Airport Zoning Board (JAZB) to develop an Airport Zoning ordinance</td>
</tr>
<tr>
<td>Ground Transportation</td>
<td>RPZ Conflicts</td>
<td>Increased travel time on 30th Street</td>
<td>None</td>
</tr>
<tr>
<td>Wildlife Attractants</td>
<td>Wetlands in vicinity of runway approach</td>
<td>Wetlands in vicinity of runway approach</td>
<td>To be determined</td>
</tr>
<tr>
<td>Natural Resources and Energy Supply</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Noise and Compatible Land Use</td>
<td>None</td>
<td>None</td>
<td>Update voluntary noise abatement plan and hold educational briefings for pilots</td>
</tr>
<tr>
<td>Socioeconomics, Environmental Justice, and Children’s Health &amp; Safety</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>
## Preliminary Summary of Environmental Effects

<table>
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<tr>
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<th>Required Permitting, Mitigation, and/or Associated Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Visual Effects</strong> (including airfield lighting)</td>
<td>None</td>
<td>Existing light system relocations and new light system installations</td>
<td>To be determined</td>
</tr>
<tr>
<td><strong>Water Resources</strong></td>
<td></td>
<td></td>
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</tbody>
</table>
| **Wetlands** | None | 1.97 acres direct wetland impact | - Compensatory Mitigation Plan (assume impact will be banked)  
- USACOE 404 Army Corps Permit and Compliance with Minnesota Wetland Conservation Act  
- MnDNR Public Waters permit |
| **Stormwater** | None | 12.6 acres increased impervious area | - Stormwater Pollution Prevention Plan  
- On-Site Best Management Practices  
- MPCA CWA Section 401 Water Quality Certification and NPDES permit  
- VBWD permit |
| **Cumulative Impacts** | None | Under evaluation | To be determined |
Environmental Assessment
Lake Elmo Airport

Anticipated EA/EAW Timeline

Next Steps:

- Complete Evaluation of Effects
- Publish Draft EA/EAW (begins public comment period)
- Hold Public Hearing
- Finalize EA/EAW

For more detail, see the Stakeholder Engagement Plan on the project website. Schedule is subject to change. Any significant schedule updates will be published on the project website and distributed to e-news subscribers, as appropriate.
Environmental Analysis Categories

- Air Quality
- **Biological Resources** (including fish, wildlife, and plants)
- Climate
- Coastal Resources
- **Department of Transportation Act, Section 4(f)**
- Farmlands
- Hazardous Materials, Solid Waste, and Pollution Prevention
- Historic, Architectural, Archeological & Cultural Resources
- Land Use
- Natural Resources and Energy Supply
- Noise and Compatible Land Use
- Socioeconomics, Environmental Justice, and Children’s Environmental Health and Safety
- **Visual Effects** (including light emissions)
- **Water Resources** (including wetlands, floodplains, surface waters, groundwater, and wild and scenic rivers)
Purpose & Need Goals

The **PURPOSE** of the proposed improvements:

1. Address and attend to the airport’s failing, end-of-life infrastructure;
2. Enhance safety for airport users and neighbors; and
3. Improve facilities for the types of aircraft using, and expected to use, the airport.

The **NEED** for the proposed improvements:

1. Existing runway pavements are deteriorating and, for safety’s sake, need to be replaced.
2. The primary runway has several incompatible land uses within its runway protection zones (RPZs), including a railroad and two public roads.
3. The existing runway lengths do not meet the needs of current aircraft operators and their aircraft.
4. The airport lacks the most current navigational technology for landing aircraft.

Lake Elmo Airport
Project History
1966 to 2017

1965

1975

1985

1995

2005

2015

2025

1966 first Plan (planned to extend the existing primary and crosswind runways to 3,200 and 3,500 feet, respectively, and construct two new runways—a 3,900-foot and 2,750-foot—making it a four-runway airport)

1976 Plan update (preserved the 1966 four-runway airport concept)

1992 Plan update (recommended a relocated and extended primary runway initially to 3,300 feet, then ultimately to 3,900 feet; removed future parallel primary and crosswind runways)

2008 Plan Update (planned to extend the primary runway to 3,900 feet and extend the crosswind runway to 3,200 feet)

2015 Plan Update (planned to extend the primary runway to 3,600 feet, then reduced it to 3,500 feet based on community input)

2017 EA/EAW (for the extension of the primary runway to 3,500 feet and the crosswind runway to 2,750 feet)*ongoing
Runway Alternatives Evaluation Process

Criteria for Identifying Range of Alternatives
- Maintain runway orientations
- Avoid or minimize land acquisition
- Avoid or minimize changes to airport use and aircraft flight patterns

Criteria for Screening Range of Alternatives
- Meet the Purpose and Need
- Conform to FAA policies
- Compatible with a viable 30th Street N. realignment alternative

Criteria for Identifying Preferred Alternative
- Practicability factors
- Environmental factors

Preferred Alternative

No Action Alternative
For Evaluation Purposes Only
Environmental Assessment
Lake Elmo Airport

Runway Length Needs

Aircraft Type

<table>
<thead>
<tr>
<th>Aircraft Type</th>
<th>Runway Length in Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>CESSNA 340</td>
<td>3,300'</td>
</tr>
<tr>
<td>BEECH BARON 58</td>
<td>3,200'</td>
</tr>
<tr>
<td>PILATUS PC-12</td>
<td>3,500'</td>
</tr>
<tr>
<td>BEECH KING AIR 200</td>
<td>3,250'</td>
</tr>
<tr>
<td>SOCATA TBM 700</td>
<td>3,650'</td>
</tr>
<tr>
<td>CITATION MUSTANG</td>
<td>3,490'</td>
</tr>
<tr>
<td>CITATION EXCEL</td>
<td>4,980'</td>
</tr>
<tr>
<td>CITATION X</td>
<td>5,400'</td>
</tr>
<tr>
<td>GULFSTREAM IV</td>
<td>6,800'</td>
</tr>
</tbody>
</table>

Existing Runway 14/32 Length: 2,849’

Proposed Runway 14/32 Length: 3,500’

NOTE:
Propeller-driven aircraft runway lengths are based on accelerate-stop distances and jet-driven aircraft runway lengths are based on balanced field length takeoff distances, as identified in the respective aircraft performance manuals. Accelerate-stop distance is the length required to accelerate from a full stop to near lift-off speed and then decelerate to a full stop. Balanced field length considers the accelerate-stop distance along with other safety factors as required for federal certification of these larger aircraft types. Lengths are calculated for a temperature of 82.3°F Fahrenheit, a field elevation of 933 feet above mean sea level, and typical takeoff flap settings.
Stay Involved!

The MAC is committed to a transparent and open community involvement process and has established a Community Engagement Panel (CEP) for this project. This is an advisory panel representing a diverse group of community stakeholders, including government representatives and staff, airport users, and local residents.

- Sign-up to receive updates via our e-news subscription program
- Check out the project website for up-to-date information
- Attend the four public events to learn more about the project
- Share your thoughts via the “Contact Project Team” tab of the website or on the comment forms at the public events

Project Website

www.metroairports.org/General-Aviation/Lake-Elmo-Environmental-Assessment.aspx
Lake Elmo Airport
Environmental Assessment (EA)/Environmental Assessment (EAW) Worksheet

Overview of Environmental Effects
Agenda

• Concerns we’ve heard from airport neighbors
• Environmental effects overview
• Next steps
Concerns We’ve Heard from Airport Neighbors

• The proposed airport improvements are not justified
  – the existing primary runway length is adequate
  – the improvements are not needed to enhance safety

• The surrounding homes will be impacted by additional air traffic, jet traffic and associated noise levels

• Estimates of existing aircraft activity levels are inaccurate

• The plan has become outdated

• Realignment of 30th Street N will disrupt emergency response times and pose safety concerns to travelers

• Realignment of 30th Street N will cause a maintenance burden for West Lakeland Township

• Environmental impacts to wetlands, wildlife habitats and trees

• Impacts to property values

• Quality of life concerns

• Impacts of future state safety zoning

• Proposed airfield lighting changes

• Project costs and fiscal responsibility

• Impact to local taxes

• The airport improvements do not provide benefit to the surrounding community

• Residents in newly developed areas adjacent to the airport are not aware of the planned improvements

• Public engagement has been inadequate
Environmental Effects

Overview

• NEPA categories considered in detail
  • Air quality
  • Biological resources
  • Cultural resources
  • Farmlands
  • Hazardous materials & solid waste
  • Land Use
  • Noise
  • Visual effects
  • Water resources

• Other NEPA categories
  • Climate
  • Coastal resources
  • DOT Section 4(f)
  • Natural resources and energy supply
  • Socioeconomics

1. Is the environmental category relevant to the proposed development?
   - YES
     • No Further Analysis Required
   - NO
     • Collect Data
     • Evaluate Effects
     • Determine Required Permitting/Mitigation

2. Are effects "significant" based on FAA-established thresholds and factors?
   - YES
     • No Further Analysis Required
   - NO
     • Federal Aviation Administration (FAA) Conducts Environmental Impact Statement (EIS)
Biological Resources

• Tree removal
  • Approximately 20 acres of trees affected on airport property
  • Off-site trees are being evaluated in coordination with FAA

• Federal and state-listed species
  • Northern long-eared bat
  • Rusty patched bumblebee
  • Blanding’s turtle
  • Impacts will be avoided and minimized using measures recommended by MnDNR and U.S. Fish & Wildlife Service
Air Quality

- Operational & construction emissions were evaluated with reference to:
  - National Ambient Air Quality Standards (NAAQS)
  - Clean Air Act requirements
- Emissions will not exceed FAA thresholds for NAAQS pollutants

Cultural Resources

- Cultural resources (above and below ground) were evaluated with reference to the National Historic Preservation Act (NHPA) requirements
- FAA determined no effect to cultural resources; awaiting State Historic Preservation Office (SHPO) concurrence
- FAA is also consulting with Native American tribes
Farmlands

• Farmlands were evaluated with respect to federal Farmland Protection Policy Act (FPPA)

• Approximately 43 acres of on-airport farmland would be converted

• U.S. Department of Agriculture consultation in process to establish significance of effects
Hazardous Materials & Solid Waste

- Known hazardous materials sites identified within one mile of Airport
  - None will be affected by project
- Groundwater contamination plume would not be affected due to water table depth
Land Use

- **Residential**
  - Minor changes to visual flight rules (VFR) traffic pattern area
  - The MAC will convene a Joint Airport Zoning Board (JAZB) consistent with Minnesota Statutes

- **Ground Transportation**
  - Realigned road can accommodate forecasted traffic volume and type
  - Travel time will increase an average of 46 seconds in either direction

- **Wildlife Attractants**
  - Tree removal and ag lease reductions result in fewer attractants
Noise

- 65 decibel day night average sound level (DNL) noise contour remains on Airport property under both No Action and Preferred Alternatives
Visual Effects

• Project lighting components
  • Relocate and extend existing Runway 14/32 non-precision systems
  • Install new Runway 04/22 non-precision systems

• Some systems will move closer to residential areas
  • Approximate 25% reduction in distance from light-sensitive areas

• Light systems will only be fully operational when “keyed on”

• Potential visual effect reduction strategies include:
  • Customized light settings
  • Light baffles
  • Fencing
Water Resources

• Resources evaluated with respect to federal Clean Water Act and state Wetland Conservation Act

• Wetlands
  • Approximately 1.97 acres of direct wetland impacts
  • Wetland will be replaced at 2:1 ratio

• Surface Water
  • Net increase of 550,000 square feet impervious surface
  • Federal, State, and local standards require specific performance standards for stormwater management
Cumulative Effects

- Past, present, and reasonably foreseeable actions
  - 1,720 parcels developed since 1964 within two miles of project
  - Continued urban development expected, especially west of the airport
  - Manning Avenue planned to widen from two to four lanes
### Summary of Environmental Effects (DRAFT)

<table>
<thead>
<tr>
<th>Environmental Impact Category</th>
<th>Effects: No-Action Alternative</th>
<th>Effects: Preferred Alternative</th>
<th>Required Permitting, Mitigation, and/or Associated Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Quality</td>
<td>None</td>
<td>Minimal impacts during construction</td>
<td>None</td>
</tr>
</tbody>
</table>
| Biological Resources (including fish, wildlife, and plants) | None                          | Tree removal | - Tree removal to occur during NLEB dormant season (October 1 – April 30)  
- Implement April 2015 USFWS/USDOT NLEB avoidance and minimization measures  
- Implement MnDNR Blanding’s turtle avoidance measures |
| Climate                       | None                          | None                          | None |
| Coastal Resources             | NA                            | NA                           | None |
| DOT Section 4(f) Lands        | NA                            | NA                           | None |
| Farmlands                     | None                          | 43 acres converted directly or indirectly | To be determined |
| Hazardous Materials, Solid Waste, and Pollution Prevention | None                          | None                          | Dispose of construction materials and other solid waste in accordance with state and local laws. |
| Historic, Architectural, Archaeological, and Cultural Resources | None                          | None                          | Awaiting SHPO concurrence with FAA determination of effect |
| Land Use                      | None                          | None                          | None |
| Residential                   | Potential zoning conflicts    | Potential zoning conflicts   | Convene Joint Airport Zoning Board (JAZB) to develop an Airport Zoning ordinance |
| Ground Transportation         | RPZ conflicts                 | Increased travel time on 30th Street | None |
| Wildlife Attractants          | Wetlands in vicinity of runway approach | Wetlands in vicinity of runway approach | To be determined |
| Natural Resources and Energy Supply | None                          | None                          | None |
| Noise and Compatible Land Use | None                          | None                          | Update voluntary noise abatement plan and hold educational briefings for pilots |
| Socioeconomics, Environmental Justice, and Children’s Health & Safety | None                          | None                          | None |
| Visual Effects (including light emissions) | None                          | Existing light system relocations and new light system installations | To be determined |
| Water Resources               | None                          | 1.97 acres direct wetland impact | - Compensatory Mitigation Plan (assume impact will be banked)  
- USACE 404 Army Corps Permit and Compliance with Minnesota Wetland Conservation Act  
- MnDNR Public Waters permit |
| Stormwater                    | None                          | 12.6 acres increased impervious area | - Stormwater Pollution Prevention Plan  
- Onsite Best Management Practices  
- MPCA CWA Section 401 Water Quality Certification and NPDES permit  
- VBWD permit |
| Floodplains                   | None                          | 0.06-acre wetland fill area in floodplain | VBWD permit |
| Cumulative Impacts            | None                          | Under evaluation              | To be determined |

Green shaded items represent categories for which impacts and associated actions have been definitively determined. Additional findings in other categories may be included in the draft EA/EAW.
Next Steps

1. CEP Meeting #5
2. Publish Draft EA/EAW for public review and comment
3. Public Hearing
4. Comments received will be included and responded to in the Final EA/EAW