CHAPTER 2: FACILITY & ENVIRONMENTAL INVENTORY

Introduction

The Inventory chapter represents a summation of the existing Perham Municipal Airport (the Airport) physical facilities and environmental conditions.

An on-site assessment was conducted on 11/28/2018. The inventory effort included a facility assessment supplemented with a comprehensive data collection effort. This effort identifies and supports the Airport Master Plan Study for the Perham Municipal Airport and provide a baseline framework to evaluate the airport facility.

The information compiled during the Inventory effort will be used to assess the existing facilities ability to meet the projected airport needs identified in subsequent sections of the master plan. Please refer to the various appendices referenced within the study narrative for more detailed information.

This chapter provides an inventory of the following elements:

Background

General

The Perham Municipal Airport (FAA ID: 16D) is a non-certificated general aviation airport serving the City of Perham and surrounding areas of Otter Tail County in central Minnesota. The airport is owned and operated by the City of Perham. The airport is a critical community asset providing vital connectivity to the region.

The Perham airport has one runway. Runway 13-31 is paved and lighted at 4,102 feet long and 75 feet wide and is capable of accommodating instrument approaches during poor weather.

The Airport provides multiple aeronautical functions including emergency response, business travel, agriculture support, community access, and flight training services. According to the Airport Master Record (as of November 2018), the airport is home to 16 based aircraft (includes 2 helicopters and 1 ultra-light) and accommodates 7,200 annual flight operations.

History

The construction of the Northern Pacific Railroad line from Lake Superior to the Pacific Northwest in the 1870s led to the settlement and growth of Perham and the surrounding area. The townsite was platted in 1873 and was named after the first president of the Northern Pacific Railroad, Josiah Perham, in 1877. Perham was officially incorporated in 1881.

The airport was originally established in 1948. The airfield had two intersecting grass landing strips, a NW-SE and E-W orientation, with a building area in the south east corner adjacent to the intersecting runways. The 1981 ALP, the most recent approved ALP, proposed constructing a paved runway (Runway 12-30) and relocating the building area midfield between the new runway and the county highway. The proposed layout was constructed, and the new airport was dedicated in 1992. The runway was later designated to Runway 13-31.

Airport Ownership & Management

The Perham Municipal Airport is owned and operated by the City of Perham. An Airport Advisory Commission is in place and provides recommendations to the Perham City Council who is the decision-making body. The City Manager serves as the airport manager and the maintenance of the airport is performed by the city public works staff.

Location & Setting

The City of Perham is located in central western Minnesota in Otter Tail County. The community is bordered by Big Pine Lake, Little Pine Lake, and Mud Lake to the north. The major roads serving Perham are U.S. Highway 10 running northwest-southeast and Minnesota Highway 78 which begins at U.S. Highway 10 and runs south.

The Perham Municipal airport is located 2 miles north west of the Perham central business district along County Highway 80 and U.S. Highway 10. Access to the airport is served by a paved road connecting the parking lot to County Highway 80.

The airport elevation is 1,376 feet above mean sea level (AMSL) with generally flat terrain around the airport. The primary land use surrounding the airport is farm land which exists to the north, south, and west of the airfield. In addition, a county highway and railroad line are immediately adjacent to the airport on the northeast edge and run parallel to the runway. A residential property and commercial business exist next to airport property just west of Runway 13 threshold. Businesses and residential property are also located about ½-mile southeast of Runway 31 threshold.

Outside of the City of Perham, the area is sparsely populated with the census reporting a population density in Otter Tail County of 29.1 people per square mile while the State of Minnesota has an average of 66.6 people per square mile.

Figure 2-1: Airport Location Map provides an overview of the airport's local environment.

Climate

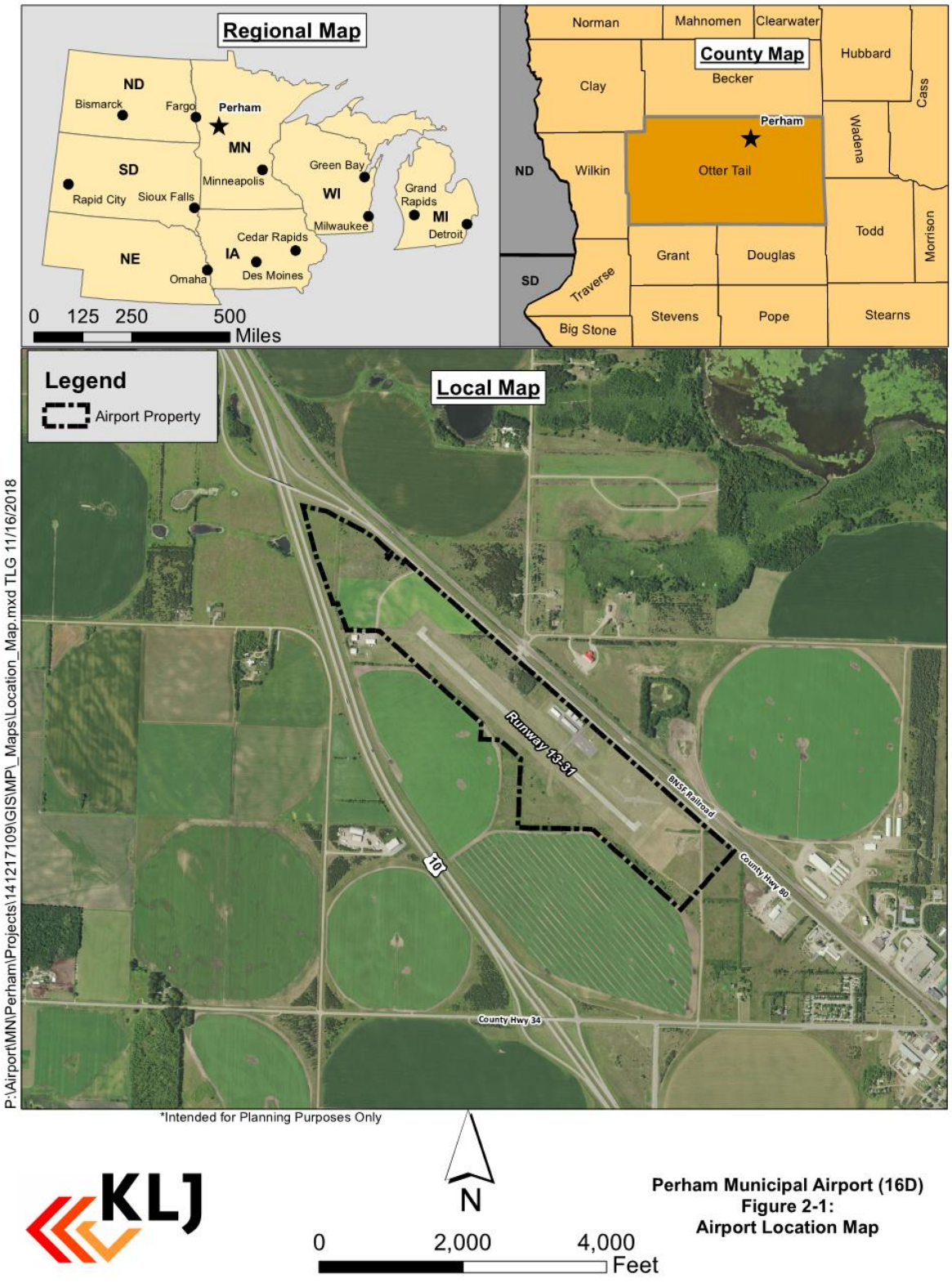
Perham is located within a humid continental climate zone with mild summers and cold winters with no significant precipitation between seasons. The nearest weather station in Devils Lake reports an average annual temperature was 42.2°F from 1981-2010 with an annual precipitation of 27.46 inches. Prevailing winds are from the north west and are generally aligned with the airport's runway orientation.

Table 2-1 – Average Weather

Month	Precipitation (in.)	Average Low Temperature (°F)	Average High Temperature (°F)
January	0.79	-2.1	19.3
February	0.50	2.8	25.6
March	1.08	17.2	37.2
April	1.85	31.4	55.5
May	3.51	45.1	69.4
June	4.44	55.2	77.5
July	3.82	59.5	82.1
August	2.96	57.8	81.1
September	3.57	47.5	71.0
October	3.05	34.7	55.8
November	1.20	20.7	37.9
December	0.69	4.9	22.5

Source: National Weather Service Climate 1981-2010 – Detroit Lakes 1 NNE

Figure 2-1 – Airport Location Map



Airport Role & Design

Perham is a general aviation (GA) airport, meaning it accommodates aviation activities other than scheduled commercial air service. General aviation airports provide vital aeronautical functions serving the public interest including emergency response, critical community access, personal and business aviation, and commercial, industrial, and economic activities.

Under Minnesota Statute 360.305, system airports are categorized in three classifications: Key, Intermediate, or Landing Strip airports. The 2012 Minnesota State Aviation System Plan (SASP) classified Perham as an Intermediate airport. The SASP identifies a minimum service level for each airport classification. Intermediate airports have paved and lighted runways less than 5,000 feet in length. The closest Key system airport with a runway length of 5,000 feet or greater is the Park Rapids Municipal Airport, 32 miles to the northeast in Park Rapids.

The National Plan of Integrated Airport Systems (NPIAS) identifies nearly 3,330 airports nationally that are included in the national airport system. The NPIAS, which is administered by the FAA, contains all commercial service airports, all reliever airports, and selected public-owned general aviation airports that link the community to the national air transportation system.

Perham is currently not included in the NPIAS. The airport has previously applied for inclusion into the NPIAS but was not accepted. The FAA has established entry criteria into the NPIAS which includes; at least 10 based aircraft, and serves a community located 30 minutes or more average ground travel time (20-mile radius is often used) from the nearest existing or proposed NPIAS airport.

Table 2-2 provides a list of the surrounding airports.

Table 2-2 – Surrounding Airports

Airport	FAA ID	Location from Airport	State Classification	NPIAS	Primary Runway
Detroit Lakes	DTL	19 Miles NW	Intermediate	Yes	4,502' x 75'
Wadena Municipal	ADC	21 Miles SE	Intermediate	Yes	4,007' x 75'
Pelican Rapids Municipal	47Y	23 Mile W	Landing Strip	No	3,260' x 140' (Turf)
Henning Municipal	05Y	22 Miles S	Landing Strip	No	3,280' x 200' (Turf)
Park Rapids Municipal	PKD	32 Miles NE	Key	Yes	5,497' x 100'
Fergus Falls Municipal	FFM	34 Miles SW	Key	Yes	5,639' x 100'
Brainerd Lake Regional	BRD	71 Miles E	Key - Commercial	Yes	7,100' x 150'
Fargo Hector Int'l	FAR	61 Miles NW	Primary Commercial Service (ND)	Yes	9,001' x 150'

Source: www.Airnav.com,

The FAA's Airport Reference Code (ARC) identifies a design category based on aircraft wingspan, tail height and approach speed for aircraft types that regularly use the airport. The last Perham Airport Layout Plan prepared in 1981 did not identify the future ARC. Based on Runway 13-31 dimensions, the airport could accommodate regular use of aircraft up to ARC B-II, which would be approach speeds less than 121 knots and wingspans up to 79 feet. The taxiway width of 40 feet would meet Taxiway Design Group (TDG) 2 standards.

Table 2-3 summarizes the airport's role and design. See **Chapter 4: Facility Requirements** for more details on FAA design classifications.

Table 2-3 – Airport Role & Design

Airport ID	State Classification	FAA Classification	ARC	TDG
16D	Intermediate	N/A	A/B-II (Small)	2

Source: 2012 MN SASP, KLJ Analysis, ARC = Airport Reference Code, TDG = Taxiway Design Group

Airport Activity

GENERAL AVIATION

General aviation makes up the vast majority of the airport activity at Perham. Flights are conducted for various purposes including air ambulance and medical transport, agricultural spraying, business travel, personal travel, flight training and recreational.

COMMERCIAL

Perham is not served by any scheduled commercial passenger airlines. The nearest airport with scheduled passenger airline service is located approximately 70 miles to the west in Fargo, ND (Hector International Airport). FAR is currently served by numerous airlines to several nonstop locations in the United States.

CARGO

There is no regular air cargo service to Perham. The majority of the community's air cargo needs are served regionally from either Detroit Lakes, Wadena, or Fargo.

OTHER ACTIVITY METRICS

Based Aircraft

According to discussions with the airport there are 21 aircraft based on the airfield. All based aircraft are stored in aircraft hangars with all hangars being fully utilized. The airport currently has 7 individuals on a waitlist for hangar rental. The FAA's Airport Master Record (Form 5010), dated December 2018, shows Perham as having 16 based aircraft while the SASP reported 14 based aircraft in 2012 with 15 projected by 2020.

Annual Operations

The FAA Airport Master Record (Form 5010) estimates there are 7,200 annual flight operations (takeoff and landings) at Perham annually, or approximately 20 operations per day on average. The MN SASP also reported 7,200 annual operations with 70 percent identified as local operations with the remaining 30 percent being itinerant.

Aircraft Fuel Sales

Fuel sales can be another metric of aviation activity on an airport. Perham offers 100LL AVGAS through a 24-hour self-service system. The airport reported 10,600 gallons of 100LL fuel sold in 2018. This was an increase from the 8,700 gallons sold the previous year.

Table 2-4 summaries airport activity from 2018. See **Chapter 3: Aviation Activity Forecasts** for more information on existing and projected airport activity.

Table 2-4 – Airport Activity Summary

Based Aircraft	Annual Operations
21	7,200

Source: FAA Airport Master Record

Facility Inventory

An inventory of airport facilities was performed to establish a baseline for determining required future improvements. As discussed in the following sections, airport facilities are grouped into several categories: land, airfield, navigational aids (NAVAIDS)/airspace, general aviation, support, and access/parking.

Land

Airport property owned by the City of Perham is designated as aeronautical and is leased to private entities for approved uses. The City of Perham owns approximately 182 acres of property fee simple. No avigation easements were found for the properties surrounding the airport.

Airport land is leased to private parties for approved aeronautical uses. Examples of aeronautical uses include land to construct an aircraft storage hangar. Private hangars have 20-year terms.

Airfield Facilities

Airside facilities are those that are necessary for aircraft surface movement, such as runways, taxiways, aprons, and associated lighting, marking and signage systems. A map depicting existing airport airside components is included in **Figure 2-2: Airfield Facilities Map**. Information on design codes is contained in **Chapter 4: Facility Requirements**.

RUNWAY 13/31

The Perham Airport has one paved runway. Runway 13-31 is a 4,102 x 75-foot asphalt runway. The runway is designed to meet FAA Runway Design Code (RDC) A/B-II, small aircraft design standards with 1-mile approach minimums. Runway 13-31 does not have a parallel taxiway and therefore an Approach Reference Code (APRC) and Departure Reference Code (DPRC) are not available for this runway. The runway pavement underwent reconstruction in 2010.

Runway 13-31 pavement has no surface friction improvement and is marked with non-precision instrument markings. Visual aids include a 4-box Precision Approach Path Indicator (PAPI) and Runway End Identifier Lights (REIL) on both Runway ends. Runway 13-31 has a pilot controlled medium intensity runway lighting (MIRL) system.

Runway facilities are summarized in **Table 2-5**.

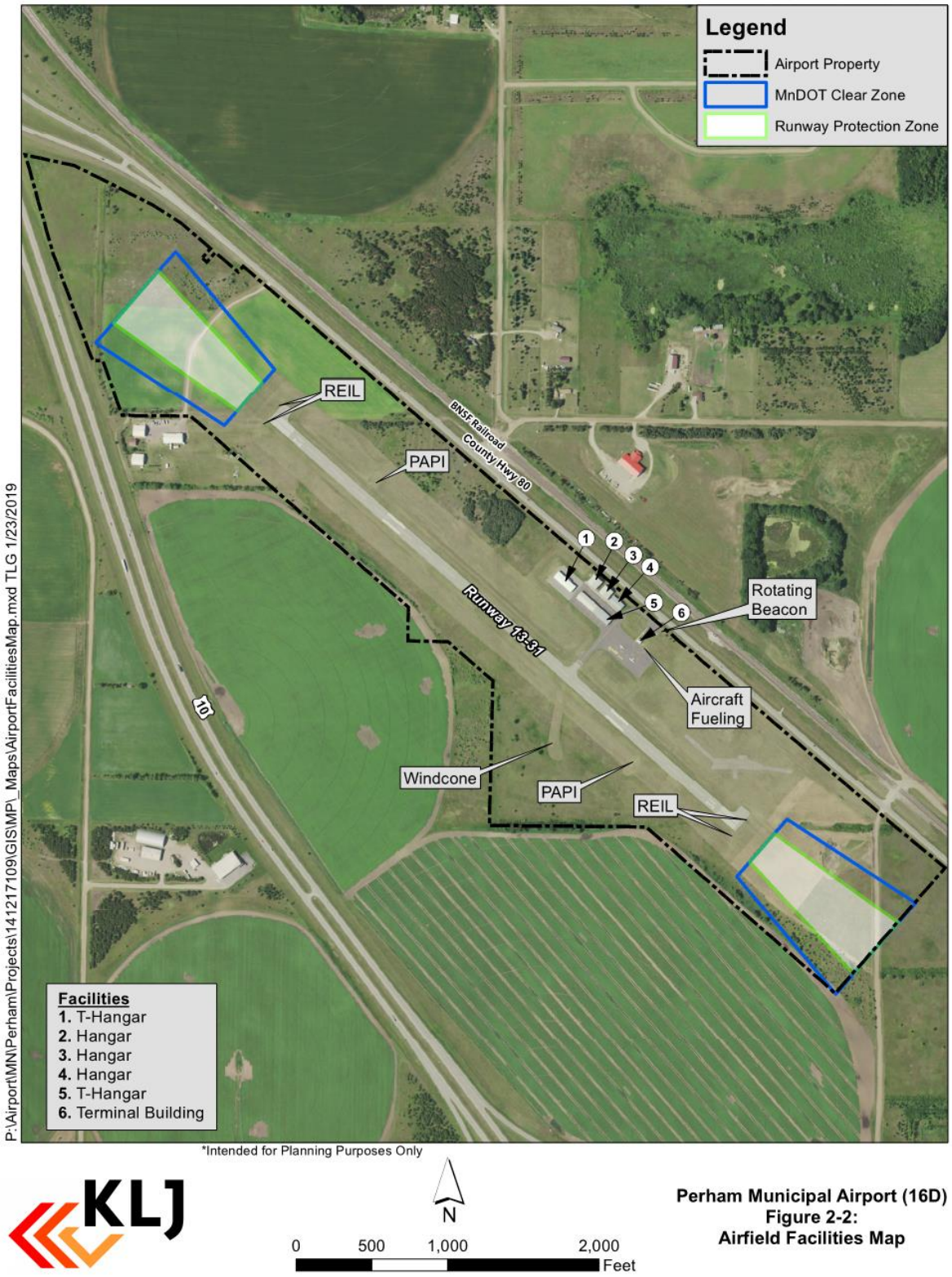
Table 2-5 – Runway Facility Summary

Component	Runway 13/31
Runway Length (feet)	4,102 FT
Runway Width (feet)	75 FT
Runway Surface Material	Bituminous
Runway Surface Treatment	N/A
Single Wheel Pavement Strength	12,500 lbs.[1]
Runway Design Code	A/B-II (Small)

Source: FAA Airport Master Record, KLJ Analysis

[1] Runway 13-31 pavement strength is not published

Figure 2-2 – Airfield Facilities Map



TAXIWAYS & TAXILANES

A system of taxiways and taxilanes facilitates the movement of aircraft from the runway environment to other airport facilities including hangars and parking aprons. Locations of the taxiways and taxilanes are depicted in **Figure 2-2**.

A Taxiway – A 40-foot wide asphalt taxiway that connects the main apron to midpoint of Runway 13-31. This taxiway provides access to the parking apron and aircraft storage hangars.

Turnarounds – An expanded pavement area by Runway 13 and 31 ends available for aircraft turn-around. The asphalt pavement is 80 feet by 80 feet starting from the edge of runway pavement.

Taxilanes – Unnamed asphalt taxilanes provide access to the aircraft storage hangars from the main apron. These access taxilanes are designed for ADG I aircraft with wingspans up to 49 feet.

APRONS

Apron areas serve the loading, unloading, parking and maneuvering needs for commercial airlines, air cargo, and general aviation operations. There is one aircraft parking apron at Perham.

The main aircraft parking apron is located approximately midfield, adjoined to the taxiway on the northwest edge. The arrivals/departure building and aircraft fueling area are located on the northeast edge. The apron provides transient aircraft parking, aircraft fueling, aircraft loading/unloading and other aircraft maneuvering space. The apron is 6,640 SY in size, has 8 striped aircraft parking tie-downs in nested positions, and is lighted. The bituminous pavement is in fair condition with a PCI value of 61. The pavement was last rehabilitated in 2016. No taxilane centerline striping currently exists on the apron.

PAVEMENT CONDITION

Exhibit 2-6 – Pavement Condition Map

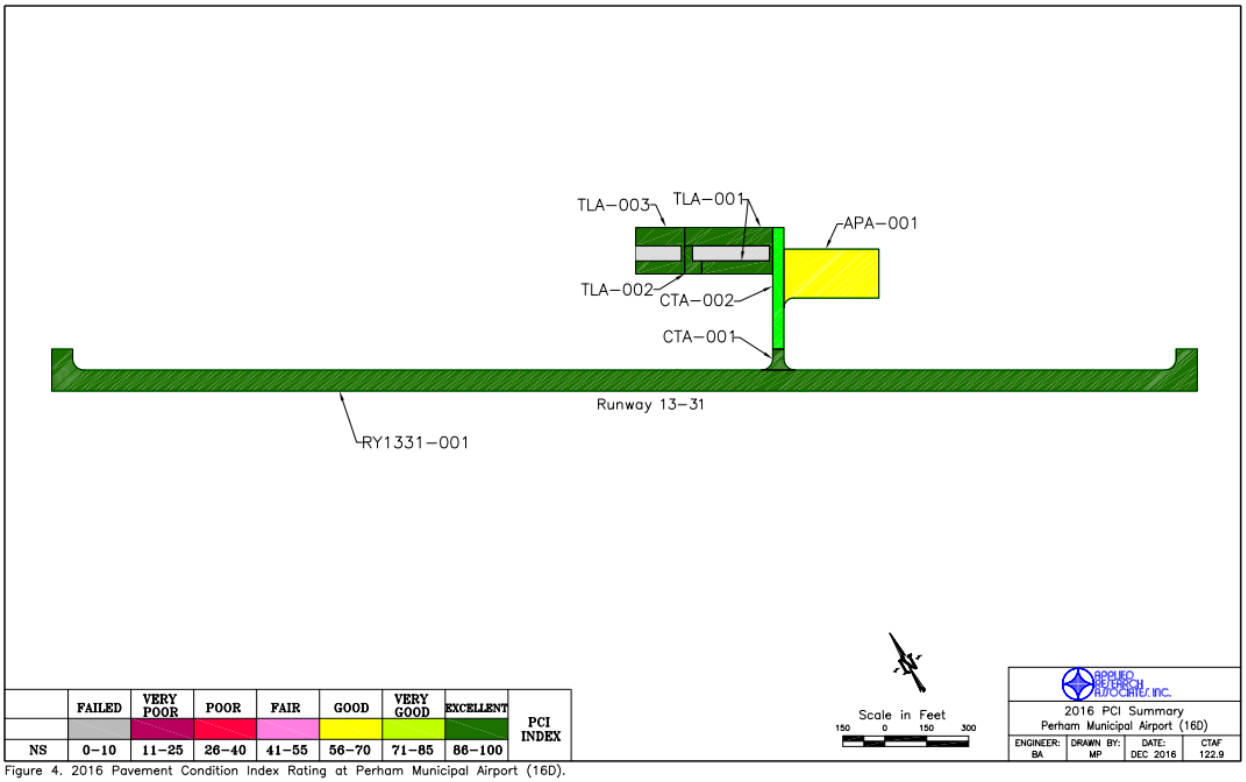


Figure 4. 2016 Pavement Condition Index Rating at Perham Municipal Airport (16D).

Source: MnDOT 2016 Pavement Condition Index (PCI) Report for 16D (http://www.dot.state.mn.us/aero/airportdevelopment/pavementmanagement)

Airport pavements are basic infrastructure components at airports. Airfield pavements need to be maintained in a safe and operable condition for aircraft operations. Pavement condition is comprehensively evaluated by the State every three years and measured on a 0 to 100 scale known as the Pavement Condition Index rating. Pavement evaluation includes runway, taxiway, and apron pavements. A summary of the latest PCI rating for the runway and selected other airfield pavements is tabulated in **Table 2-7**.

Table 2-7 – Pavement Condition Summary (2016)

Component	Surface Type(s)	LCD	PCI Range
Apron (APA-001)	AC	1981	61
Taxiway (CTA-001)	AAC	2010	88
Taxiway (CTA-002)	AC	1981	72
Taxilane (TLA-001)	AAC	2007	94
Taxilane (TLA-002)	AC	2014	88
Taxilane (TLA-003)	AC	2014	94
Runway 13-31 (RY1331-001)	AAC	2010	88

Source: MnDOT 2016 Pavement Condition Index (PCI) Report for 16D
PCI = Pavement Condition Index rating (0-100), LCD = Last Major Construction Date, AC = Asphalt Concrete, AAC = Asphalt Overlaid with Asphalt

The airfield pavements are generally in good condition. The apron, which was originally constructed in 1981, has the lowest PCI value (61) and is fair to good condition. Major rehabilitation is typically required when the PCI falls below 70. The 2016 Pavement Condition Report projects that Runway 13-31 will reach this threshold (PCI of 69) by 2025.

Navigational Aids & Airspace

Navigational aids (NAVAIDs) provide visual and electronic guidance to pilots enabling the airport to accommodate safely, efficiently, and effectively arriving and departing flights. Airspace is a resource that is necessary to allow flights to safely operate and maneuver in the airport environment. **Figure 2-2** identifies visual and electronic navigational aids and weather facilities graphically.

VISUAL NAVIGATION AIDS

Visual aids are installed to provide airport usability during periods of darkness and/or low visibility. Pavement markings and lighting systems available at the airport are summarized in the following sections.

Identification Lighting

Perham has a clear and green rotating beacon, which is a two-sided light that assists pilots in the visual identification of a civilian airport. The clear and green beacon indicates a lighted land airport. The airport beacon is located along the south edge of the vehicle parking lot and operates sunset to sunrise.

Pavement Edge Lighting

Pavement edge lighting fixtures are installed off the edges of runway and taxiway pavements to help pilots identify the edges and ends of pavement and facilitate safe operations in darkness and/or low visibility environments. Runway edge lights are white (bi-directional), except for the final 3,000 feet of the runway where the lights change color to yellow then red to warn pilots approaching the end of the runway. The runway end threshold lights (bi-directional) are green when viewing down the runway at the start of takeoff roll and red when approaching the end of the runway. Taxiway edge lights are blue and omni-directional.

Runway 13-31 is equipped with a Medium Intensity Runway Lighting (MIRL) system which was installed in 1992. Taxiway edge lighting exists where the taxiway intersects the runway. There are no additional taxiway edge lighting or retro-reflective blue markers throughout the remaining taxiway and taxilane system.

Visual Approach Lighting

Visual approach lighting (or visual approach aids) provide vertical descent guidance to pilots for a specific runway end. These approach aids enable the pilot to acquire and maintain the correct glide path for landing. Precision Approach Path Indicator Lights (PAPI) are the current FAA standard equipment installed for this purpose; however, other types of equipment exist, including visual approach slope indicator lights (VASI).

Both PAPI and VASI function similarly. They both have red and white lights that are used by the pilot to indicate whether they are too high, too low, or on the appropriate glidepath. Precision approach path indicators project light along a standard glide path to a runway end, with red and white colored lights indicating the aircraft's vertical position (above, below, or on glide path) relative to the defined glide path.

Visual approach slope indicators project a beam of light having a white segment in the upper part of the beam and red segment in the lower part of the beam.

Runway 13 and 31 ends are equipped with a four-box Precision Approach Path Indicator (PAPI) system installed on the left side of the runway with a standard 3.0-degree decent angle. The PAPIs are owned by the airport (City of Perham).

Runway 31 REIL

Runway End Identification Lighting

Runway End Identifier Lights (REILs) are a set of synchronized flashing white strobe lights installed on each side of the runway to provide rapid and positive identification of the approach end of a runway without complex visual approach lighting. The system can be unidirectional toward the runway approach or omnidirectional.

Runway 13 and 31 ends are each equipped with an omni-directional REIL.

Pilot-Controlled Lighting

Airfield lighting systems allow for pilots to control the complexity and intensity of lights. During night time hours, the edge lighting for Runway 13-31 is preset to low intensity. A pilot-controlled lighting system (PCL) is utilized to adjust the intensity of the runway edge lighting as well as activate the PAPI and REIL system at night. The system can be activated using the aircraft radio on the CTAF frequency designated for the airport.

Pavement Markings

Pavement markings provide visual guidance to aircraft to critical areas on the runway and taxiway surface. Runway markings vary in complexity depending on the type of approach. Runway 13-31 is equipped with Non-Precision markings identifying the runway designation, threshold, aiming points, and centerline.

Markings on the taxiway include both centerline striping, which provides proper clearance from pavement edges and fixed objects, and runway hold position markings, which identify the safety setback from the active runway. Taxiway centerline striping is in place at Perham. Hold position markings are installed 125 feet from the centerline of Runway 13-31.

Other markings include aircraft tie-downs, fueling circle striping, airport identification, and airport elevation on the apron.

Airfield Guidance Signs

Guidance signs provide location, direction, and guidance information to pilots on the ground to enhance awareness. Signs are placed around the airfield to identify runway and taxiway intersections, runway hold positions and other guidance. Mandatory signs are red and identify an intersection with a runway or critical safety zone. Other types of signs include location, direction, destination, and distance remaining signs.

There is currently no guidance signage in place at Perham.

ELECTRONIC NAVIGATION AIDS

Electronic navigational aids are installed to provide critical guidance information when operating in the airport environment. These navigational aids often provide horizontal and/or vertical guidance in conjunction with published navigation procedures. Electronic navigation aids available at the airport are summarized below:

Very High Frequency Omni-Directional Range (VOR)

This ground-based navigational aid projects an omni-directional signal that allows equipped aircraft to navigate to and from the station.

There is no VOR station currently installed at Perham. The nearest station is the Detroit Lakes VOR-DME (ID:DTL) located approximately 17 NM to the NW.

Instrument Landing System (ILS)

An Instrument Landing System is installed for a runway end to allow pilots to capture a horizontal and vertical radio beam to the runway threshold to assist in landing. Components of an ILS include the glideslope antenna, localizer antenna, approach lighting system and marker beacons. The glideslope antenna is located alongside the runway providing vertical guidance, the localizer antenna is installed beyond the opposite runway end providing horizontal guidance, the approach lighting system provides visual guidance to the runway end, and the marker beacons provide aural cues for pilots flying the approach.

There is no ILS installed for any runway end at Perham. The closest ILS-capable runway is Runway 31 at the Park Rapids Municipal Airport-Konshok Field located 28 nautical miles to the NE of Perham.

Global Positioning System (GPS)

GPS is a satellite-based navigation system that allows location to be triangulated from space-based satellites. Equipped aircraft can navigate between user-defined or FAA waypoints with lateral and vertical guidance. With ground-based transmitters known as Wide Area Augmentation System (WAAS) the system can provide accuracy down to a few feet. GPS is widely becoming the preferred aircraft navigation system and FAA is establishing en-route and approach procedures using this satellite-based technology.

GPS is used at Perham in the establishment of straight-in instrument approach procedures with horizontal and vertical guidance to the Runway 13 and 31 ends.

METEOROLOGICAL FACILITIES

Metrological facilities provide users with up-to-date weather information at the airport to aid in pilot decision making for safe flight operations.

Wind Indicator(s)

Wind direction indicators provide an immediate visual indication of the wind direction and velocity. A segmented circle provides a visual indication of the wind direction and velocity together with runway alignment and/or traffic pattern information.

A lighted wind cone is installed midfield of the runway approximately 400 feet south west of the center line. There is currently no segmented circle or supplemental wind cones installed on the airfield.

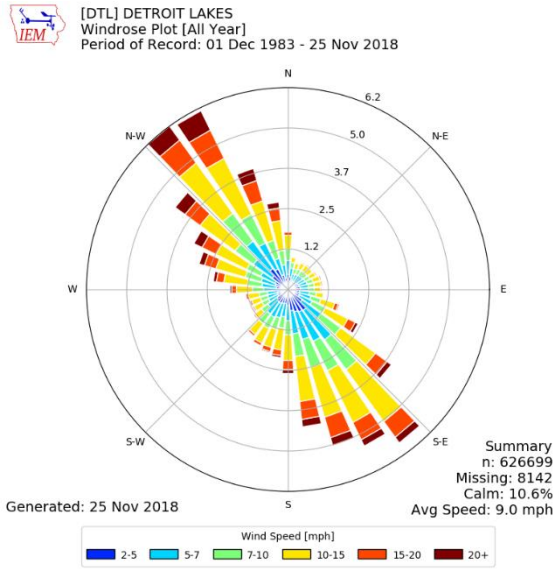
Weather Reporting

There are two types of weather reporting systems on an airport. The Automated Surface Observing System (ASOS) program was a joint effort between the Federal Aviation Administration and the National Weather Service (NWS) to deploy a network of high-grade weather monitoring stations across the United States. ASOS serves as a primary climatological observing network in the United States and have equipment that provides weather observations every minute. A second-tier Automated Weather Observation System (AWOS) has varying sets of equipment packages to provide local weather observations.

There are no automated weather reporting stations installed at Perham. The nearest AWOS facilities are located at Detroit Lakes or Wadena airports.

METEOROLOGICAL DATA

Local weather conditions are a significant factor in the design and development of airport facilities since they affect aircraft performance. Temperature affects runway length, wind direction and speed affect runway orientation, and visibility and cloud ceiling conditions determine the need for runway navigational aids and lighting. Since Perham Municipal Airport does not have an automated weather reporting station, the meteorological and wind analysis used 10 years (2008-2017) of data from the Detroit Lakes (DTL) AWOS located 19 miles north west. Over the last 30 years (1981-2010) the average maximum temperature at DTL in the hottest month has been 82.1 degrees Fahrenheit (July).



Source: www.mesonet.agron.iastate.edu

Prevailing winds are from the north west and are generally aligned with the airport's runway configuration. Crosswind or tailwind conditions can be hazardous to aircraft operations if they exceed the operational capabilities of the airplane or flight crew. The smallest aircraft are typically the most affected operationally by crosswinds.

A runway's wind coverage is determined by an aircraft's ability to operate with a "direct" crosswind, which is defined as 90 degrees to the direction of travel. For planning purposes, FAA has defined the maximum direct crosswind for small aircraft as 12 miles per hour (10.5 knots). For increasingly larger aircraft, a 15-mile per hour (13 knot) direct crosswind is used up through 23-mile per hour (20 knots) for the largest aircraft. Aircraft can operate safely in progressively higher wind speeds as the crosswind angle decreases and the wind direction aligns more closely with the opposing the direction of flight. In addition, some aircraft are designed to safely operate with higher crosswind components. Ideally, an aircraft will take off and land directly into the wind or with a light crosswind. The FAA recommends that primary runways accommodate at least 95 percent of local wind conditions; when this level of coverage is not provided, the FAA recommends development of a secondary (crosswind) runway.

Based on Perham's runway design, the maximum crosswind component is 13 knots. The current runway orientation provides the FAA recommended minimum 95 percent wind coverage for both 10.5 and 13 knots. **Table 2-8** provides the calculated all-weather wind coverage for the airport.

Table 2-8 – All-Weather Wind Coverage

Runway	Crosswind Component (Wind Speed)	
	10.5 knots	13.0 knots
Runway 13-31	96.16%	98.75%

Source: DTL AWOS (2008-2017, Hourly) from National Climatic Data Center

Pilots can fly with visual reference to the ground and other aircraft during most weather conditions. This is known as Visual Meteorological Conditions (VMC). Pilots are required to reference flight instruments and be on a FAA Instrument Flight Riles (IFR) flight plan when the cloud ceiling is less than 1,000 feet above the ground or the flight visibility is less than 3 statute miles. These conditions are known as Instrument Meteorological Conditions (IMC) and require a pilot to be instrument rated.

Wind coverage during IMC is evaluated to determine the ideal alignment for instrument approach to an airport's runway. As shown in **Table 2-9**, the IMC wind coverage for Runway 13-31 provides 96.95 percent coverage for 10.5 knots which meets the FAA minimum recommendation of 95 percent coverage for smaller aircraft. Because instrument approaches are provided for each individual runway end, **Table 2-9** also shows the wind coverage for each runway end. This will be applicable later in **Chapter 4 – Facility Requirements** when analyzing instrument approach minimums and accessibility.

Table 2-9 – IMC Wind Coverage

Runway	Crosswind Component (Wind Speed)	
	10.5 knots	13.0 knots
Runway 13-31	96.95%	98.97%
Runway13 Only	47.52%	48.17%
Runway 31 Only	59.71%	61.08%

Source: DTL AWOS (2008-2017, Hourly) from National Climatic Data Center

Based on true hourly weather data summarized in **Table 2-10**, the airport experiences IMC weather conditions 13.97 percent of the time. When considering the current instrument approach weather minimums of 295-foot cloud ceiling and 1-mile flight visibility, the airport has weather conditions below this criterion 8.6 days per year where the airport is not usable.

Table 2-8 – Meteorological Analysis

Weather Condition	Percentage	Days per Year	Hours per Year
VMC	86.03%	314.0	7,536
Usable IMC	11.62%	42.4	1,018
Usability	**97.65%**	**356.4**	**8,554**
Below Weather Minimums*	2.35%	8.6	206
Total	**100.00%**	**365.0**	**8,760**

Source: DTL AWOS (2008-2017, Hourly) from National Climatic Data Center, KLJ Analysis
**Current IFR minimums are 295-foot cloud ceiling and 1 mile flight visibility for Runway 13 and 31 approach*

COMMUNICATION FACILITIES

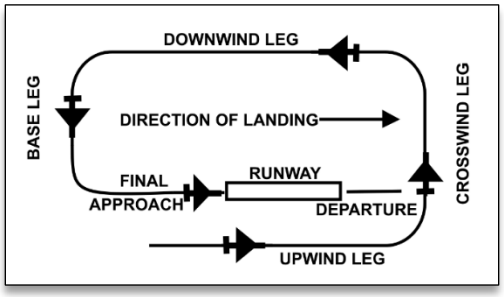
Communication facilities allow aircraft to transmit and receive clearances to air traffic control to navigate the national airspace system safely and effectively.

Local Area

Perham is an uncontrolled airport and is not served by a local Air Traffic Control Tower (ATCT) providing landing and takeoff clearances. Individual aircraft are responsible for announcing their position and stating their intentions over an air-ground Common Traffic Advisory Frequency (CTAF), otherwise known as UNICOM. The CTAF frequency at Perham is 122.9 Mhz. This system is typical for low activity general aviation airports such as Perham.

APPROACH/DEPARTURE PROCEDURES

Aircraft operate under either Visual Flight Rules (VFR) or Instrument Flight Rules (IFR) depending on weather conditions and/or operational standards.



Standard VFR Airport Traffic Pattern (Source: FAA)

Visual Approach/Departure Procedures

Under VFR, pilots are advised to utilize a standard rectangular traffic pattern around the runway to approach or depart an airport. Standard traffic pattern legs include upwind, crosswind, downwind, base, and final. Departures are typically straight-out from a departing runway, a 90-degree crosswind, or 180 degree downwind. Arrivals typically enter a traffic pattern 45 degrees to a downwind leg for landing.

The traffic pattern at Perham is a standard left-hand pattern, meaning pilots must make left turns throughout the traffic pattern for each leg. The standard traffic pattern altitude is 1,000 feet above ground level (AGL).

Instrument Approach Procedures

Pilots operating under IFR intending to land at an airport must navigate aircraft on published Instrument Approach Procedures (IAP). Two IAPs (see **Table 2-11**) are available for Runway 13-31 with satellite-based NAVAIDS. Instrument approach weather minimums are a result of the approach type, airport infrastructure, and any prevailing airspace obstructions.

Table 2-9 – Instrument Approach Procedures

Approach Procedure	Approach Type	Lowest Cloud Ceiling Minimum (HAT)	Lowest Visibility Minimum (n.m.)
RNAV (GPS) RWY 13	Non-Precision Approach with Vertical Guidance	LPV: 295 feet LNAV/VNAV: 295 feet LNAV MDA: 384 feet Circling: 744 feet	1 mile
RNAV (GPS) RWY 31	Non-Precision Approach with Vertical Guidance	LPV: 295 feet LNAV/VNAV: 784 feet LNAV MDA: 706 feet Circling: 744 feet	1 mile (2 ½ mile LNAV/VNAV)

Source: www.airnav.com
Note: HAT = Height Above Touchdown, n.m. = nautical miles (reported), LPV = Localizer Performance with Vertical Guidance, LNAV = Lateral Navigation, VNAV = Vertical Navigation, MDA = Minimum Descent Altitude

IFR/Obstacle Departure Procedures

Special procedures are published at airports to provide aircraft with adequate obstacle clearance. Examples include increased aircraft climb rates or recommended turns. Perham has a departure procedure published for Runway 13 departures. Below is the excerpt for Perham from page L21 of the U.S. Terminal Procedures Publication (NC-1), effective 01/03/2019 – 02/28/2019.

PERHAM, MN
PERHAM MUNI (16D)
TAKEOFF MINIMUMS AND (OBSTACLE)
DEPARTURE PROCEDURES
AMDT 1 13234 (FAA)
DEPARTURE PROCEDURE: **Rwy 13**, climb heading 128° to 1900 before turning left.
TAKEOFF OBSTACLE NOTES: **Rwy 13**, REILs 8' from DER, 79' right of centerline, 2' AGL/1373' MSL. Trees beginning 6' from DER, 350' right of centerline, up to 50' AGL/1386' MSL and trees beginning 138' from DER, 115' right of centerline, up to 50' AGL/1433' MSL. Light 8' from DER, 79' left of centerline, 2' AGL/1373' MSL. Trees beginning 261' from DER, 251' left of centerline, up to 50' AGL/1387' MSL. **Rwy 31**, REILs 9' from DER, 79' right of centerline, 2' AGL/1378' MSL. Ground 8' from DER, 223' right of centerline, 1377' MSL. Poles and tower beginning 627' from DER, 570' right of centerline, up to 43' AGL/1430' MSL. Light, 8' from DER, 79' left of centerline, 2' AGL/1377' MSL. Vehicles on road beginning 431' from DER, 32' left of centerline, up to 18' AGL/1394' MSL. Trees, pole, and building beginning 93' from DER, 377' left of centerline, up to 50' AGL/1409' MSL.

AIRSPACE & SURVEILLANCE

Airspace Classification

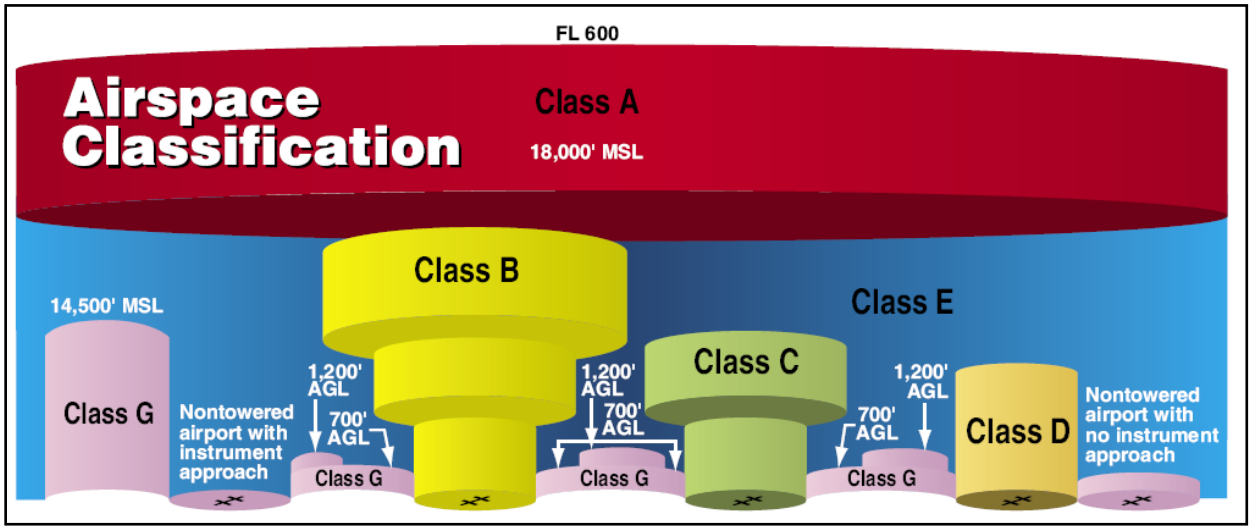
Airspace is segregated into controlled, uncontrolled, special use or other airspace. Each airspace class has different operating rules.

FAA VFR Sectional Chart
Source: www.skyvector.com

Perham is located within uncontrolled Class G Airspace with controlled Class E Airspace beginning at 700 feet above the surface. This airspace is used to transition between the terminal and en-route environment.

No ATC clearance or radio communication is required for VFR flights in Class E or G airspace. For IFR flight, ATCT clearance is required before entering controlled Class E airspace but not uncontrolled Glass G. IFR flights departing Perham must receive an IFR clearance before reaching an altitude 2,076 feet above mean sea level.

Exhibit 2-10 – FAA Airspace Classifications



Source: Federal Aviation Administration (FAA) Pilot's Handbook of Aeronautical Knowledge (2007)

Automatic Dependent Surveillance-Broadcast (ADS-B)

ADS-B is a satellite-based surveillance technology in which aircraft transmit GPS position information to other aircraft and to ATC facilities. ADS-B will supplement primary ground-based radar. FAA has required all aircraft operating within airspace requiring a transponder to have ADS-B transmitting equipment installed by the year 2020 as part of the Next Generation Air Transportation System (NextGen) initiative. Various ground stations have been located nationwide to provide ADS-B coverage.

The closest ground station to Perham is located in Fargo, ND approximately 61 nautical miles to the north west. ADS-B coverage is estimated to begin at 500 feet AGL at Perham.

AIRSPACE OBSTRUCTIONS

Airspace is an important resource around airports that is very important for safe flight operations. There are established standards to identify airspace obstructions around airports. Title 14 CFR (Code of Federal Regulations): Part 77 *Safe, Efficient Use, and Preservation of the Navigable Airspace* establishes various airspace surfaces near airports. Part 77 is used to determine if an object is an obstruction that penetrates an "imaginary" three-dimensional surface. Surfaces include the primary, approach, transitional, horizontal, and conical surfaces each with different standards.

When evaluating objects, the FAA determines whether an obstruction is a **hazard** to air navigation. FAA subsequently evaluates the obstruction using more in-depth minimum airspace standards. These include FAA Approach/Departure Surfaces from FAA AC 150/5300-13A, *Airport Design* or instrument procedure surfaces identified in FAA Order 8260.3B, *U.S. Standard for Terminal Instrument Procedures (TERPS)*. Corrective action is then recommended. Examples of corrective action include removing, lowering, or obstruction lighting an object.

Clear airspace is necessary for the safe and efficient use of aircraft arriving and departing an airport. The most demanding approach to a runway defines the Part 77 airspace standards for that runway. There are three main approach types:

- **Precision**: A runway having an existing instrument approach procedure utilizing an existing or planned Instrument Landing System (ILS) with horizontal and vertical guidance. Visibility minimums are less than ¾ mile.

- **Non-Precision**: A runway having an existing instrument approach procedure utilizing air navigation facilities with horizontal guidance, or area type navigation equipment, for which a straight-in non-precision instrument approach procedure has been approved or planned. Approaches with vertical guidance are considered non-precision. Visibility minimums are typically 1 mile but as low as ¾ mile.

- **Visual**: A runway intended solely for the operation of aircraft using visual approach procedures, with no straight-in instrument approach procedure published or planned.

There are two runway classifications:

- **Utility**: A runway that is constructed for and intended to be used by propeller driven aircraft of 12,500 pounds' maximum gross weight and less.

- **Other-Than-Utility**: A runway that is constructed for and intended to be used by aircraft greater than 12,500 pounds' maximum gross weight.

The combination of the approach type and the runway classification defines the dimensional criteria for each approach. The Part 77 airspace dimensional criteria for the airport is identified in **Table 2-13**.

Table 2-11 – Existing Part 77 Approach Airspace Standards

Runway End	Approach Standards	Distance From Runway End	Inner Width*	Outer Width	Length	Slope
13	Non-Precision Utility Greater than ¾ mile	200'	500'	2,000'	5,000'	20:1
31	Non-Precision Utility Greater than ¾ mile	200'	500'	2,000'	5,000'	20:1

Source: 14 CFR Part 77, FAA Airport Master Record
**Inner width is also the Primary Surface width driven by the most demanding approach to a runway.*

The following table contains a list of the most significant obstacles for each existing runway end as reported in the FAA Airport Master Record (5010 Report). Runway 13 does not have any approach surface obstructions.

Table 2-12 – Critical Part 77 Airspace Obstacles

Runway End	Surface	Object Type, Height Above End	Distance From End	Location from Centerline	Penetration	Slope to Clear (Required)
13	Approach	Trees, 34'	753'	321' Left	**6'**	**16:1** (20:1)

Source: FAA Airport Master Record
*Notes: Penetration value estimated based. **RED** indicates does not meet current standards.*

A more detailed obstruction analysis will be completed using data from ground and drone survey, which is part of the master plan process. This detailed obstruction identification and mitigation disposition is identified in the Airport Layout Plan developed at the end of this planning study located in **Appendix D: Airport Layout Plan**.

General Aviation

General Aviation (GA) elements include facilities that serve aeronautical needs of the flying public beyond those needed for commercial airlines. Facilities include those necessary for the movement of passengers as well as parking, service, and storage of aircraft. Examples of these facilities include the aircraft storage hangars, aircraft parking apron, GA terminal, and commercial aviation operators. A map depicting these facilities is shown in **Figure 2-2: Airfield Facilities Map**.

AIRCRAFT PARKING APRON

The location of the aircraft apron is depicted in **Figure 2-2: Airfield Facilities Map**. Apron areas serve the loading, unloading and parking needs for general aviation.

The apron is approximately 6,640 square yards in size and made of asphalt with an estimated pavement strength of 12,500 pounds. There are 8 striped aircraft tie-downs for small aircraft parking (Group I). The access taxilane to the hangars is designed for FAA Design Group I aircraft up to 49-foot wingspan. There is one entry and exit point requiring aircraft to perform a turnaround when exiting the apron area.

TERMINAL BUILDING

A terminal building for general aviation traffic serves multiple functions for inbound and outbound general aviation passengers and pilots. The terminal building at Perham was constructed in 1993. It is located next to the fueling system which is northeast of the main aircraft parking apron. The building is approximately 25’ by 30’ in size for a total area of 750 square feet.

Perham Airport Arrival/Departure (Terminal) Building

The general aviation terminal building serves multiple functions for inbound and outbound general aviation passengers and pilots. Facilities available include a waiting area, flight-planning and weather-briefing station, restrooms and an office. The terminal building also houses the control airfield lighting system.

AIRCRAFT STORAGE HANGARS

Perham has 21 aircraft based at the airport. Hangar facilities consist of both T-hangars and small conventional hangars (10,000 square feet or less).

Aircraft storage facilities are detailed below in **Table 2-13**. Refer to **Figure 2-2: Airfield Facilities Map** for facility location.

Table 2-13 – Aircraft Storage Facilities

Facility Number	Ownership	Description	Storage Area (SF)
1	Public	T-Hangar (6 Unit)	7,500
2	Private	Small Conventional Hangar	4,550
3	Private	Small Conventional Hangar	4,200
4	Private	Small Conventional Hangar	4,300
5	Public	T-Hangar (12 unit)	14,850
TOTAL		***Conventional Hangars***	***13,050***
		T-Hangars (18 units)	***22,350***
		Grand Total	**35,400**

Source: KLJ Analysis

Support Facilities

Support facilities are necessary to facilitate the day-to-day maintenance and operation of the airport. A map depicting these facilities is shown in **Figure 2-2: Airfield Facilities Map**.

Perham Fuel Facility

FUELING FACILITIES

The public fueling facility is located along the north east edge of the main apron next to the terminal building. The facility is self-service and offers 100 low-lead AVGAS. Built in 1987, the components of the 100LL fueling system includes a 10,000-gallon underground tank, fuel pump, hose reel, and card reader.

FENCING & SECURITY

The terminal building and vehicle parking lot area contains a 4-foot tall chain-link fence with manual pedestrian and vehicle gates. Outside of the terminal area there is no fencing surrounding the perimeter of the airfield.

AIRPORT MAINTENANCE

There is no maintenance or snow removal equipment storage facility located on the airport. The city-owned equipment designated for maintaining the airport are stored at the city's public works facility.

Ground Access, Circulation & Parking

These facilities provide vital connectivity within the airport facility and from the airport to the surrounding community. Facilities are depicted in **Figure 2-2: Airfield Facilities Map.**

GROUND ACCESS & CIRCULATION

Perham Airport is located south of County Highway 80. A paved airport access road provides access from County Highway 80 to the airport facilities. The vehicle parking area is located adjacent to the terminal building and main apron area. All roadways and parking areas within airport property are paved asphalt surfaces. There are no on-airport perimeter roadways.

AUTOMOBILE PARKING

There is an automobile parking area located north of the main apron and in front of the GA Terminal facility. The lot is a paved asphalt surface and parking spaces are unmarked. The parking area is approximately 600 square yards.

PUBLIC TRANSPORTATION

The Perham Airport is not served by public transportation.

Surrounding Land Use

Background

The effect of airport planning decisions extends well beyond the airport property boundary. The land uses that surround the airport must be evaluated to help determine the impact of airport planning decisions.

Compatible land uses are defined as those uses that can coexist with a nearby airport without either constraining the safe and efficient operation of the airport or exposing people working or living nearby to unacceptable levels of noise or safety hazards. Typical airport land use compatibility elements for airports include:

- Airspace standards for airport safety and operational capability.
- Land use compatibility near runway ends associated with the FAA's Runway Protection Zone (RPZ) and MnDOT Clear Zone for the safety of people and property on the ground.
- State or local airport land use standards, if applicable.
- FAA wildlife hazard mitigation plans for aircraft operational safety.
- FAA land use compatibility within designated day-night average sound level (DNL) noise exposure contours to avoid significant impacts to activities on the ground.

This section provides an overview of existing land uses and plans. Surrounding land uses are depicted graphically in **Figure 2-2: Airfield Facilities Map.**

Existing Land Uses

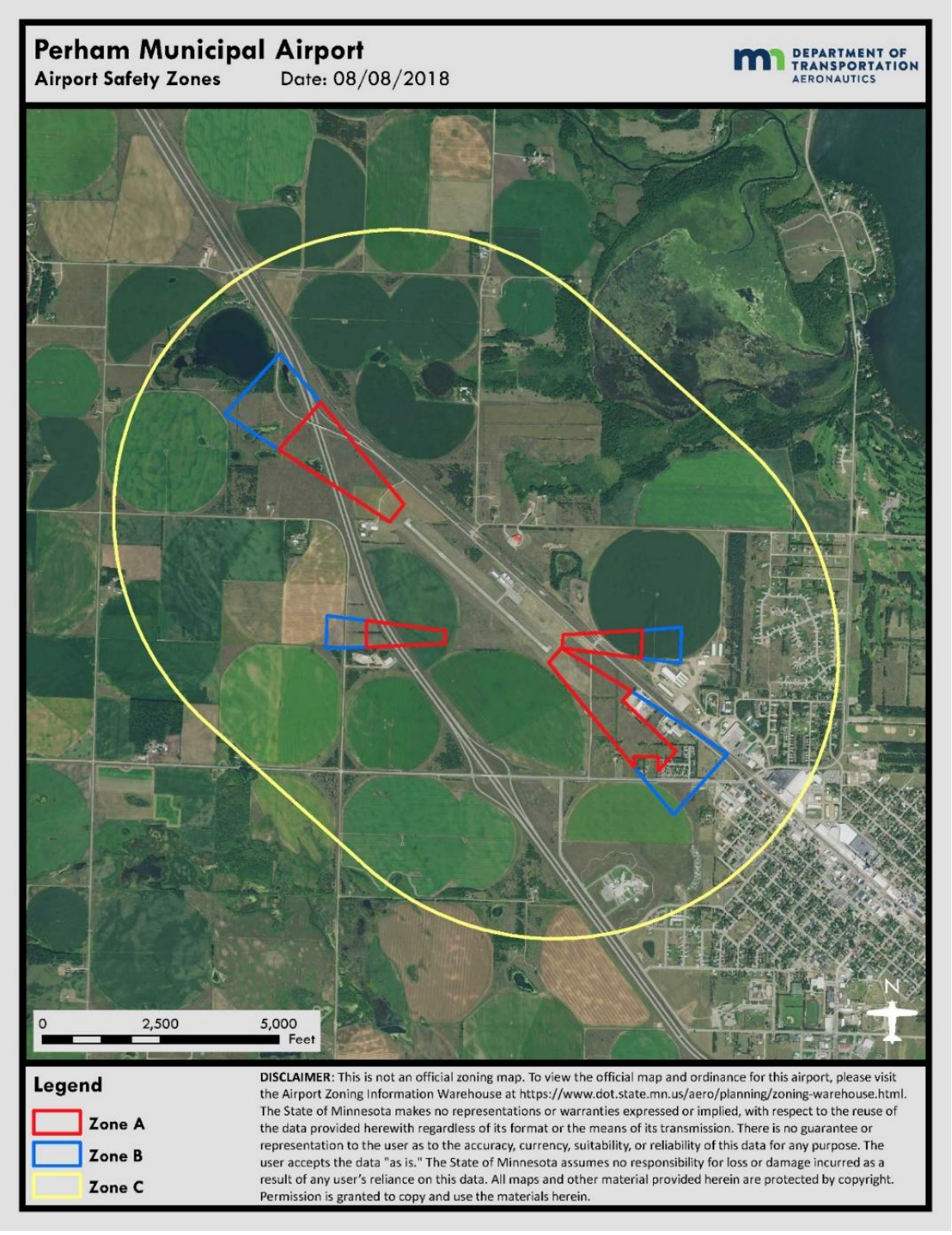
The primary land use surrounding the airport is farm land which exists to the north, south, and west of the airfield. In addition, a county highway and railroad line are immediately adjacent to the airport on the northeast edge and run parallel to the runway. A residential property and commercial business exist next to airport property just west of Runway 13 threshold. A private road providing access to the residential property lies within the RPZ and Clear Zone for Runway 13. Businesses and residential property are also located about ½-mile southeast of Runway 31 threshold. An unpaved road running north-south connecting Highway 80 and 34 lies within the RPZ and Clear Zone for Runway 31.

Land Use Controls, Plans & Zoning

In 1995 the *Perham Municipal Airport Zoning Ordinance* was last revised by the *City of Perham – Otter Tail County Joint Airport Zoning Board*. The ordinance provided airspace obstruction zoning and land use safety zoning that help the Airport maintain compatible land uses around the airport.

The ordinance protects Runway 13-31 in its existing configuration and the previous crosswind runway which has been removed. A MnDOT map illustrating land use safety zones derived from the Perham Municipal Airport Zoning Ordinance is provided below in **Exhibit 2-14**.

Exhibit 2-14 – MnDOT Airport Safety Zones



Source: MnDOT Aeronautics (http://www.dot.state.mn.us/aero/planning/zoning-warehouse.html)

Environmental Inventory

Introduction

This section provides an overview of environmental conditions and issues at Perham Municipal Airport and the immediate vicinity.

For purposes of this study area, key environmental resources are described in the following sections. **Figure 2-3: Environmental Overview Map** provides a graphical depiction of the existing environmental conditions within approximately one mile of the airport, as described in this section.

Environmental Features

BIOLOGICAL RESOURCES

The US Fish & Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) website indicated that one threatened species occurs in Ottertail County, MN; the Northern long-eared bat. There are no Critical Habitats near Perham Municipal Airport. In accordance with Section 7 of the Endangered Species Act, consultation with USFWS to determine the potential for occurrences of federally-listed threatened and endangered species in the project area would be necessary.

During summer months the Northern long eared bat utilizes forested areas and lives within cracks and bark in the trees. The bat winters in caves and mines with high humidity. As of April 1st, 2019, there are no known Northern long eared bat roost trees or known entrances to Northern long eared bat hibernacula in Otter Tail County. However, projects involving tree removal will still need to be timed to occur outside the summer maternity season (April 1 to September 31). Prior to project implementation, further analysis is required to identify the potential for fish, wildlife and plant impacts as a result of the project.

Bald Eagles may be present in the area, especially during May and June. The Eagle is protected under the Bald and Golden Eagle Act that prohibits the taking of Eagles including their nests.

HAZARDOUS MATERIALS, SOLID WASTE, AND POLLUTION PREVENTION

Hazardous Materials

There are no sites in the area surrounding the Airport on the National Priority List (NPL). This is based on a review of the Environmental Protection Agency database regarding underground storage tanks, listings for superfund sites, and sites covered under the Resource Conservation and Recovery Act. Prior to acquisition of new land to be owned in fee title by an airport sponsor, it is recommended that an Environmental Due Diligence Audit (EDDA) be performed. An EDDA includes a more detailed review of an area, relative to NEPA-level review, for the possible presence of environmental contamination.

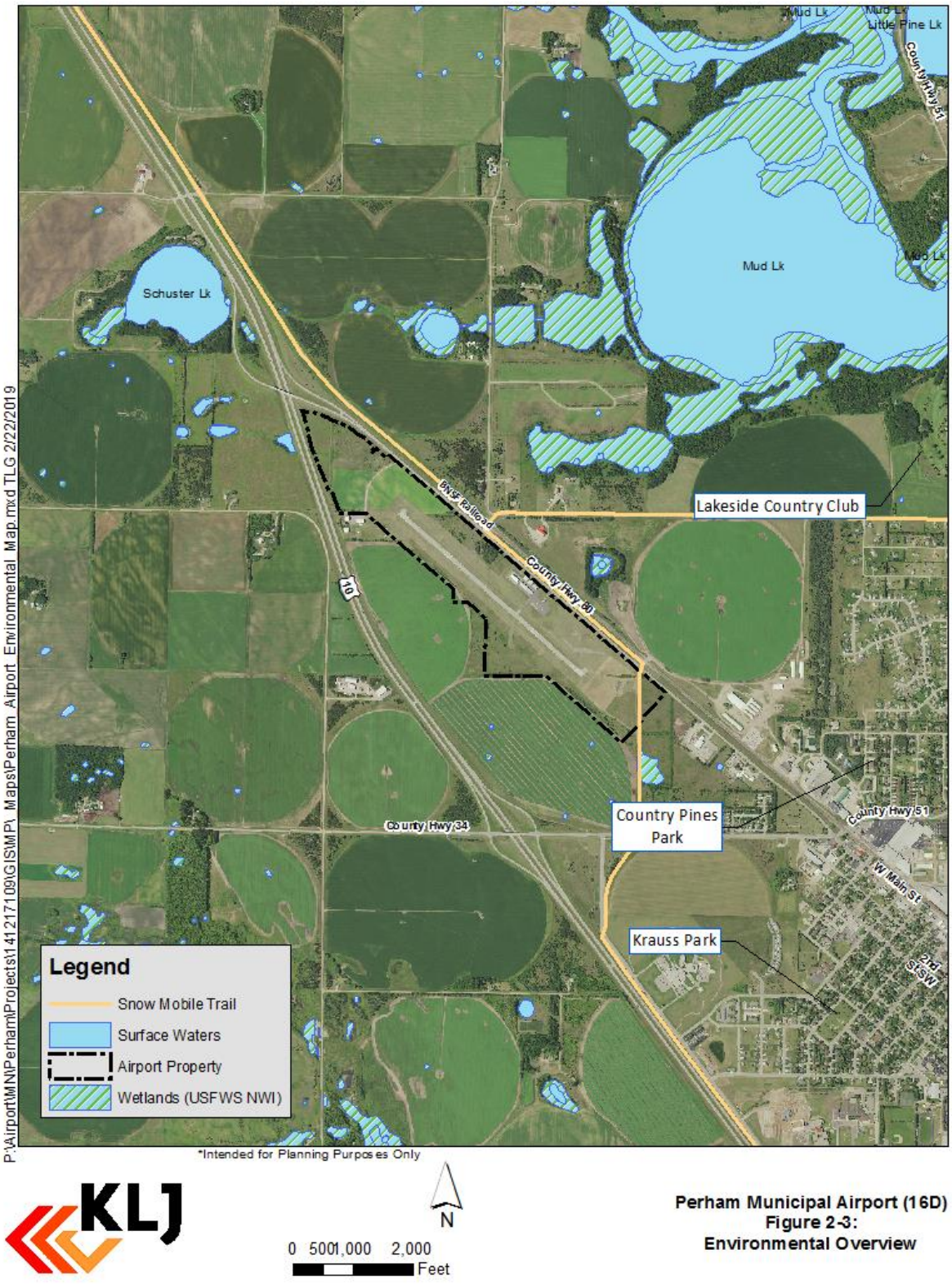
Solid Waste

The airport has not produced significant amounts of solid waste including garbage, refuse or sludge as compared to the broader community.

Pollution Prevention

The Airport does not currently have a formal pollution prevention plan.

Figure 2-3 – Environmental Overview Map



HISTORICAL, ARCHITECTURAL, ARCHEOLOGICAL, AND CULTURAL RESOURCES

There is potential that undiscovered cultural features exist on and around the Airport. Due to the age of the previous Inventory additional research, including a field survey, may be necessary to adequately assess the area's potential to contain historic properties.

Structures that are more than 50 years old and are potentially eligible for inclusion on the NRHP. Further review is required to determine if these structures have significant historical, cultural or architectural characteristics. The airport was activated in the late-1940s, however none of the airport structures appear to be more than 50 years old based on historic aerial photograph from 1972.

Projects that involve ground surface disturbance in areas not previously disturbed by the construction of the Airport may need to be surveyed by a qualified Archeologist and a determination of affect to historic properties would need to be obtained from the SHPO. Resolutions of any adverse effects would need to be coordinated with the SHPO. Further review regarding potential cultural sites historic properties will be required at the environmental documentation phase.

LAND USE

Compatible land uses are those that typically are not influenced by normal airport operations. The compatibility of existing land uses in the vicinity of an airport is usually associated with the extent of noise impacts occurring from airport property and safety concerns. Incompatible land uses are typically items such as fuel storage facilities, areas of public assembly, tree rows, high density residential areas, and areas that have the potential to attract hazardous wildlife. In general, Perham Municipal Airport is surrounded by agricultural and low-density rural development.

Wildlife Hazards

FAA has implemented procedures and guidelines to mitigate wildlife damages to aircraft and aviation operations. Wildlife collisions have increased over the past two decades and reporting has increased awareness of hazards to human health, safety and financial losses.

Potential wildlife hazards in the area include trees to the northwest and the numerous wetlands and lakes in the area surrounding the Airport. Trees provide nesting, loafing, and roosting sites for a variety of birds. They also provide perch sites for large birds of prey to hunt in open areas. Wetland provide a food source, nesting areas, and cover for a variety of waterfowl. A Wildlife Hazard Assessment (WHA) may be a valuable tool to identify daily and seasonal wildlife activity and provide recommendations for mitigating wildlife hazards at Perham Municipal Airport.

SOCIOECONOMIC IMPACTS, ENVIRONMENTAL JUSTICE AND CHILDREN'S ENVIRONMENTAL HEALTH AND SAFETY RISKS

Social impacts from a project depend on how that project affects the character, habits, and economic conditions of the people living within the affected area of the project. The project's effects on business, employment, transportation, utilities, etc. are factors that affect the social climate of a community. Any action that would either adversely or beneficially affect the factors stated above would be considered as having some type of social impact on the residents of a particular community. Off-airport actions include the acquisition of land use and airspace avigation easements and potential future obstruction mitigation. Further analysis is required. For more information on Land Use on and near the Airport please refer to ***Surrounding Land Use***.

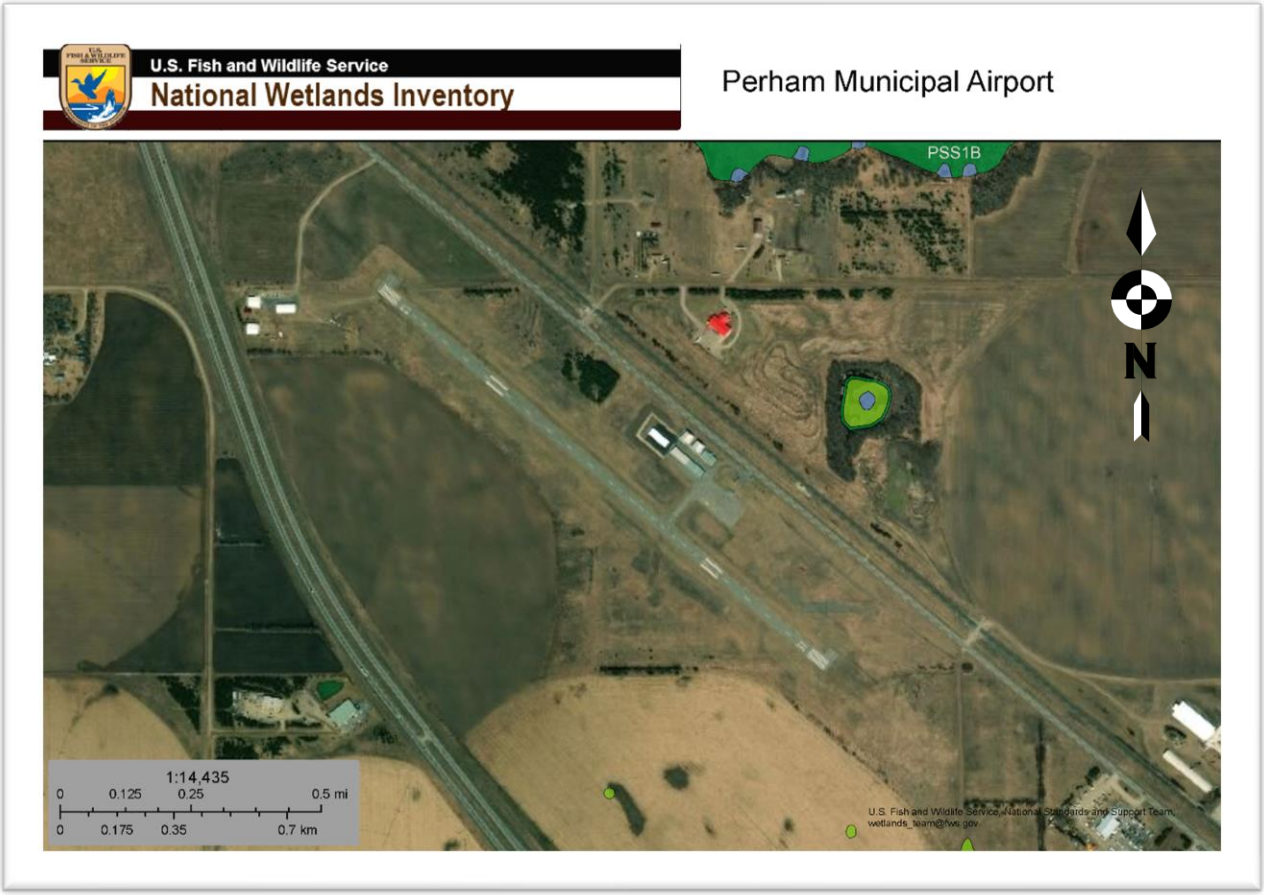
WATER RESOURCES – WETLANDS

Wetlands are defined in as those areas that are inundated by surface or groundwater with a frequency to support, and under normal circumstances does or would support, a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Three parameters that define a wetland as outlined in the US Army Corps of Engineers Wetland Delineation Manual are hydric soils, hydrophytic vegetation, and hydrology.

There are wetlands in the National Wetland Inventory (NWI) located near the Airport property. Please refer to **Exhibit 2-15 National Wetland Inventory Map**. In addition to maintaining water quality in rivers and recharging groundwater among other positive benefits, wetlands may have the potential to attract wildlife that can be hazardous to aircraft using the Airport. The following exhibits depicts the NWI wetlands.

All wetlands would require delineation to clearly identify their boundaries. Projects with wetland impacts greater than one half acre of wetlands require a U.S Army Corps of Engineers (USACE) general permit. A wetland delineation and coordination with applicable resource agencies will be necessary prior to project implementation to further analyze the impacts the proposed improvements would have on wetlands. Further analysis is required for future projects.

Exhibit 2-15 – National Wetland Inventory Map



Source: U.S. Fish and Wildlife Service

WATER RESOURCES –FLOODPLAINS

Floodplains constitute lands situated along rivers and their tributaries that are subject to periodic flooding on the average interval of 100 years or less. Perham Municipal Airport is not located within a 100-year floodplain; therefore, no further analysis is required.

WATER RESOURCES – SURFACE AND GROUND WATERS

The Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977, provides the authority to establish water quality standards, control discharges into surface and subsurface waters, develop waste treatment management plans and practices, issue permits for discharges (Section 402) and for dredged or fill material (Section 404).

Airport activities can affect water quality. This is mainly due to stormwater runoff from paved areas. Providing treatment for stormwater runoff from runway, taxiway and apron areas using best management practices and grassed swale areas would minimize potential impacts to water quality. Stormwater management will be of particular emphasis with the addition of large expanses of pavements for projects such as expanded aircraft parking/aprons.

Drainage at Perham Municipal Airport generally flows in north and east once it leaves the airport into the Mud Lake and Ottertail River.

A General Permit for Storm Water Discharges Associated with Construction Activities may be required from the Minnesota Pollution Control Agency (PCA) for the proposed improvements if the area of disturbance exceeds one acre. Permit requirements would need to be reviewed during the environmental documentation phase. Further coordination with the PCA may be needed for airport development projects.

Environmental Consequences Not Relevant

AIR QUALITY CLASSIFICATION

Areas identified by EPA as non-attainment areas may require additional analysis if one (1) or more of the six Ambient Air Quality Standards are exceeded. Perham Municipal Airport is not located in a Clean Air Act non-attainment or maintenance area.

Temporary increases in emissions due to construction will be mitigated using Best Management Practices (BMP's).

NATURAL RESOURCES AND ENERGY SUPPLY

Impacts on energy supplies and natural resources are related to changes of stationary facilities, such as airfield lighting or terminal building heating and expansion, as well as any increase of fuel consumption by aircraft or ground vehicles. Projects at Perham Municipal Airport may require additional energy, but are not anticipated to cause significant impacts to energy supplies or natural resources. No further analysis is required.

NOISE AND NOISE-COMPATIBLE LAND USE

Noise emitted from aircraft can significantly affect the well-being of people living or working near an airport. If a project involves Airplane Design Groups I and II and has forecasted operations of less than 90,000 annual propeller operations or 700 annual adjusted jet operations, then no further noise analysis

would be required under the federal guidelines. Perham Municipal does not exceed these thresholds; therefore, a noise analysis will not be required.

VISUAL EFFECTS

The aesthetic value of an area is influenced by its landscape and the viewer's response to the view, scenic resource, or man-made feature. The extent of potential visual contrast/compatibility effects with adjacent landforms and land uses are addressed from the vantage point of those looking to an airport from outside the system.

WILD AND SCENIC RIVERS

No direct or indirect impacts to wild scenic rivers are anticipated with the proposed improvements. No further analysis is required.

Conclusion

The information collected and documented in this Inventory chapter provides a baseline foundation to update the Perham Municipal Airport long-range plan. This information will feed into future sections to determine how facilities will meet the projected airport needs based on aviation activity forecasts.