Chapter 3.0 Affected Environment & Environmental Consequences

3.1 Introduction

This chapter of the Environmental Assessment (EA) describes the resources that may be affected by the Preferred Alternative and the No Action Alternative. This chapter also presents an analysis of the reasonably foreseeable direct, indirect, and cumulative impacts of the Preferred Alternative when compared with those of the No Action Alternative, as well as mitigation measures to avoid or minimize such impacts. Each resource category listed below includes first a summary of the regulatory setting and then an analysis of the topic relative to the Preferred Alternative and the No Action Alternative, as well as any proposed mitigation plans.

To help identify measures to first avoid, then minimize, and lastly mitigate impacts of the Preferred Alternative, assistance was received from the Ann Arbor Municipal Airport (Airport or ARB), the Michigan Department of Transportation Office of Aeronautics (MDOT AERO), the Federal Aviation Administration (FAA) and various other regulatory agencies with jurisdiction or permitting authority over a particular resource category in the project area. Information received was incorporated into the EA where appropriate. A summary of impacts and proposed mitigation associated with the Preferred Alternative is provided in **Table 3-8 Mitigation Summary of the Preferred Alternative** located at the end of this chapter.

As described in previous chapters, the Airport is proposing to shift Runway 6/24 150 feet to the southwest and then extend the runway 720 feet at the approach end of Runway 6. This would provide 4,225 feet of usable runway length for existing and future users of the Airport and allow an unobstructed view of the entire airfield by airport traffic control tower (ATCT) personnel. For detailed discussion of the Preferred Alternative, see **Chapter 2.0 Alternatives Considered**. For additional details and justification of why the project is needed, see **Chapter 1.0 Purpose and Need**.

As described in **Chapter 1.0 Purpose and Need**, the Airport's proposed project includes the following components:

- Extend Runway 6/24 720 feet at the approach end of Runway 6 to provide 4,225 feet of runway length
- Shift Runway 6/24 to the southwest by adding an additional 150 feet on the Runway 6 end and removing 150 feet on the Runway 24 end
- Taxiway A - Extend parallel to the southwest to match the Runway 6/24 length
- Taxiway A1 – Relocate 150 feet to the southwest and reconstruct to comply with FAA Advisory Circular (AC) 150/5300-13B, Section 4.8.1 to correct the taxiway intersection with Runway 6/24 to connect at a right angle
- Taxiway A4 – Construct new connector taxiway at the Runway 6 end

- Taxiway D – Relocate 150 feet to the southwest and reconstruct to comply FAA AC 150/5300-13B, Section 4.3.5 which prohibits direct access from an apron to a runway without requiring a turn by aircraft prior to reaching the runway

3.2 Early Agency and Public Coordination

Resource agencies and Native American tribes with potential jurisdiction over, or interest in the proposed action were contacted at the beginning of the project and given the opportunity to provide comment on the proposed action. A copy of the distribution list, early coordination letters and maps sent to each agency and organization, and documentation received including response letters are found in **Appendix E Early Agency Coordination**. Specific information and direction received from responding agencies is noted and addressed in the appropriate resource sections below where appropriate.

An onsite agency scoping meeting was held on June 6, 2019. The purpose of the meeting was to explain the Purpose and Need of the project, review preliminary alternatives, discuss findings to date, and obtain input from the various federal, state, and local resource agencies and municipalities regarding the development of the EA, expected impacts, and anticipated mitigation. The attending agencies also toured the airfield.

Upon issuance of the Draft EA, the document was made available for public and agency review and comment for 30 days. Following the public review period, a Public Hearing was held on December 13, 2022. A court reporter was also present to record verbal comments from the public. Written comments from the regulatory agencies and the public were considered and incorporated into the Final EA where applicable. See **Appendix O Public Hearing & Public and Agency Involvement** for details on the Public Hearing meeting and a summary of the public and agency coordination activities.

For additional public and agency information, see **Appendix P Public and Agency Comments on the Draft EA** for a summary of public and agency comments received and Airport responses to those comments. See **Appendix Q Public Comments Received** for copies of the actual letters and emails received from the public during the commenting period with references to find Airport responses to individual comments. See **Appendix R Agency Comments Received** for copies of the actual coordination letters received from local, state, and federal agencies during the agency review period with Airport references to individual comments.

3.3 Current Airport Environment and History

ARB is a general aviation airport located in southeast Michigan, less than four miles south of the City of Ann Arbor (Ann Arbor or City) and approximately 40 miles west of Detroit. The Airport is located entirely within Pittsfield Charter Township, although it is owned and operated by the City of Ann Arbor. **Figure 3.0 ARB Surrounding Area** provides a map of existing development around the Airport and a general overview of the local area.

The Airport has played an important role in the development of the City and general aviation in southeast Michigan since its founding in 1928. According to historical documents, the Airport is one of the oldest

Figure 3.0 ARB Surrounding Area

Source: 2021 Google Earth

continuing institutions in the Ann Arbor area. Its beginnings date back to the end of World War I, when barnstorming aviators identified the level field with ideal approaches as an airfield and exhibition ground.

ARB was an essential part of Ann Arbor for airmail services, recreation, pilot training, and commerce. Early in its history, the City made substantial investments into the Airport and built the first administration building and fixed base operator hangar in 1933. Continuous improvements have been made to ARB since its establishment, and it continues to play a vital role in the community today.

3.3.1 Existing Airport Facilities

The discussion of existing facilities includes both airside and landside infrastructure. Major airfield facilities at the Airport include runways, taxiways, aprons, hangars, navigational aids (NAVAIDs), a terminal building, two fixed base operators (FBOs), which provide aviation services to aircraft using ARB, an Airport Traffic Control Tower (ATCT), and other miscellaneous support facilities. See **Figure 3.1 Existing Airport Layout Plan**, for a graphic representation of airport facilities and their locations on Airport property.

The Airport has two existing runways. Runway 6/24 is the only paved runway and is 3,505 feet long and 75 feet wide. The runway is grooved and constructed of concrete. Runway 12/30 is a turf runway that is 2,750 feet long and 110 feet wide. This runway is used seasonally for smaller aircraft.

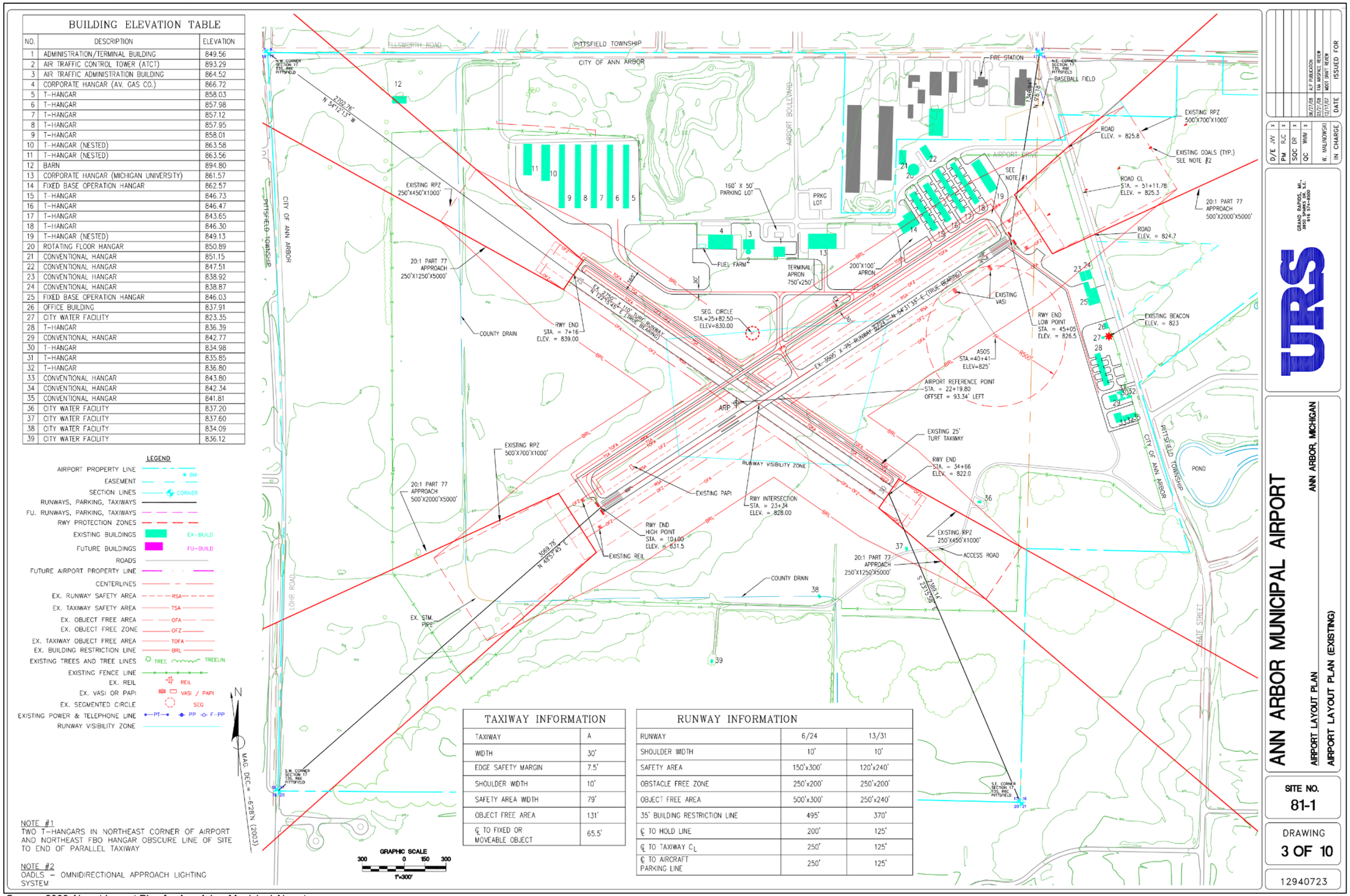
Taxiway A is a full-length parallel taxiway for Runway 6/24, with connector taxiways A1, A2, and A3 providing access between the runway and taxiway. Connector Taxiways B and C provide access between Taxiway A and the terminal apron, as well as T-hangars on the north side of the airfield. Connector Taxiway D provides access to additional hangars that exist on the east side of the airfield.

Visual NAVAIDs at the Airport include a rotating beacon, wind indicators, segmented circle, medium intensity runway lights (MIRL) for Runway 6/24, a 4-light Precision Approach Path Indicator (PAPI) and FAA-owned Runway End Identifier Lights (REIL) at the approach end of Runway 6, and a 2-box Visual Approach Slope Indicator (VASI) at the approach end of Runway 24. In addition to visual NAVAIDs, the Airport is also equipped with electronic NAVAIDs to help pilots navigate in inclement weather. Existing electronic NAVAIDs include a global positioning satellite (GPS) approach and Omni-Directional Range radio (VOR) for both ends of Runway 6/24.

ARB is serviced by a FAA-staffed ATCT that manages the landing and departure of aircraft at the Airport. The ATCT is located on the terminal apron and is adjoined by an air traffic administration building.

Airport Traffic Control Tower

Figure 3.1 Existing Airport Layout Plan



Source: 2008 Airport Layout Plan for Ann Arbor Municipal Airport

There are two FBOs at the Airport, both on the north side of the airfield. Solo Aviation is in the main terminal building and provides an array of services including a pilot lounge, planning room, flight school, full-service maintenance, aircraft rentals, and fueling. Ann Arbor Aviation Center is in the northeast hangar area, also providing many services and amenities such as fueling, oxygen servicing, flight training, aircraft rental, maintenance, parts, pilot lounge, and public restrooms. In addition to the FBOs, there are two rental car agencies (Enterprise and National) located at the terminal building providing ground transportation services to Airport users.

3.4 Air Quality

An air quality analysis is the measure of the condition of the air in terms of pollutant concentrations. Air quality is regulated out of concern for human health (especially the health of children, the elderly, and those with certain health conditions). Poor air quality can also affect crops and vegetation, as well as buildings and other facilities. Air quality is regulated by the United States Environmental Protection Agency (USEPA) under the Clean Air Act (CAA) described in 42 U.S.C. §§ 7401- 7671q. The USEPA regulates pollutants to permissible levels via standards called National Ambient Air Quality Standards (NAAQS).

In addition to the USEPA, several other agencies address air quality in the project area: the Michigan Department of Environment, Great Lakes, and Energy (EGLE), and the Southeast Michigan Council of Governments (SEMCOG). USEPA has delegated authority to EGLE to implement federal air quality requirements in Michigan. SEMCOG is the metropolitan planning organization (MPO) responsible for tracking requirements under the state and federal transportation conformity regulations.

Areas which have concentrations of air quality criteria pollutants below the NAAQS are designated as “attainment areas.” Areas with concentrations of these pollutants above the NAAQS are designated as “nonattainment areas.” Nonattainment areas must implement plans to lower pollutant levels below designated standards. In addition, aviation-related federal projects planned for nonattainment areas may be required to conform to these plans, known as “General Conformity.”

The Airport is in Washtenaw County which is part of the greater Detroit Area Airshed. Washtenaw County is in the seven county Detroit Metropolitan nonattainment area for the 2015 ozone 8-hour standard. However, the project area is in attainment for all other criteria pollutants.

Summary of Findings: An air quality emissions inventory for aviation sources was prepared for ARB using the FAA’s current Aviation Environmental Design Tool (AEDT) Version 3d. Emissions are separated by construction (emissions by vehicles necessary to construct the Preferred Alternative) and operational emissions (emissions from ongoing operations once the proposed construction is completed). For details on the air quality analysis, see **Appendix F Air Quality Analysis**.

Construction Emissions: No construction emissions would be expected with the No Action Alternative, as the proposed development would not occur.

Construction emissions were calculated for the Preferred Alternative using the USEPA MOVES3 model.[1] Emission factors and construction equipment use estimates from the Airport Cooperative Research Program (ACRP) Report 102 *Guidance for Estimating Airport Construction Emissions* (available upon request or online at https://crp.trb.org/acrpwebresource4/acrp-report-102-guidance-for-estimating-airport-construction-emissions/). Construction of the Preferred Alternative would be expected to occur during a 90-day period in 2024 (year of anticipated construction); thus, emission factors for non-road equipment were obtained from the MOVES3 model for Washtenaw County for year 2024.

Air Quality modeling found that construction emissions from the Preferred Alternative would be de minimis "of minimum impact". This qualification for de minimis means there will be no significant contamination of the air when compared to the CAA thresholds and construction emissions would not be significant nor require mitigation.

Operational Emissions: The operational emissions inventory represents the sources of equipment operating based upon the activity occurring at the Airport in 2019 and future years (activity levels in 2024 and 2029) under the No Action Alternative and the Preferred Alternative. 2019 operational data was used because it was the most recent calendar year in which a full 12 months of historical data was available at the time when the EA was initiated.

Aircraft operations and ground support equipment emissions were estimated for both the No Action Alternative and the Preferred Alternative. When comparing the No Action Alternative to the Preferred Alternative, project related emissions are expected to slightly increase due to the additional 720 feet of aircraft taxiing distance and the increase in the number of operations in the future as described in the **Appendix C Runway Justification Study**.

Analysis found that Carbon Monoxide (CO) emissions would increase by 5.4 tons in 2024, and 6.1 tons in 2029. Ozone precursors such as Volatile Organic Compounds (VOC) and Nitrogen Oxides (NOx), as well as other criteria pollutants would increase by less than 1.0 ton per year with the Preferred Alternative in 2024 and 2029.

Per the CAA general conformity rule, the de minimis levels for an ozone marginal nonattainment area is 100 tons each of NOx and VOC (precursors to ozone formation). The analysis determined that the project-related emissions from the Preferred Alternative would be below the CAA defined de minimis threshold, and thus the planned actions do not require a conformity determination because emissions from the Preferred Alternative are lower than the de minimis for ozone nonattainment areas, no further analysis is required, and no mitigation is proposed.

To further reduce the potential for temporary air quality impacts for both workers and the surrounding area, The *Construction Emission Control Checklist* provided by the USEPA (found in

[1] https://www.epa.gov/moves/latest-version-motor-vehicle-emission-simulator-moves. In addition, on-road vehicle emission factors for Michigan were obtained from the USEPA AFLEET2020 tool.

Appendix R Agency Comments Received) should be followed where feasible. Although the Airport will strongly encourage the use of the USEPA checklist, the Airport must follow applicable FAA advisory circulars and construction guidelines. Construction contracts will identify any applicable requirements that contractors must follow.

In addition, the following supplementary recommendations will also be considered during the construction of the Preferred Alternative. These recommendations may be implemented and incorporated by the Airport during construction where feasible:

- Use low-sulfur diesel fuel (less than 0.05% sulfur).
- Retrofit engines with an exhaust filtration device to capture diesel particulate matter before it enters the construction site.
- Position the exhaust pipe so that the diesel fumes are directed away from the operator and nearby workers, thereby reducing the fume concentration to which personnel are exposed.
- Use catalytic convertors to reduce carbon monoxide, aldehydes, and hydrocarbons in diesel fumes. These devices must be used with low sulfur fuels.
- Use climate-controlled cabs that are pressurized and equipped with high efficiency particulate air (HEPA) filters to reduce the operator's exposure to diesel fumes. Pressurization ensures that air is moved from the inside to the outside. HEPA filters ensure that any incoming air is filtered first.
- Regularly maintain diesel engines, which is essential to keeping exhaust emissions low, and follow the manufacturer's recommended maintenance schedule. 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 operators to perform routine inspections, and maintaining filtration devices.
- Purchase new vehicles that are equipped with the most advanced emission control systems available.
- With older vehicles, use electric starting aids as block heaters to warm the engine to reduce diesel emissions.

It should also be noted that the FAA recently approved a lead-free fuel for all piston driven aircraft. To further reduce air quality emissions, ARB intends to transition to unleaded gas as soon as the fuel is reasonably available.

Air quality impacts are not expected from the construction or operation of the Preferred Alternative or implementation of the No Action Alternative. For details on the air quality analysis see **Appendix F Air Quality Analysis**.

3.5 Biological Resources

Biological resources include plants (vegetation), animals (wildlife), and the habitats where they occur. Habitats are the resources and conditions that support the continuous existence of plants or animals in any particular area. Together, biological resources form ecosystems, which are dynamic and respond over time

to changes in the environment, whether natural or human induced. Biological resources provide aesthetic, recreational, and socioeconomic values to society, as well as being valuable in their own right. Accordingly, federal and state laws and statutes exist to protect certain species and habitats of special importance.

Early agency coordination with federal and state regulatory agencies with interest or jurisdiction over biological resources in the project area was conducted at the onset of this project. Agency response letters are found in **Appendix E Early Agency Coordination**.

3.5.1 Endangered & Threatened Species

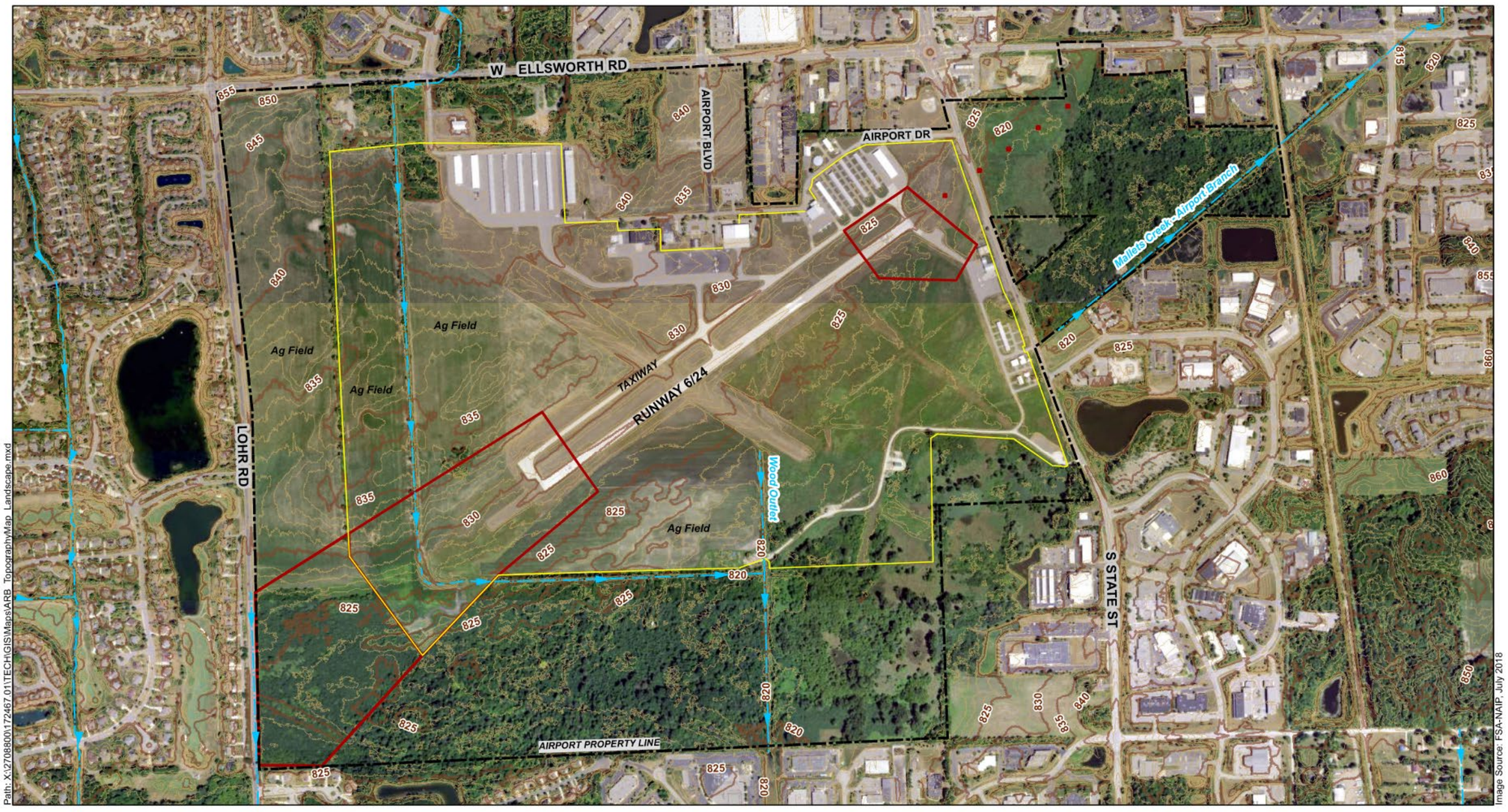
The Endangered Species Act (Act) of 1973 (16 U.S.C. §1531-1544) and subsequent amendments, require the conservation of federally listed threatened and endangered plant and animal species, and critical habitats in which they are found. A species is considered endangered if it is in danger of extinction throughout all or a significant amount of its range. Threatened species are defined as those that are likely to become endangered in the foreseeable future. The U.S. Fish and Wildlife Service (USFWS) administers the Act primarily for land and freshwater species and designates critical habitat for species protected under the Act. Section 7 of the Act requires all federal agencies to consult with the USFWS, as applicable, before initiating any action that may affect a listed species or designated critical habitat. Candidate species, which may be listed as threatened or endangered in the future, are not provided any statutory protection under the Act but conservation efforts are encouraged.

At the state level threatened and endangered species are protected from being taken or harmed during project activities by EGLE under Part 365 of the Natural Resources and Environmental Protection Act (1994, as amended) (NREPA). An environmental review must be completed for the project area to identify whether any threatened and endangered species may be affected by project actions. Permits may be required by EGLE if impacts are identified.

To determine the presence of threatened and endangered species and evaluate the potential impacts from the proposed project at the federal and state level, site visits were conducted by a qualified biologist on October 10, 2018 and June 4 – 6, 2019, within an 82.2-acre Area of Interest (AOI) shown on **Figure 3.2 Biological Resources Area of Interest**. The site visits found that nearly all infield areas consisted of grasses and forbs that are actively managed and mowed on a regular basis. The airfield is relatively flat with little elevation change over the active airside areas. Topography within the active airfield slopes gently from the southwest to northeast along the axis of the main runway. Surface runoff

Runway 6 End

Figure 3.2 Biological Resources Area of Interest



Topography Map

Ann Arbor Municipal Airport

Data Sources:

Elevation data: Washtenaw County from 2017 LiDAR data. The contour elevation interval is 1 foot.
Streams: Washtenaw County

Legend

- Project Area of Interest (AOI)
- Piped Drainage
- Stream
- Airport Property Boundary
- Fence

Contour Type*

- Index
- Intermediate

* Contour interval is 1 foot

0 250 500 1,000 1,500 Feet

N

Project Location

T3S, R6E, Sections 16 and 17
Ann Arbor Municipal Airport
Washtenaw County, MI
LRR subregion: M
USACE Regional Supplement: Midwest
Area of Interest = 82.2 acres
Field work conducted: October 10, 2018 and June 3 - 6, 2019

generally flows from north to south from higher points along Ellsworth Road to lower portions along the southern property boundary.

Runway 24 End

Most of the area to the west of the airfield is in agricultural production as is a parcel south of the main runway. A large, wooded area at the southwest corner of Airport property outside of the Airport fence, consists of patches of buckthorn with a few larger trees intermixed. This area was formerly in agriculture use and currently is unmanaged. Some additional open areas are present and covered by smooth brome and Canada goldenrod.

Summary of Findings: The USFWS and EGLE provided information regarding protected species in the vicinity of the project area (**Table 3-0 Threatened and Endangered Species**). Also shown on this list are the Creek Heelsplitter (*Lasmigona compressa*) and Rusty Patched Bumblebee (*Bomus affinis*), both of which are considered species of special concern by the state of Michigan. For details on the biological resources in the project area including USFWS and EGLE consultation, affects determinations, and additional analysis of each listed species, see **Appendix G Biological Resources**.

Table 3-0
Threatened and Endangered Species

Species Name	Common Name	Status	Determination
Myotis sodalis	Indiana Bat	Federal - Endangered	NLAA*
Myotis septentrionalis	Northern Long-eared Bat	Federal - Endangered	NLAA*
Sistrurus catenatus	Eastern Massasauga	Federal - Threatened	No Effect
Epioblasma triquetra	Snuffbox Mussel	Federal - Endangered	No Effect
Neonympha mitchelli mitchelli	Mitchell's Satyr Butterfly	Federal - Endangered	No Effect
Oarisma poweshiek	Poweshiek Skipperling	Federal - Endangered	No Effect
Platanthera leucophaea	Eastern Prairie Fringed Orchid	Federal - Threatened	No Effect
Ammodramus henslowii	Henslow's Sparrow	State - Endangered	NLAA*
Hydrastis canadensis	Goldenseal	State - Threatened	No Effect
Lasmigona compressa	Creek Heelsplitter	State - Special Concern	No Effect
Bomus affinis	Rusty Patched Bumblebee	State - Special Concern	No Effect

Source: USFWS and EGLE Consultation / * NLAA = May Affect, Not Likely to Adversely Affect

USFWS coordination determined that no critical habitat under their jurisdiction is found in the project area. Biological field investigations in 2018 and 2019 did not identify species or habitat for most of the listed species in **Table 3-0 Threatened and Endangered Species**. The only species having suitable habitat at ARB were the Henslow's Sparrow (which is regularly sighted at the Airport), the Indiana Bat, and the Northern Long-eared Bat (NLEB).

Since the Henslow's Sparrow is known to occur at ARB, any grading or construction near State Road would be in an area currently under "restricted mowing" per a voluntary verbal agreement with the Washtenaw Audubon Society (a chapter of Michigan Audubon) and the City of Ann Arbor. ARB revises the boundaries of this mowing agreement annually, based on Audubon's most current bird count data. To avoid potentially impacting Henslow's Sparrows during construction of the Preferred Alternative, ARB will not allow grading within agreed upon restricted mowing areas during the breeding season, which extends from early spring through mid-July. The Michigan Department of Natural Resources concurred that the birds are reasonably protected if ARB follows these grading restrictions (**Appendix R Agency Comments Received**).

The forested area in the southwest corner of the Airport contains large stands of buckthorn with isolated aspen and box elder trees interspersed. Vegetation within this area contains a low diversity mix of grasses and forbs. Generally, this type of habitat is not conducive to supporting either the NLEB or the Indiana bat's habitat needs. Tree removals are not expected with the construction of the Preferred Alternative; however, if tree removals are deemed necessary, any cuttings will occur between October 1 – March 31 to minimize impacts to any potential bat populations.

Endangered and threatened species impacts are not expected from the construction or operation of the Preferred Alternative or implementation of the No Action Alternative. For details and analysis of biological resources in the project area, see **Appendix G Biological Resources**.

3.5.2 Migratory Birds

The *Migratory Bird Treaty Act of 1918* (MBTA) described in 16 U.S.C. § 703 et seq and its amendments are the main driver for the protection of migratory birds in the United States. Executive Order 13186*: Responsibilities of Federal Agencies to Protect Migratory Birds,* also obligates all federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitats.

In a biological sense, a migratory bird is an avian that has a seasonal and somewhat predictable pattern of movement. Generally, migratory birds are defined as all native birds in the United States, except those non-migratory species such as quail and turkey that are managed by individual states.

Summary of Findings: The USFWS identified 10 migratory birds with the potential to exist in the vicinity of the project area. To mitigate potential impacts to migratory birds, vegetation clearing will only be allowed to occur between October 1 – March 31. This restriction period satisfies the

"breeding season" for all listed migratory birds and also meets the "probability of presence" for all listed species except for the Dunlin (*Calidris alpina)* and the Rusty Blackbird (*Euphagus carolinus).*

The Dunlin typically nests in arctic regions and winters in large flocks along bays, estuaries, and coastlines. The Dunlin is characterized as a shorebird. The Rusty Blackbird is commonly found in wet areas, including flooded woods, swamps, marshes, and the edges of ponds. The Rusty Blackbird prefers wetland habitats for foraging in the winter and during migration. During the breeding season, it favors bogs, beaver ponds, and wet woods in boreal forests. Since the preferred habitat for either species is not found in the project area, it is unlikely they would experience impacts from the Preferred Alternative.

Potential impacts to migratory birds are limited due to the developed and maintained nature of the project area. The project area is mowed regularly or in agricultural production. It is reasonable to assume that during construction and land grading activities, any migratory birds that are present will relocate out of the project area and into adjacent habitat with minimal disturbance.

As previously mentioned, to avoid direct or indirect impacts to migratory birds, habitat disturbance will only be allowed from October 1 – March 31. Disturbance restrictions include no mowing of open grassy fields, no removal of shrubs or other potential nesting structures, and no cutting of trees during the specified time period. The above disturbance restrictions are in place to avoid unintentionally taking migratory birds, eggs, young, or active nests.

Migratory bird impacts are not expected from the construction or operation of the Preferred Alternative or implementation of the No Action Alternative. For a list of migratory birds in the project area and USFWS correspondence, see **Appendix G Biological Resources**.

3.6 Climate

Climate change and greenhouse gases are a growing concern for the aviation industry. The primary source of greenhouse gas emissions at an airport are associated with aircraft operations and the short-term emissions from construction equipment activity. Climate change is generally governed by the CAA (42 U.S.C. §§ 7408, 7521, 7571, 7661 et seq.).

Although there are no federal standards for aviation-related greenhouse gas emissions, it is well established that greenhouse gas emissions affect climate.[2] Where a proposed action would result in an increase in greenhouse gas emissions, the emissions should be assessed either qualitatively or quantitatively. There are no significance thresholds for aviation greenhouse gas emissions, and it is not required for a National Environmental Policy Act (NEPA) analysis to attempt to link specific climate impacts to a proposed action or alternative(s) given the small percentage of emissions that aviation projects contribute annually.

[2] FAA, An Environmental Desk Reference for Airport Actions, October 2007. https://www.faa.gov/airports/environmental/environmental_desk_ref/.

In terms of relative U.S. contribution, the U.S. General Accounting Office (GAO) reports that aviation accounts "*for about 3% of total U.S. greenhouse gas emissions from human sources, according to USEPA data*" compared with other industrial sources such as the country's transportation sector (20 percent) and power generation (41 percent).[3] The International Civil Aviation Organization (ICAO) estimates that greenhouse emissions from aircraft account for roughly 3 percent of all anthropogenic greenhouse gas emissions globally. Climate change due to greenhouse gas emissions is a global phenomenon, so the affected environment is the global climate.[4]

Summary of Findings: The FAA's AEDT model was used to quantify aircraft carbon dioxide (CO_2) emissions for years 2019, 2024, and 2029. Analysis found that in 2019 aircraft emissions from operations at ARB represented 964 metric tons of CO_2 (as previously mentioned, 2019 was used because it was the most recent calendar year in which a full 12 months of historical data was available at the time the EA began). In the context of total U.S. emissions (5,215.6 million metric tons), the total aircraft emissions at ARB are less than 0.001 percent of the total U.S. greenhouse gas emissions.

Construction of the Preferred Alternative and subsequent operational activity in future years at the Airport, relative to aviation throughout the United States, is negligible when compared to overall national aviation activity. Greenhouse gas emissions associated with existing and future aviation activity at the Airport are expected to be an inconsequential contributor of greenhouse gases nationwide.

Climate impacts are expected to be negligible from the construction or operation of the Preferred Alternative or implementation of the No Action Alternative. No mitigation is proposed.

3.7 Coastal Resources

The *Coastal Zone Management Act of 1972* (16 U.S.C. §§ 1451-1466) established the Federal Coastal Zone Management Program to encourage and assist states in preparing and implementing management programs to "*preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone*." In addition, the *Coastal Barrier Resources Act of 1982* requires that no new federal expenditures or financial assistance may be made available for construction projects within the boundaries of the Coastal Barriers Resource System. Executive Order 13089, *Coral Reef Protection* requires federal agencies to "*identify any actions that might affect coral reef ecosystems, protect and enhance the conditions of these ecosystems, and ensure that the actions carried out, authorized, or funded by federal agencies will not negatively impact or degrade coral reef ecosystems."*

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[3] IPCC Report as referenced in U.S. General Accounting Office (GAO) *Environment: Aviation's Effects on the Global Atmosphere Are Potentially Significant and Expected to Grow*; GAO/RCED-00-57, February 2000, p. 14; GAO cites available USEPA data from 1997.

[4] As explained by the U.S. Environmental Protection Agency, "greenhouse gases, once emitted, become well mixed in the atmosphere, meaning U.S. emissions can affect not only the U.S. population and environment but other regions of the world as well; likewise, emissions in other countries can affect the United States." Climate Change Division, Office of Atmospheric Programs, U.S. Environmental Protection Agency, *Technical Support Document for Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act* 2-3 (2009), available at http:// USEPA.gov /climatechange/endangerment.html.

Summary of Findings: The project is not located within or near any protected coastal resources. Impacts to coastal resources are not expected from the construction or implementation of the Preferred Alternative or the No Action Alternative. No mitigation is proposed.

3.8 Department of Transportation Act, Section 4(f)

Section 4(f) of the Department of Transportation Act (49 U.S.C. § 303) requires that the Secretary of Transportation not approve any program or project that requires the use of any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or land from a historic site of national, state, or local significance as determined by the officials having jurisdiction unless there is no feasible and prudent alternative to the use of such land.

Several potential Section 4(f) resources were identified in the vicinity of the project area. The locations of these resources relative to ARB are shown in **Figure 3.3 Section 4(f) Resources**. Public parks and recreational areas in the vicinity of the Airport include:

- Pittsfield Township Park – Owned by Pittsfield Charter Township, Pittsfield Township Park is located at the northwest corner of the intersection of State Street and Airport Drive. The park features a pavilion, playground, t-ball field, grill, parking, and restrooms.
- Stonebridge Golf Club – Stonebridge Golf Club is a privately-owned public use, 18-hole golf course located southwest of ARB, immediately across Lohr Road.
- Ann Arbor Airport Community Garden – Ann Arbor Airport Community Garden is located on ARB property south of Runway 6/24, along the edge of a wooded area. The garden is accessed via a gated gravel road off State Road. The garden is one of several community garden sites in the Ann Arbor area operated by Project Grow Community Gardens, which is an organization that focuses on facilitating organic community garden sites.

Summary of Findings: The Pittsfield Township Park and the Stonebridge Golf Club are located off Airport property outside the project area. Although the Community Garden is located on ARB property, it is well outside the limits of construction of the Preferred Alternative. All proposed construction activity would be on ARB owned property and a considerable distance from these resources. The closest resource (Community Garden) is approximately 0.25 miles away.

No physical or constructive use is anticipated for any Section 4(f) resource identified in the project area. No direct or indirect impacts were identified as all environmental resources analyzed in this chapter were found to either not extend off airport property or not exceed a level of significance resulting in an impact to any particular resource.

Impacts to Section 4(f) impacts are not expected from the construction or implementation of the Preferred Alternative or the No Action Alternative. No mitigation is proposed.

Figure 3.3 Section 4(f) Resources

Source: 2021 Google Earth

3.9 Farmlands

The *Farmland Protection Policy Act of 1981* (FPPA) described in (7 U.S.C. §§ 4201-4209) was enacted to minimize the extent to which federal actions and programs contribute to the unnecessary and irreversible conversion of farmland to non-agricultural uses. Per FPPA, *"farmland includes prime farmland, unique farmland, and land of statewide or local importance. Farmland subject to FPPA requirements does not have to be currently used for cropland. It can be forest land, pastureland, cropland, or other land, but not water or urban built-up land."*

Prime farmland has the best combination of physical and chemical characteristics for producing food, forage, fiber, and oilseed crops. Unique farmland is defined as land other than prime farmland that is used for the production of specific high-value food and fiber crops such as citrus, tree nuts, olives, cranberries, fruits, and vegetables. Any federal action which may result in conversion of farmland to a non-agricultural use requires coordination with the U.S. Department of Agriculture's (USDA) Natural Resource Conservation Services (NRCS).

A review of farmland classification maps available from the NRCS indicated the presence of farmland classified as "prime farmland if drained" and "farmland of local importance" at both ends of Runway 6/24. However, the U.S. Census Bureau's Urbanized Area Reference Map for Ann Arbor, Michigan, shows that ARB is entirely located within the City of Ann Arbor's "Urbanized Area". According to the FPPA, farmland resources located in Urbanized Areas that may be impacted by Airport projects are exempt from regulatory protection. Specifically, the FPPA exempts farmlands "*already in or committed to urban development… [including] lands identified as 'urbanized area' on the Census Bureau Map*."

Summary of Findings: Coordination with the NRCS occurred in June 2022, which confirmed ARB's location within an Urbanized Area and the exemption of farmlands within the project area from protection and mitigation requirements.

The Airport currently leases property for active farming. If construction of the Preferred Alternative takes place, approximately two acres of active farming land will be taken out of production at the Runway 6 end. Although this farming activity is not protected, The City and Broadview Farms will need to renegotiate the farming agreement in the future. No additional consultation or mitigation is required by the NRCS.

Protected farmland impacts are not expected from the construction or operation of the Preferred Alternative or implementation of the No Action Alternative. See **Appendix H Farmland** for farmland classification maps, the Urbanized Area Reference Map, and correspondence from the NRCS.

3.10 Hazardous Materials, Solid Waste, and Pollution Prevention

Hazardous materials are those which can pose a risk to health, safety, and property, including hazardous wastes and hazardous substances as well as other materials. Hazardous materials are regulated under several statutes, including the Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. §§ 9601-9675), the Resource Conservation and Recovery Act (RCRA) described in 42 U.S.C. §§ 6901-6992k, and the Toxic Substance Control Act (15 U.S.C. §§ 2601-2697). Solid waste is discarded

material that falls into specific regulatory definitions; solid waste is regulated under RCRA. Pollution prevention refers to efforts to avoid, prevent, or reduce discharges and emissions of pollutants.

In 2019, a Phase I Environmental Site Assessment (ESA), in conformance with the scope and limitations of the American Society for Testing and Materials (ASTM) Designation: E1527-13, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*, was completed for the proposed area of construction of the Preferred Alternative, as well as the greater Airport property. For details of the hazardous materials investigations, see **Appendix I Hazardous Materials – Abridged Version**. The full 600-page version is available upon request. The following conditions were identified:

- The historical agricultural use of the subject property and surrounding area is not anticipated to negatively impact the subject property. Although the historic agricultural utilization of property can result in application of pesticides that do not degrade over time, it is reasonable to assume that pesticides when applied for their intended purpose, in accordance with label directions, have a low potential for environmental impact and do not represent Recognized Environmental Conditions (RECs). Additionally, in row-crop productions, application rates are typically smaller, and periodic plowing would increase soil contact with pesticide residues, therefore accelerating the decomposition of pesticide residues.
- Based on their regulatory status, distance from the subject property, and/or their hydrogeologic relationship, the adjacent properties and facilities have a low potential for environmental impact to the subject property and do not represent RECs.
- Normal wear and staining were observed on the concrete flooring throughout various maintenance hangars. Stains appeared to be the result of recurring leaks and spills of used engine oil, as well as poor housekeeping. However, the spills appeared surficial in nature and the concrete flooring was intact with no significant cracking. Furthermore, the proposed runway extension project area is located southwest of the Airport service buildings. As such, there is no reason to believe that the proposed runway extension project area will be negatively impacted by onsite maintenance operations.
- According to available information, 16 registered underground storage tanks (USTs) were identified on Airport property, or within 0.25 miles of the Airport facility. Based on information received from the Michigan Department of Licensing and Regulatory Affairs and proximity to the proposed project area, there is no reason to believe that the former USTs have impacted the airport runway area.

Based on the information above, the Phase I ESA report revealed no evidence of RECs in connection with ARB property and no further investigations are warranted.

Summary of Findings: The FAA has not established a significance threshold for hazardous waste, solid waste, or pollution prevention. However, the FAA 1050.1F *Desk Reference* offers guidance to consider whether the proposed project could:

- Violate any laws or regulation regarding hazardous waste
- Involve a contaminated site
- Produce an appreciable amount or type of hazardous waste

- Generate an appreciably different quantity or type of solid waste that could exceed local capacity or use different methods of collection and disposal and/or would exceed local capacity.
- Adversely affect human health and the environment

While there is no known hazardous waste contamination within the project area, construction activities associated with the Preferred Alternative have the potential to create solid waste material (excavated soil, remnant concrete, etc.). The contractor will be required to have a Spill Prevention, Control, and Countermeasure (SPCC) plan in place to be implemented if a spill occurs during construction operations. An approved erosion control plan is also required to provide a collection area for non-recyclable waste. Any waste generated through proposed project improvements will be disposed of in compliance with all federal, state, and local regulations.

Hazardous material impacts are not expected from the construction or operation of the Preferred Alternative or implementation of the No Action Alternative. See **Appendix I Hazardous Materials – Abridged Version** for details of the hazardous materials investigations and findings in the project area.

3.11 Historical, Architectural, Archeological, and Cultural Resources

Historical, architectural, archeological, and cultural resources include a variety of sites, properties, and facilities related to activities and societal and cultural institutions. Such resources express past and present elements of human culture and are important to a community. Section 106 of the National Historic Preservation Act (NHPA) (Section 106 of the National Historic Preservation Act, 54 U.S.C. § 300101) requires federal agencies to consider the effects their actions may have on these properties.

According to FAA Order 5050.4B*,* NEPA *Implementing Instructions for Airport Projects*, two basic laws apply to this impact category; the first law, the *National Historic Preservation Act of 1966*, as amended, "[r]*ecommends measures to coordinate Federal historic preservation matters, to recommend measures to coordinate Federal historic preservation activities and to comment on Federal actions affecting historic properties included in or eligible for inclusion in the National Register of Historic Places*."

The second law, the *Archeological and Historic Preservation Act of 1974*: *"[p]rovides the survey, recovery, and preservation of significant scientific, prehistorical, historical, archeological, or paleontological data when such data may be destroyed or irreparably lost due to a Federal, Federally licensed, or Federally funded project."*

In 2019, a reconnaissance-level historic resources survey was conducted for both above-ground and below-ground resources to identify, document, and evaluate historic-age properties within the project area. The Area of Potential Effect (APE) included areas of the Airport that may be directly or indirectly impacted by project activities. Consideration was given to indirect effects where the project may have physical, visual, and auditory impacts off Airport property. The evaluation of noise impacts on cultural resources were limited to changes in noise levels within the 65 Day Night Average Sound Level (DNL) noise contour. See **Section 3.14 Noise and Noise Compatible Land Use** for details of the noise analysis and the DNL sound label.

The archeology APE included a 20-acre area that would experience direct impacts from the construction of the Preferred Alternative. The APE included areas where soil will be disturbed and consisted of a northern survey area off the end of Runway 24 and a southern survey area off the end of Runway 6. The survey also included an area to the northeast across State Road where seven Omni-directional approach lights (ODALS) were located at the time of the survey. The ODALs were removed by the FAA in 2021.

Summary of Findings: The historic and archaeological surveys found that the project APE was highly disturbed throughout most of the project area. Through field investigations, data research, and coordination with the Michigan State Historic Preservation Office (SHPO), above-ground cultural resources were identified and an analysis of the potential effects from the construction of the Preferred Alternative was completed. Properties within the 65 DNL noise contour of the Preferred Alternative were also assessed. No properties eligible for the National Register for Historic Places were identified.

A literature review, visual reconnaissance, and shovel tests of the APE were completed as part of the archeological survey. The literature review did not result in findings of previously identified archeological sites, and the visual reconnaissance and shovel testing did not identify any archeological sites within the APE. The Phase I archaeological survey concluded the proposed project will not impact any known archaeological resources, and no further archaeological studies were recommended.

An Application for State Historic Preservation Office (SHPO) Section 106 Consultation summarizing these findings was submitted to the SHPO by the FAA for review and concurrence. The SHPO agreed and provided a letter of concurrence dated June 22, 2022 (found in **Appendix J Section 106 Report**). In this letter the SHPO stated that it concurs that no historic properties (architecture/history and archeology) will be affected within the APE for the proposed project and issued a "No historic properties affected" determination. SHPO directed that if the scope of work changes in any way or if cultural resources are encountered during construction, work must stop and the SHPO be notified immediately.

Cultural resources impacts are not expected from the construction or operation of the Preferred Alternative or implementation of the No Action Alternative. No mitigation is proposed. For details of the historic and archeological investigations including the SHPO concurrence letter, see **Appendix J Section 106 Report**.

3.12 Land Use

As described in 1050.1F *Desk Reference*, *"Section 1502.16(c) of the Council on Environmental Quality (CEQ) regulations requires the discussion of possible conflicts between the proposed action and the objectives of federal, state, regional, and local land use plans, policies, and controls for the area concerned. Where an inconsistency exists, the EA document should describe the extent to which the agency would reconcile its proposed action with the existing land use plan."* The FAA also requires airport operators to ensure that actions are taken to establish and maintain compatible land uses around their airports.

Land use regulations near airports typically focus on safety for airport users and the surrounding community. Elements of airport actions can change existing land use patterns and, in some instances, disrupt communities, require residential or business relocations, or degrade surface transportation service. Land use controls and zoning regulations generally discourage or prohibit land use that is incompatible with airport operations. The authority to enact zoning codes usually lies at the local level.

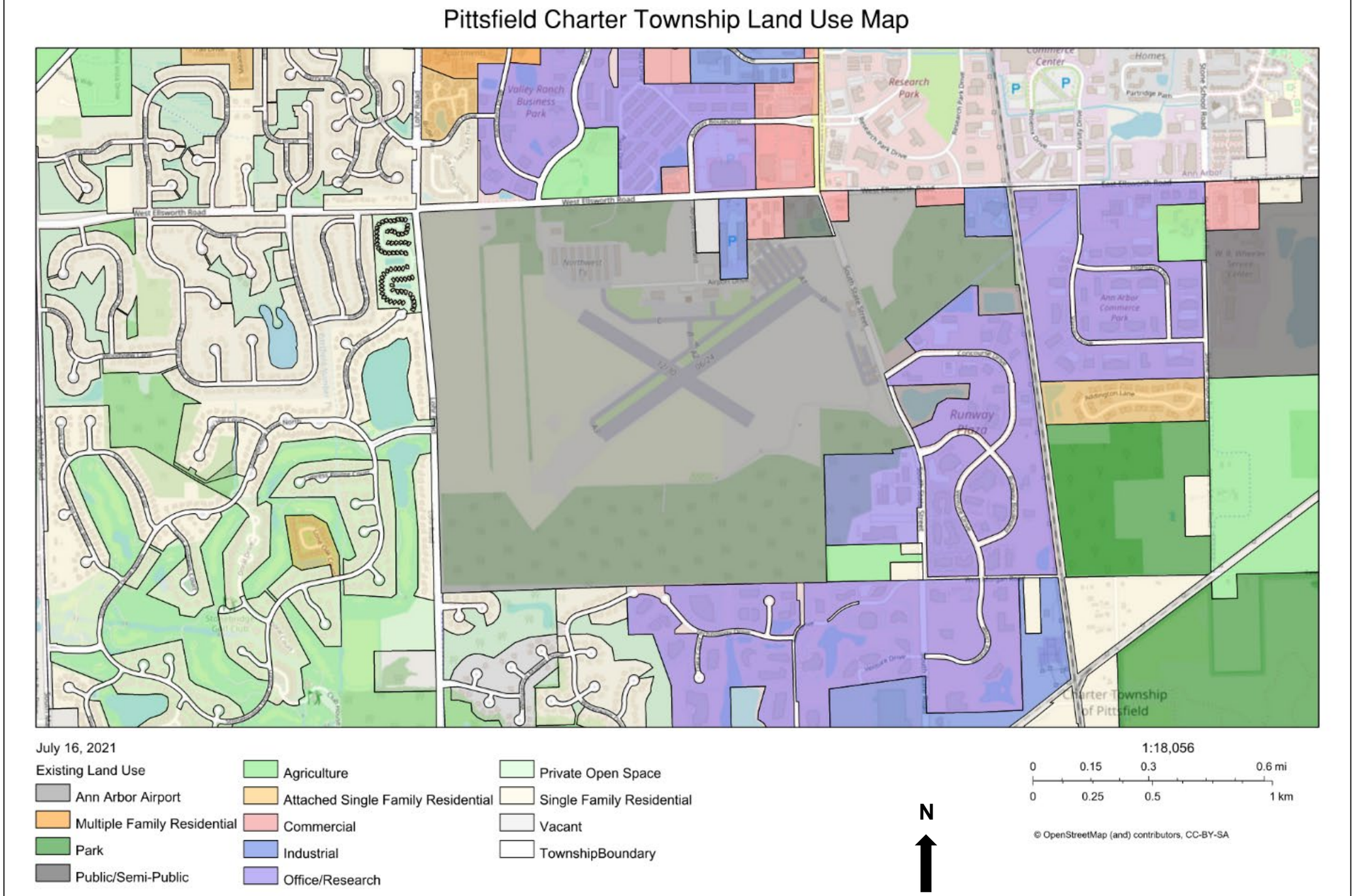
Planning and zoning around ARB fall under the jurisdiction of the Pittsfield Charter Township Planning Commission. According to the Pittsfield Charter Township current land use map, land uses west, northwest, and southwest of the Airport are classified as "Single Family Residential," "Agriculture," and "Private Open Space." To the north, south, and east of ARB, land uses are primarily classified as "Commercial," "Office/Research," and "Industrial". See **Figure 3.4 Pittsfield Charter Township Land Use Map** for a graphic depiction of the land use classifications surrounding the Airport.

The shift and extension of Runway 6/24 will affect mostly undeveloped areas containing mowed turf grasses, and approximately two acres of active farming land will be taken out of production (see **Section 3.9 Farmlands** for additional details on farmland impacts). Agricultural use is expected to continue at the Airport with only temporary disruptions during construction.

The FAA also provides specific guidance related to land uses within a Runway Protection Zone (RPZ) of a runway end. An RPZ is a trapezoidal shaped area beyond a runway end with the purpose of protecting pilots as well as individuals and property on the ground. Airports are encouraged by the FAA to control the land within an RPZ and clear the areas of incompatible objects and activities if possible. FAA Advisory Circular (AC) 150/5300-13B, Airport Design, states that, "*It is desirable to clear the entire RPZ of all above-ground objects. Where this is impractical, airport owners, at a minimum, should maintain the RPZ clear of all facilities supporting incompatible activities.*" Consultation with the FAA is required when there are new or changed uses planned within an RPZ, or a planned change to an RPZ size or location. Land uses planned within an RPZ that require FAA consultation include:

- Buildings and structures
- Recreational land uses
- Transportation facilities
- Fuel storage facilities
- Hazardous material storage
- Wastewater treatment facilities
- Above-ground utility infrastructure, including solar panel installations.

Figure 3.4 Pittsfield Charter Township Land Use Map



Source: Pittsfield Charter Township

According to FAA AC 150/5200-33C, *Hazardous Wildlife Attractants on or near Airports,* the FAA also requires that consideration be given to the potential increases in wildlife attractants that a project may create and that an assessment be taken of existing incompatible land uses near airports such as solid waste landfills, crops, open water, and wetlands that may act as wildlife attractants.

Summary of Findings: The FAA has not established a significance threshold for land use, or factors to consider when determining significance of a project's effect on land use; however, to determine the potential for land use impacts caused by the Preferred Alternative and No Action Alternative, an evaluation of the proposed action and its compatibility with local land use controls and plans was completed.

No land use classification changes would occur with the Preferred Alternative or the No Action Alternative. No noise sensitive areas (residential, educational, health, religious, park or recreational, wildlife refuges, or cultural and historical) will be introduced or impacted. In compliance with 49 U.S.C. § 47017 (a)(10), the Airport has been proactive in restricting incompatible land uses adjacent to and within the immediate vicinity of ARB when feasible. All construction will take place on existing Airport property and existing land use patterns will remain unchanged. The Preferred Alternative is considered compatible with the existing land uses surrounding the project area.

To determine potential RPZ impacts of the Preferred Alternative and complete the required consultation with the FAA, an RPZ Analysis technical report was completed for Runway 6/24 (found in **Appendix D Runway Protection Zone Analysis**).

The proposed 150-foot runway shift improves the existing RPZ condition at the end of Runway 24 by relocating the RPZ entirely onto land owned by municipal authorities (Airport, City of Ann Arbor, and Washtenaw County Road Commission), so that all land within the RPZ can be controlled by these municipal agencies. The Preferred Alternative improves the existing RPZ environment by eliminating the need for land acquisition or easements to control land uses within these areas.

Although State Street continues to be an incompatible land use within the Runway 24 RPZ of the Preferred Alternative, the RPZ analysis evaluated several build alternatives and found this to the best option for minimizing the impact of existing and future land uses within the RPZ (described in **Chapter 2.0 Alternatives Considered**). The other build alternatives would result in substantial community impacts as State Street would require realignment and reconstruction to be relocated outside the RPZ. The City of Ann Arbor may also mitigate by coordinating with the Washtenaw County Road Commission on potential signage to notify drivers using State Street. See **Appendix D Runway Protection Zone Analysis** for a full evaluation of the potential RPZ impacts of each of the alternatives that were considered to meet the project's Purpose and Need.

The Runway 6 RPZ would be entirely on ARB property with no incompatible land uses. See **Chapter 2.0 Alternatives Considered** for an exhibit of the Preferred Alternative's RPZ.

A Wildlife Site Visit (WSV) was conducted over two days in 2019 by the USDA to assess ARB for wildlife activity and provide recommendations for addressing wildlife and wildlife attractants at the Airport. The WSV technical report and recommendations are found in **Appendix K Wildlife Site Visit**.

During the site visit, USDA personnel observed several species including deer, Canadian geese, red-tailed hawks, and European starlings. The WSV determined that deer and the lack of a deer proof perimeter fence were concerns to Airport operations and the Airport should also consider measures to address avian hazards as well. Specific recommendations from the WSV included:

- Enclosing the airfield with a deer proof fence
- Aggressively culling deer until a wildlife fence can be installed
- Consider phasing out agricultural activity on Airport property
- Develop and implement a comprehensive Wildlife Hazard Management Plan
- Report and review any wildlife strikes
- Monitor wildlife populations and abundance on the ARB property.

As recommended by the USDA, the Airport is removing land from agricultural production and replacing it with ground cover, which is expected to be completed in 2024. In addition, ARB has been working with the USDA to place the appropriate type of ground cover that best deters wildlife. The USDA considers seasonal grasses less of a wildlife attractant than land that is in agricultural production. The Airport is actively investigating implementing the WSV recommendations.

The proposed action will not increase wildlife attractants or introduce new wildlife that are hazardous to aircraft operations. No wetlands, open water, or habitat will be created with the construction of the Preferred Alternative. With the proposed removal of approximately two acres of active farming near Runway 6/24 from the construction of the Preferred Alternative, it is expected that this may result in a reduction in wildlife attractants in the project area.

In addition, neither the Preferred Alternative nor the No Action Alternative are expected to increase congestion, cause degradation of level of service, or permanently close any surface roads within, or adjacent to, the project area. Traffic from construction vehicles would be managed to avoid and minimize any impacts to local roads by defining haul routes and by scheduling the arrival and departure times of construction traffic so that normal traffic patterns are not interrupted. Any potential construction impacts to surface transportation would be temporary in nature.

Based on the above information, it is determined that the Preferred Alternative and the No Action Alternative are compatible with existing and planned land uses and zoning requirements. Land use impacts associated with the proposed action will not be significant based upon the factors described above. The Preferred Alternative reduces incompatible uses within the RPZs when compared to the No Action Alternative.

3.13 Natural Resources and Energy Supply

Executive Order 13834, *Efficient Federal Operations* directs projects to examine the potential changes in the demand for energy or natural resources that would have a significant measurable effect on local

supplies due to the implementation of the Preferred Alternative or the No Action Alternative. Energy requirements associated with an airport usually fall into two categories: (1) those which relate to changed demands for stationary facilities and (2) those which involve the movement of air and ground vehicles. Examples of these include airfield lighting, terminal building heating and cooling systems, and aircraft and passenger vehicles.

As described in 1050.1f *Desk Reference*, 40 CFR § 1502.16(e)(f) of the CEQ regulations require that federal agencies consider energy requirements, natural depletable resource requirements, and the conservation potential of alternatives and mitigation measures be evaluated in NEPA documents. Though specific significance thresholds for natural resource consumption and energy supply have not been established by the FAA, the proposed action should be examined for the potential to cause demand to exceed available or future supplies of these resources.

FAA guidance typically states that airport improvement projects do not generally increase the consumption of energy or natural resources to the point that significant impacts would occur unless it is found that implementation of a proposed project would cause demand to exceed supply.

The facilities at the Airport require electricity and natural gas for lighting, cooling / heating, and operations. The area around the Airport is considered a suburban area with adequate access to natural resources for aircraft operations and construction projects as well as meeting the needs of the surrounding community.

Summary of Findings: Electric or gas use required to operate ARB facilities is not expected to substantially increase because of the proposed project. A small amount of increased energy consumption may result from additional runway and taxiway lighting to support the extensions of Runway 6 and Taxiway A; however, the amount is expected to be negligible. It is the intention of ARB to replace all runway and taxiway lighting with light-emitting diode (LED) lights and not just the proposed extension, to further reduce energy consumption. Aircraft will be required to taxi a slightly longer distance to and from the Runway 6 end due to the runway and taxiway extensions, but a substantial increase in fuel consumption is not anticipated.

The Preferred Alternative will not require the consumption of petroleum-based fuels or other natural resources in quantities that would surpass available supply. Best Management Practices (BMPs) to reduce energy consumption during construction will be employed, where applicable. To reduce energy consumption associated with the temporary use of excavators and vehicles for the Preferred Alternative, construction equipment should be in good working order to ensure the most efficient use of fuel. All vehicles and equipment should be checked for leaks and repaired immediately.

The nature of the project does not lend itself to significant increases in energy or natural resources beyond temporary energy consumption associated with construction of the Preferred Alternative. A slight increase in energy use can be expected with the additional runway and taxiway lighting fixtures, but the increase is negligible and likely offset by the proposed conversion to LED lighting for the runway and the taxiway.

Natural resources and energy supply impacts are not expected from the construction or operation of the Preferred Alternative or implementation of the No Action Alternative.

3.14 Noise and Noise Compatible Land Use

Compatible land use is described in FAA Order 5050.4B*, - NEPA Instructions for Implementing Airport Actions,* as "*the compatibility of existing and planned land uses in the vicinity of an airport is usually associated with the extent of the noise impacts related to that airport*." An FAA noise analysis primarily focuses on how proposed airport actions would change the cumulative noise exposure of individuals to aircraft noise in areas surrounding the airport.

Noise is considered unwanted sound which disturbs or interrupts routine activities. Aviation noise includes sounds made by aircraft during departure, arrival, flight, taxiing, and other activities. The compatibility of land use around an airport is typically determined based on the level of aircraft noise. The degree of annoyance which people suffer from aircraft noise varies depending upon their activities at any given time.

The FAA uses DNL as its primary noise metric. DNL accounts for the levels of aircraft events, the number of times those events take place, and the timeframe in which they occur (day or night). Noise levels greater than 65 DNL on noise sensitive areas are considered a potential impact. The FAA, USEPA, and U.S. Department of Housing and Urban Development have established the 65-decibel DNL level as the threshold for noise impacts over noise sensitive areas.

Noise sensitive areas typically include residential, educational, health, religious structures and sites, parks, recreational areas, wilderness areas, wildlife refuges, and cultural and historical sites. In the context of airport noise, such facilities, or areas within the 65 DNL contour, may be considered a noise sensitive land use.

The AEDT is the FAA-approved software system that dynamically models aircraft performance in space and time to produce noise estimates. AEDT is designed to estimate the long-term effects of noise using average annual input conditions. The AEDT model requires a variety of operational related inputs to model the noise environment around an airport. Common noise modeling inputs include:

- Aircraft Activity Levels
- Aircraft Fleet Mix
- Runway Utilization
- Time of Day
- Surrounding Terrain
- Flight Tracks

To evaluate potential noise impacts from the proposed project, noise modeling was developed for the base year (2019) and for future years 2024 (5-year) and 2029 (10-year) for the No Action Alternative and the Preferred Alternative. As previously mentioned, 2019 data was used because it was the most recent calendar year in which a full 12 months of historical data was available at the time the EA was initiated. Specific modeling scenarios included:

- Baseline (2019)
- 5 Year (2024) - No Project (No Action)

- 5 Year (2024) - With Project (Preferred Alternative)
- 10 Year (2029) - No Project (No Action)
- 10 Year (2029) - With Project (Preferred Alternative)

Noise-sensitive land uses (residential neighborhoods, recreational areas, parks) exist in the project area predominately to the west of the Airport. Other land uses adjacent to the Airport (commercial, manufacturing, and agricultural facilities) are not considered noise-sensitive and were not considered for noise impacts.

Summary of Findings: The noise analysis found that the 65 DNL contour remains completely within ARB owned property under all noise scenarios (2019, 2024, 2029). Noise impacts on noise sensitive land uses within the 65 DNL are not expected. See **Appendix L Noise Analysis** for details on the noise modeling including inputs, methodology, and noise contour maps under different modeling scenarios.

Figure 3.5 Location of 60 DNL

Source: Mead & Hunt Noise Analysis Technical Report

Although the 65 DNL is the standard for determining potential noise impacts on noise sensitive land uses, the noise analysis found that with the construction of the Preferred Alternative, the 60 DNL in years 2024 (5-year) and 2029 (10-year), the 60 DNL narrowly left Airport property in an area that contains a noise sensitive land use at the Runway 6 end. The outer edge of the 60 DNL is in a residential area at the southwest corner of the Airport (**Figure 3.5 Location of 60 DNL**).

Areas near the Runway 24 end where the 60 DNL leaves ARB property, all future noise levels improved over existing conditions because the Preferred Alternative shifts the runway 150 feet to the southwest.

The Airport, in full disclosure, included this 60 DNL point in their analysis to determine potential noise impacts from the proposed project even though the 65 DNL is used for determining impacts.

Potential noise levels at this location were developed and are shown in **Table 3-1 60 DNL Analysis**. Potential noise impacts between the 60 DNL and the 65 DNL are defined as an increase of 3.0 dB or more due to the implementation of the project. Given that no increase above 3.0 dB occurs between the 60 DNL and the 65 DNL under any future year, noise impacts are not expected at this location.

Table 3-1 60 DNL Analysis		
Modeling Scenario	**Noise Levels at Receptor Point**	**Change within 60 DNL to 65 DNL**
5 Year – No Project	57.95 dB	2.15 dB
5 Year – With Project	60.10 dB	
10 Year – No Project	58.10 dB	2.15 dB
10 Year – With Project	60.25 dB	
Source: Mead & Hunt Noise Analysis Technical Report		

Temporary noise will occur due to operations of heavy equipment during construction. Construction staging areas are not allowed near sensitive land uses, and all activity will take place on Airport property. Minimal noise increases from construction are expected.

Based on the findings of the noise analysis described above, significant noise impacts are not expected from the construction or operation of the Preferred Alternative or implementation of the No Action Alternative. No mitigation is proposed. See **Appendix L Noise Analysis** for details on the noise modeling.

3.15 Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety Risks

Statutes related to socioeconomic impacts include the Uniform Relocation Assistance and Real Property Acquisitions Policy Act of 1970 (42 U.S.C. § 61 et seq.). Environmental justice, as defined by the EPA, is the "*fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. EPA has this goal for all communities and persons across this Nation".* Title VI of the Civil Rights Act of 1964 (42 U.S.C. §§ 2000d2000d-7), Executive Order 12898 - *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* and Executive Order 13045 - *Protection of Children from Environmental Health Risks and Safety Risks*, and other federal guidance have been issued to address environmental justice and children's environmental health and safety risks.

Airport development projects can impact the socioeconomic conditions of the surrounding community. Such projects have the potential to impact neighboring populations, including children, and may do so disproportionately to the overall area population. The proposed project was evaluated for socioeconomic and environmental justice impacts as well as health and safety risks to children.

3.15.1 Socioeconomic Impacts

The types of socioeconomic impacts that can arise from airport development projects include:

- Relocation of residences, businesses, or farms
- Alteration of surface transportation patterns that may restrict community access
- Disruption of established communities

- Disruption of orderly, planned development
- Creation of appreciable changes in employment

Table 3-2 Major Employers lists important employers in the region and the number of people employed. The area's major employers and industry are not expected to be adversely impacted by the proposed action and may benefit from access to an improved airport facility and additional development opportunities in the area. In addition, no appreciable changes in employment in Pittsfield Charter Township or the City are anticipated.

Table 3-2
Major Employers

Employer	Industry	# of Employees
University of Michigan	Public University and Health System	34,300 - 34,399
St. Joseph Mercy Health Systems (multiple locations)	Health Care System	5,800 - 5,899
General Motors Proving Grounds	OEM Research	5,500 - 5,599
VA Ann Arbor Healthcare System	Health Care System	2,800 - 2,899
Ann Arbor Public Schools	Public School District	2,500 - 2,599
Toyota Motor North America Research and Development (two locations)	OEM Research	2,200 - 2,299
Faurecia Interior Systems	Automotive Component Manufacturer	1,800 - 1,899
IHA Health Services Corporation	Multi-Specialty Physician Group Practice	1,600 - 1,699
Eastern Michigan University	Public University	1,300 - 1,399
Washtenaw County Government	Government	1,300 - 1,399
Domino's Pizza	Corporate Headquarters	1,000 - 1,099
Thomson Reuters	Software and Information Services for Professionals	1,000 - 1,099
Thai Summit America	Automotive Component Manufacturer	800 - 899
City of Ann Arbor	City Government	700 - 799
Truck Hero Inc.	Automotive Component Manufacturer	700 - 799
Grupo Antolin Interiors	Automotive Component Manufacturer	700 - 799
Zingerman's Community of Businesses	Food Production	700 - 799
IBM Watson Health	Data and Information	700 - 799
Terumo Cardiovascular Group	Medical Device Manufacturer	700 - 799
Citizens Insurance Company of America	Property and Casualty Insurance	700 - 799

Source: Ann Arbor SPARK, January 2022

The Airport is approximately four miles south of downtown Ann Arbor. An estimated 33 percent of the total population of Washtenaw County lived in the City of Ann Arbor in 2019. **Table 3-3 Surrounding Area Population 2010-2019** presents a summary of the population in Ann Arbor and Washtenaw County from 2010 to 2020.

Table 3-3
Surrounding Area Population 2010-2019

Geographic Area	2010	2019	Percent of Change
City of Ann Arbor	113,934	119,890	5.3%
Washtenaw County	344,791	367,601	6.5%
Source: U.S. Census Bureau 2020			

There were 145,041 jobs in Washtenaw County in 2021 and per capita personal income was $45,500. Gross domestic product for the county was $2,860,483,400 (U.S. Bureau of Economic Analysis 2021). The three largest industries were education and government (41,000 individuals employed); health care and social assistance (11,000 individuals employed); and the automotive industry (7,500 individuals employed) (Ann Arbor Spark *Employer Newsletter* January 2023).

Washtenaw County has approximately 159,296 housing units with approximately 61.4 percent of housing units being owner occupied. The median home value in 2020 was $312,585 and in 2022 it was $379,469; representing a 21.4 percent increase. Property values in Washtenaw County have been following the national trend and increasing sharply over the past few years.

Summary of Findings: No residential, business, or farm relocations will be required as part of this proposed project. All development will take place on existing ARB property; therefore, no alteration of surface transportation patterns, community disruptions, or disruptions of orderly, planned development are expected.

During construction activities, temporary impacts on airport operations are expected. The runway would be closed for approximately seven days. Operations would be impacted during construction and flight schedules will require adjustments. Runway closure notice will be given to users with a detailed construction schedule as to provide enough time to adjust flight schedules. It is reasonable to assume that users will modify their flights in anticipation of construction and a measurable impact on their costs is not anticipated. If possible, runway closures will not occur during University of Michigan sporting events expected to draw a large number of attendees flying in for games.

Construction activities would result in a temporary increased need for local construction contractors, which would result in an increase in construction employment opportunities. There would be an increase in demand for local services associated with the construction, but the demand is not anticipated to exceed the existing capacities of the local services in the area. Construction would provide an economic benefit to the region due to increases in payroll taxes, sales receipts, and the indirect purchase of goods and services.

Operation of construction equipment and transport of workers and materials to and from the project site would result in congestion or degrade the current level of service. Traffic volumes would return to pre-project levels upon completion of construction.

Significant socioeconomic impacts from the construction or operation of the Preferred Alternative or implementation of the No Action Alternative are not expected.

3.15.2 Environmental Justice

The purpose of Executive Order 12898 - *Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations*, is to identify, address, and avoid disproportionately high and adverse human or environmental effects on minority and/or low-income populations. Environmental justice is defined as the right to a safe, healthy, productive, and sustainable environment for all, where "environment" is considered in its totality to include the ecological, physical, social, political, aesthetic, and economic environments.

The FAA 1050.1F *Desk Reference* also suggests the following factors as an example of the magnitude to consider when analyzing typical environmental justice impacts. The factors to consider that may be applicable to environmental justice include, but are not limited, to a situation in which the proposed action or alternative(s) would have the potential to lead to a disproportionately high and adverse impact to an environmental justice population, i.e., a low-income or minority population, due to:

- Significant impacts in other environmental impact categories; or
- Impacts on the physical or natural environment that affect an environmental justice population in a way that the FAA determines is unique to the environmental justice population and significant to that population.

In compliance with Executive Order 12898, U.S. Census data was reviewed to determine the characteristics of people living in proximity to ARB. Based on 2020 Census data, the racial composition of the state of Michigan, Washtenaw County, and Ann Arbor is predominately White/Caucasian (data was not available at the township level). Black/African American residents account for the second largest racial group in the state and county, while Asian residents comprise the second largest racial group in the City (**Table 3-4 Racial Diversity**).

As shown in **Table 3-5 2020 Median Household Income**, the annual median household income (in 2020 dollars) of Washtenaw County ($75,730), the City of Ann Arbor ($69,456), and Pittsfield Charter Township ($84,021) are all higher than the state of Michigan ($59,234).

Summary of Findings: A review of Census information and USEPA Environmental Justice Screen showed that areas directly surrounding the Airport and project area do not have high proportions of minority or low-income populations. Given that the project will be constructed entirely within existing Airport property, environmental justice impacts are not expected.

Environmental justice impacts from the construction or operation of the Preferred Alternative or implementation of the No Action Alternative are not anticipated. No mitigation is proposed.

Table 3-4 Racial Diversity		
Geographic Area	**Population**	**Percent**
State of Michigan		
Asian	334,300	3.3%
Black/African American	1,376,579	13.7%
White/Caucasian	7,444,974	73.9%
All Other	921,478	9.1%
Total	**10,077,331**	**100.0%**
Washtenaw County		
Asian	33,632	9.0%
Black/African American	42,819	11.5%
White/Caucasian	257,688	69.2%
All Other	38,119	10.2%
Total	**372,258**	**100.0%**
City of Ann Arbor		
Asian	19,425	15.7%
Black/African American	8,393	6.8%
White/Caucasian	83,702	67.6%
All Other	12,331	10.0%
Total	**123,851**	**100.0%**
Source: U.S. Census 2020		

Table 3-5 2020 Median Household Income	
Geographic Area	**Median Income***
State of Michigan	$59,234
Washtenaw County	$75,730
City of Ann Arbor	$69,456
Pittsfield Charter Township	$84,021
*In 2020 dollars	
Source: 2021 U.S. Census Bureau State & County QuickFacts	

3.15.3 Children's Environmental Health and Safety Risks Impacts

FAA Order 1050.1F requires the identification of any potential environmental health risks to children as stated: *"Environmental health risks and safety risks include risks to health and safety that are attributable to products or substances that a child is likely to come in contact with or ingest, such as air, food, drinking water, recreational waters, soil, or products they might use or be exposed to."*

The FAA has not established a significance threshold for impacts to children's environmental health and safety; however, an analysis should include a determination on a proposed action's potential to cause disproportionate health or safety risks to children.

Summary of Findings: All construction under the proposed action would occur on ARB owned property, and access to the site would be restricted. It is unlikely that the development of either the Preferred Alternative or the No Action Alternative will include products or substances a child is likely to encounter. It is therefore unlikely that either the No Action Alternative or the Preferred Alternative will result in any environmental health or safety risks that could disproportionately affect children.

Children's Environmental Health and Safety Risks Impacts from the construction or operation of the Preferred Alternative or implementation of the No Action Alternative are not anticipated. No mitigation is proposed.

3.16 Visual Effects (Including Light Emissions)

Airport lighting is required for security, obstruction identification, and navigation. The essential lighting systems required to safely operate an airport and its components can contribute to light emissions. When projects introduce new or relocated existing airport lighting facilities that may affect residential or other light-sensitive areas in proximity to an airport, an analysis of these impacts is necessary.

A project can also have impacts on the visual resources and visual character of the surrounding area. Visual resources and visual character impacts are typically related to a decrease in the aesthetic quality of an area resulting from development, construction, or demolition. FAA guidance states that an analysis of visual impacts is necessary when the proposed action would affect, obstruct, substantially alter, or remove visual resources including buildings, historic sites, or other landscape features, such as topography, water bodies, or vegetation, that are visually important or have unique characteristics.

The Preferred Alternative will require the installation of new lights and the relocation of existing NAVAIDs, as part of construction. Proposed lighting infrastructure includes:

- Relocation of Visual Approach Slope Indicator (VASI) lights
- Relocation of Precision Approach Path Indicator (PAPI) lights
- Relocation of FAA owned Runway End Identifier Lights (REILs)
- Extension of runway and taxiway lights to match relocated Runway 6/24 and Taxiway A

Summary of Findings: The Preferred Alternative will require some additional runway and taxiway lighting fixtures including the relocation of existing NAVAIDs (VASI, PAPI, and REILs). However, the additional lighting fixtures and NAVAID relocations are not anticipated to affect the Stonebridge residential or other light-sensitive areas in the project area, particularly across Lohr Road. Although the proposed action would shift and extend Runway 6 approximately 870 feet closer to Lohr Road (150-foot shift and 720-foot extension), the end of Runway 6 would still be approximately 0.25 miles from any residential properties. A large unmaintained vacant area (approximately 25 acres) with low growing woody vegetation is located between the end of Runway 6 and Lohr Road, thus acting as a visual shield for most residential homes. In

addition, evening and nighttime runway lights are controlled by pilots and normally turned off unless needed by operating aircraft.

No light sensitive land uses were identified in the Runway 24 viewshed. Visual effects improve at the end of Runway 24 as the Preferred Alternative shifts the existing runway and associated lighting fixtures 150 feet closer onto ARB property over existing conditions.

Visual Effects (including light emissions) impacts from the construction or operation of the Preferred Alternative or implementation of the No Action Alternative are not anticipated. No mitigation is proposed.

3.17 Water Resources

FAA Order 1050.1F references the Clean Water Act (CWA), described in 33 U.S.C. §§ 1251-1387, which provides the federal government with the authority to regulate activities related to water quality, including controlling discharges, preventing or minimizing loss of wetlands, and protecting local aquifers or sensitive ecological areas. In essence, the quality of surface water and groundwater should not be degraded by the planned construction or operations associated with a proposed development.

Water resources are surface waters and groundwater which are important to the ecosystem and the human environment. Analysis of water resources includes checking for disruption as well as changes in quality. Because wetlands, floodplains, surface waters, groundwater, and other water resources are all connected within the overall system, this section encompasses an analysis of each.

3.17.1 Wetlands

Wetlands are areas that support specific vegetation due to inundation or saturation by ground water. Sometimes these are called swamps, marshes, or bogs. Wetlands provide benefits to the natural and human environments that include habitat, water filtration, storage, and recreation. There are several statutes, regulations, orders, and other requirements related to wetlands. The CWA regulates the discharge of pollutants into Waters of the U.S. (including wetlands) and establishes a program to regulate discharge of fill material into such waters as well as requires projects not to violate water quality standards.

Surface waters or wetlands considered jurisdictional are regulated under the CWA; however, not all surface waters are under the authority of the CWA. The jurisdictional determination is made on a case-by-case basis by the United States Army Corps of Engineers (USACE). Non-jurisdictional wetlands are protected under Presidential Executive Order 11990, *Protection of Wetlands*, commonly known as the “No Net Loss” Executive Order. This Executive Order directs any project that uses federal funds or is federally approved to mitigate for all wetland impacts that it causes regardless of size or regulatory status. Therefore, any wetland impacts as a result of the Preferred Alternative will require mitigation.

To determine the locations and limits of area wetlands, appraise their types and functions, assess their regulatory status, and evaluate potential impacts from the proposed project, a USACE compliant wetland delineation was conducted by a qualified wetland biologist within an 82.2-acre

Area of Interest (AOI) on ARB property in October 2018 and June 2019. All wetland delineations conformed 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: Midwest Region*. All delineated wetlands were reviewed and verified by a qualified MDOT AERO biologist. The full wetland delineation report is provided in **Appendix M Water Resources**.

The AOI was split into two sections situated at the runway ends: approximately 10.4 acres at the Runway 24 end and 71.8 acres at the Runway 6 end. Nearly all infield areas consisted of grasses and forbs and are mown on a regular basis. Most of the area to the west of the active airfield is in agricultural production as is a parcel south of the main runway. The airfield is relatively flat with little elevation change over the active airside areas.

At the time of field work, many areas within the AOI had been mowed, with adequate regrowth observed, making vegetation identifiable in most cases. A large, wooded area at the southwest corner of Airport property outside of the Airport fence was not delineated although it was part of the project AOI. It was determined that direct or indirect impacts were unlikely given its considerable distance from the runway and the proposed area of construction.

A total of three separate jurisdictional wetland complexes totaling 3.232 acres (140,764.513 sq. ft) were delineated within the AOI as shown on **Figure 3.6 Water Resources Map**. **Table 3-6 Summary of Delineated Wetlands within the Area of Interest** summarizes the delineated wetlands.

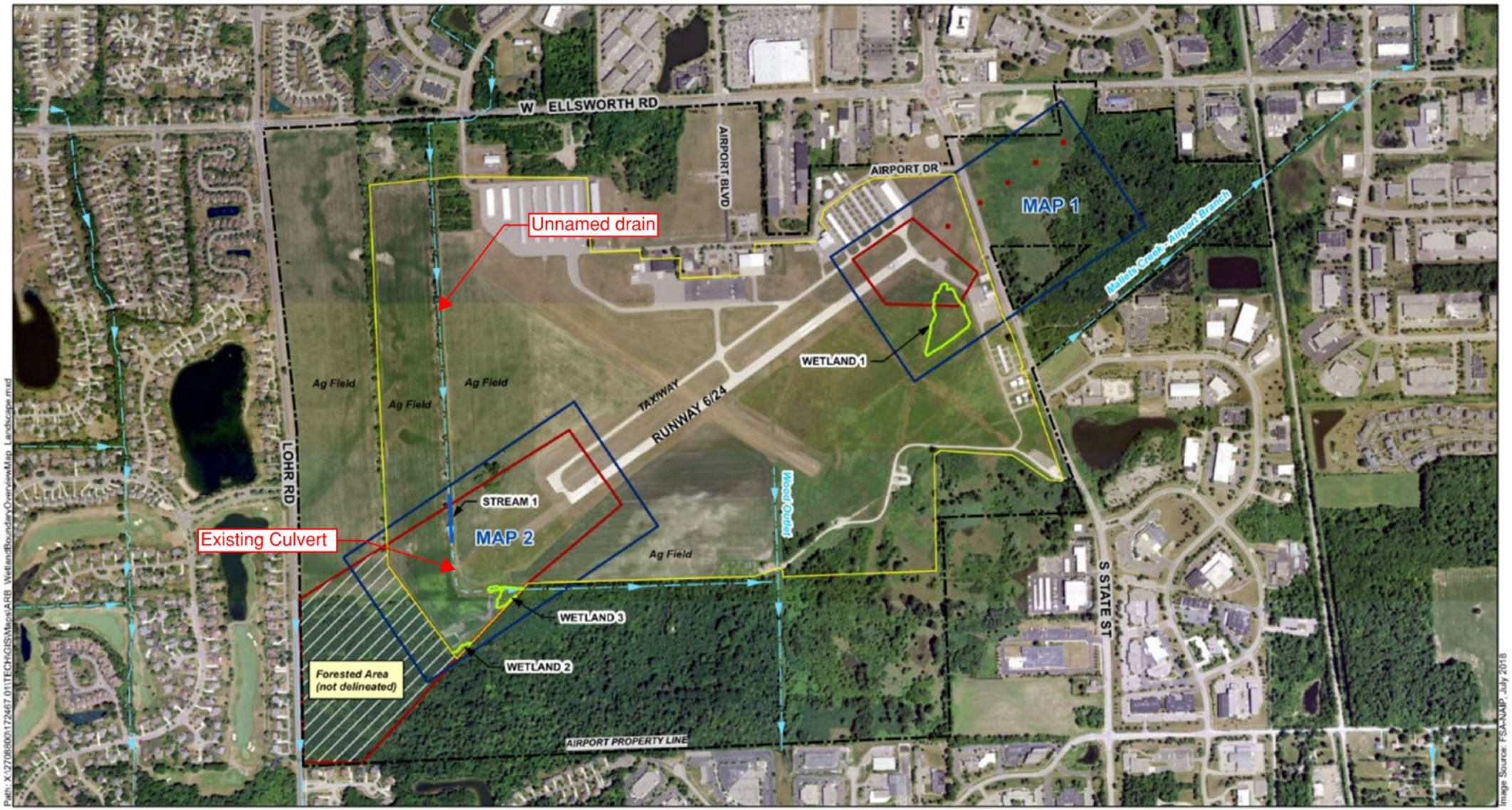
Table 3-6
Summary of Delineated Wetlands within the Area of Interest

Wetland	Type	Dominant Vegetation	Total Area within AOI (Acres)	Total Area within AOI (Sq. Ft)
1	PEM1	Reed canary grass	2.582	112,453.367
2	PEM1	Reed canary grass	0.144	6,269.759
3	PEM1	Cattail; reed canary grass	0.506	22,041.387
Total			**3.232**	**140,764.513**

Source: *Wetland Delineation Report, Ann Arbor Municipal Airport, Runway 6/24 Extension*, prepared by Mead & Hunt, Inc., December 2019

Wetland 1 is a large shallow triangular basin located in the northern portion of the AOI. The wetland plant community is dominated by emergent vegetation within its core. The taxilane and east apron pavement confines the eastern side of the wetland. The southern and western boundaries are formed by remnant portions of the original Airport pavement sections, now covered by vegetation.

Figure 3.6 Water Resources Map



Wetland Boundary Map Overview
Ann Arbor Municipal Airport

Data Sources:

Streams: Washtenaw County

Legend

- Project Area of Interest (AOI)
- Area not delineated
- Ditch
- Wetland
- Piped Drainage
- Stream
- Wetland Map Sheet
- Airport Property Boundary
- Fence

0 250 500 1,000 1,500 Feet

N

Project Location

T3S, R6E, Sections 16 and 17
Ann Arbor Municipal Airport
Washtenaw County, MI
LRR subregion: M
USACE Regional Supplement: Midwest
Area of Interest = 82.2 acres
Field work conducted: October 10, 2018 and June 3 - 6, 2019

Source: *Wetland Delineation Report, Ann Arbor Municipal Airport, Runway 6/24 Extension*, prepared by Mead & Hunt, Inc., December 2019

Wetland 2 is in a low shallow area at the western corner of the Airport fence line. The wetland plant community is dominated by emergent vegetation while the fence is lined with mature 25-30-foot buckthorn trees. The wetland continues beyond the fence. From an analysis of historic aerial imagery, this area was covered by a tree and shrub plant community until about 2008.

Wetland 3 is a small depressional area dominated by emergent vegetation including cattails and reed canary grass. The wetland is located to the east of a culvert exiting from a wide berm, which carries flows from the north through the Wood Outlet Drain. A portion of the drain is carried through reinforced concrete pipe and daylights about 250 feet short of a connecting culvert under the Airport fence to an open channel drain beyond ARB property. This wetland is fed by drainage exiting from the culvert.

Summary of Findings: It is unlikely that regulated wetlands will be impacted by the construction of the Preferred Alternative as preliminary design indicates that all wetland areas can be avoided resulting in no wetland impacts expected. Indirect impacts to wetland water quality are not anticipated for the reasons discussed in **Section 3.17.3 Surface Water**.

No wetland impacts are expected with the No Action Alternative.

During final design of the Preferred Alternative, if design modifications cause impacts to regulated wetlands, coordination with EGLE will be required to determine appropriate permitting and mitigation activities. If impacts are identified, a Part 303, PA451 *Wetland Protection Permit* would be required prior to construction activities. All delineated wetlands will be shown on construction plans to protect them from any possible direct or indirect impacts and construction documents will require avoidance and erosion control measures.

Wetland impacts from the construction or operation of the Preferred Alternative or implementation of the No Action Alternative are not anticipated. No mitigation is proposed. See **Appendix M Water Resources** for the full wetland delineation report including maps, data sheets, and plant lists.

3.17.2 Floodplains

Executive Order 11988, *Floodplain Management*, defines floodplains as "*the lowland and relatively flat areas adjoining inland and coastal waters including flood-prone areas of offshore islands, including at a minimum, that area subject to a one percent or greater chance of flooding in any given year.*" Executive Order 11988 discourages federal actions in a floodplain unless no practicable alternative exists and requires measures to minimize unavoidable short-term and long-term impacts if the proposed action occurs in a floodplain.

A floodplain is a flat, low area adjacent to a stream, river, or creek which may be flooded during high water flow conditions. A 100-year floodplain includes the area that has a one percent (1%) chance of flooding in any given year. Projects within a 100-year floodplain are discouraged.

Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) were obtained for the project area to evaluate potential floodplain impacts. FIRMs indicated that regulated floodplains are found throughout the project area. These floodplain maps are presented in **Figure 3.7 Floodplain Map – Approach End of Runway 6** and **Figure 3.8 Floodplain Map – Approach End of Runway 24**.

Summary of Findings: According to the FIRMs, the project area at the approach end of Runway 24 is outside the 100-year floodplain that is located east of South State Street, but the area southwest of the existing Runway 6 threshold is located within a 100-year floodplain associated with the Wood Outlet drain.

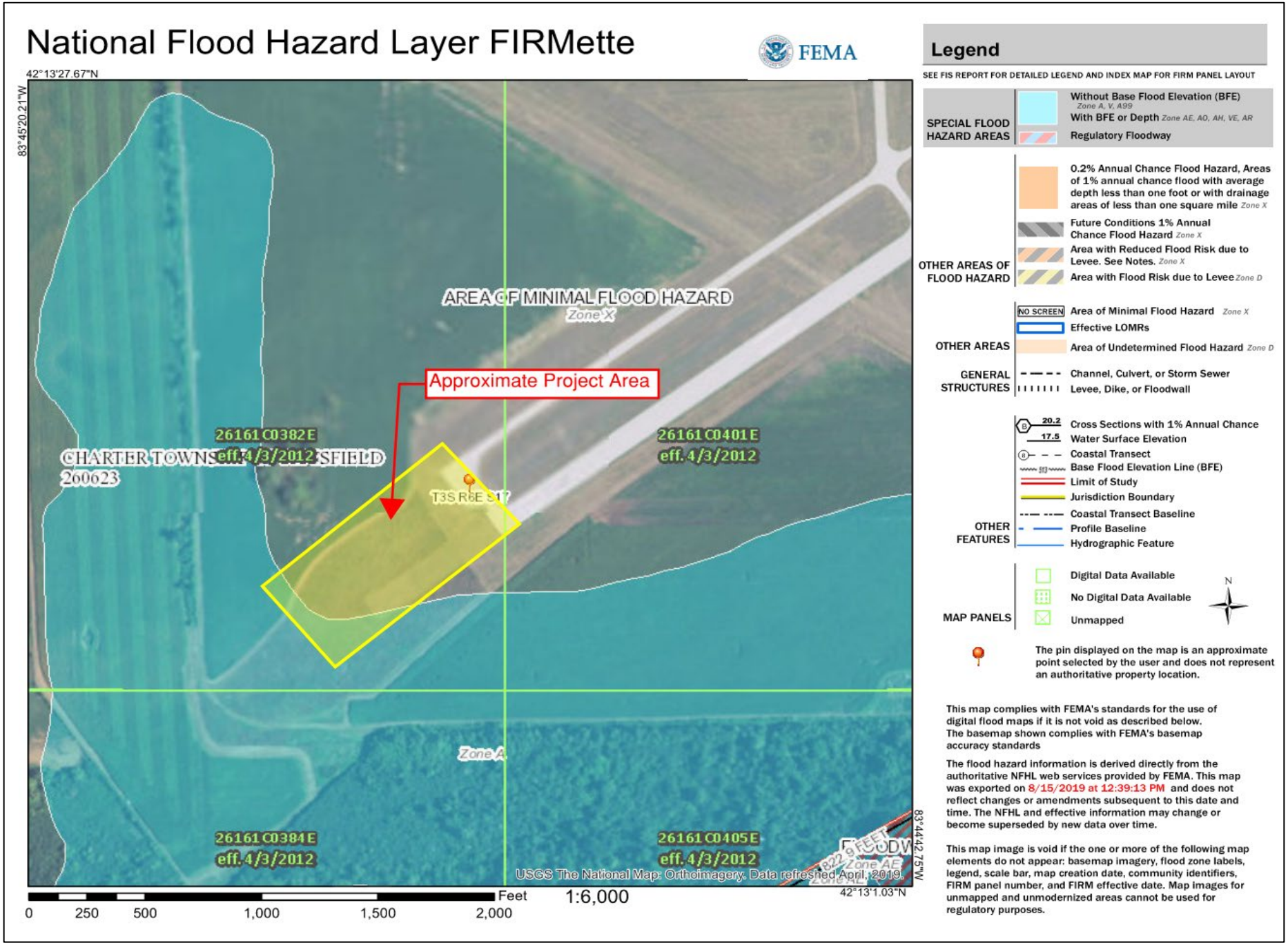
At the state level, EGLE's threshold for determining impacts is the deposit of 300 cubic yards or more of fill material placed in a regulated floodplain. Any fill material above 300 cubic yards is considered an impact and requires a permit and compensating mitigation. Although final earth moving quantities have not been calculated to determine the amount of fill expected to be placed within the regulated floodplain, it is anticipated that the 300 cubic yard criterion may be exceeded under the Preferred Alternative. In particular, the Runway Safety Area (RSA) of the Runway 6 extension is anticipated to minimally extend into the floodplain, requiring grading and deposition of fill material due to changes in topography in this area. The exact quantity of fill material to be deposited in the floodplain will be determined during final project design. Final design will attempt to reduce or eliminate floodplain impacts to the greatest extent possible.

The Draft EA was reviewed by EGLE and they had no comments or concerns regarding potential loss of natural or beneficial values of the floodplain. Since minor floodplain impacts are anticipated, EGLE directed the completion of a Part 31, *Floodplain Permit*. Proposed mitigation will be a compensating cut of material within the limits of the same floodplain in an area not classified as a protected resource (e.g. wetland or threatened or endangered species habit). The compensating cut of material will result in a no net loss of flood storage in the project area. Final mitigation requirements are at the discretion of EGLE.

Alternatives to avoid floodplain impacts were investigated. Other alternatives (described in **Chapter 2.0 Alternatives Considered**) were found to likely impact floodplains but to a lesser degree than the Preferred Alternative. No potential floodplain impacts from any of the alternatives including the Preferred Alternative were considered a "significant flood encroachment" as defined in FAA 1050.1F *Desk Reference*. Given that most of the floodplain is currently agricultural row crops and the area's lack of quality habitat, natural and beneficial floodplain values are not expected to be significantly impacted.

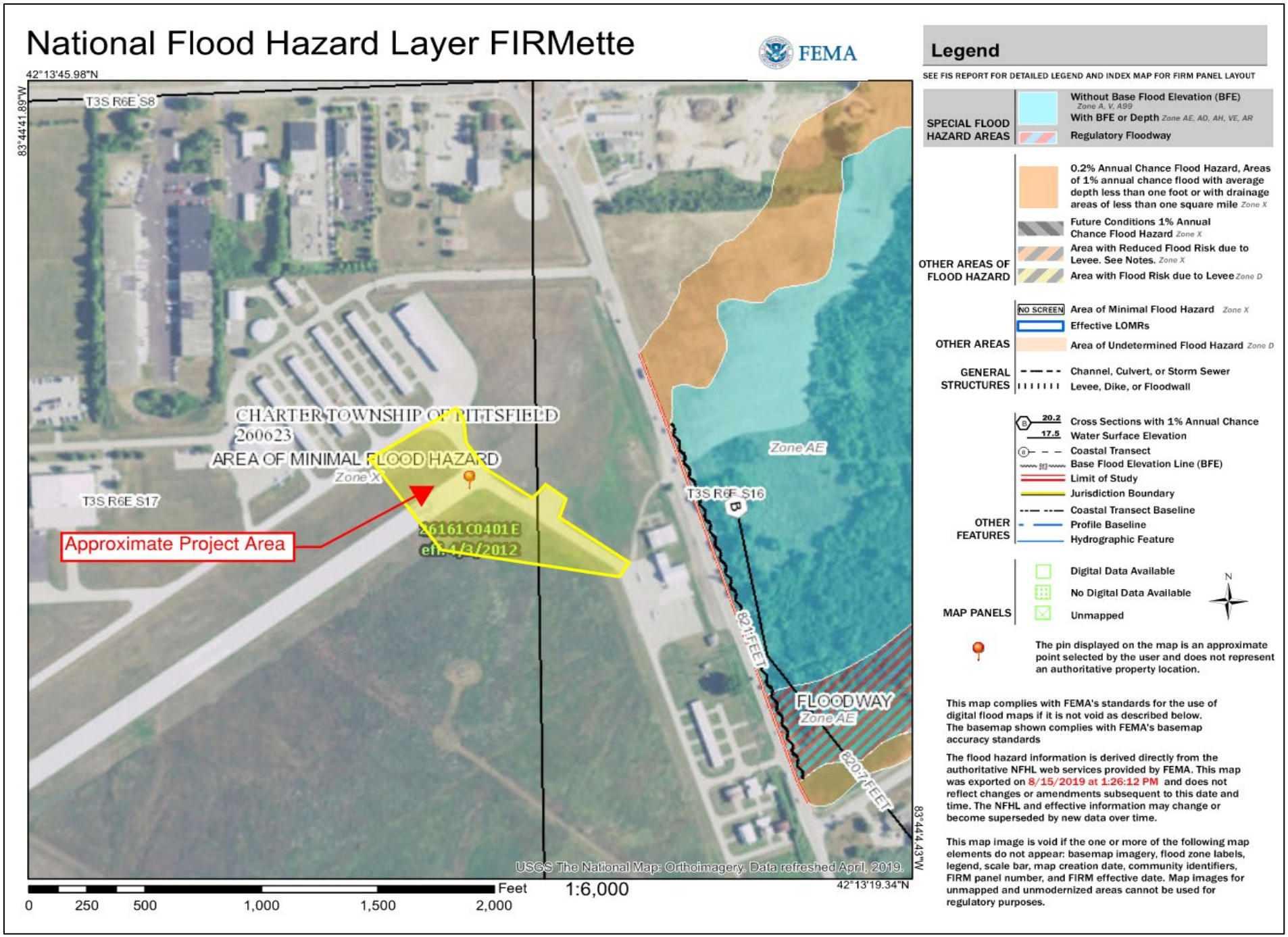
Although the Preferred Alternative is likely to have the greatest impacts to floodplains of all the alternatives, impacts are still considered minor and easily mitigated through the EGLE permitting process. No impacts are expected with the No Action Alternative.

Figure 3.7 Floodplain Map – Approach End of Runway 6



Source: Federal Emergency Management Agency

Figure 3.8 Floodplain Map – Approach End of Runway 24



Source: Federal Emergency Management Agency

3.17.3 Surface Water

The CWA, in conjunction with the Fish and Wildlife Coordination Act (16 U.S.C. §§ 661-667d), Rivers and Harbors Act (33 U.S.C. § 401 and 403), the Safe Drinking Water Act (SDWA) found in 42 U.S.C. §§ 300(f)-300j26, and other local statutes, establish regulations that protect the Nation's water resources. Surface waters are typically lakes, rivers, streams, creeks, and wetlands. Surface waters collect the water from precipitation which does not infiltrate the soil and instead flows across the land. Surface waters can be hydrologically connected to groundwater.

As explained above, a wetland delineation was completed for the 82.2-acre AOI on Airport property over two field visits in October 2018 and June 2019. As part of these field visits, surface water resources other than wetlands were also delineated.

During field investigations three drains were identified that traverse ARB property. At the approach end of Runway 6, an unnamed drain carries flows from the north and joins Wood Outlet Drain before continuing to the south off Airport property. A portion of the unnamed drain, as it turns to the east, is carried through a reinforced concrete pipe (culvert). Another drain, the Mallets Creek – Airport Branch, is in the Runway 24 approach east of State Street and flows to the northeast. Both the Wood Outlet Drain and the Mallets Creek – Airport Branch are classified by the USEPA as impaired streams.

Culvert for the Unnamed Drain

The USEPA's NEPAssist database was also reviewed to determine the presence of other surface water resources located outside of, but in proximity to the Airport and the AOI. These water resources included:

- Eight unnamed ponds/lakes west of Lohr Road
- Five unnamed pond/lake north of W Ellsworth Road
- Four unnamed ponds/lakes east of S State Street
- One unnamed pond/lake southeast of ARB property, west of S State Street
- One unnamed pond/lake east of Lohr Road, south of ARB property

A portion of the unnamed drain measuring 300.2 linear feet was delineated with findings summarized in **Table 3-7 Summary of Streams within the Area of Interest**. The delineated section of the unnamed drain is designated as "Stream 1" on **Figure 3.6 Water Resources Map**. The full length of the unnamed stream was not delineated. Only the section of the unnamed drain within the AOI and closest to the proposed area of construction of the Preferred Alternative was evaluated. The remainder of the unnamed drain was considered outside of the AOI and unlikely to experience any impacts from the proposed project.

Stream 1 is a narrow steep-sided open channel drain flowing to the south. Stream 1 is the portion of this channel north of the culvert entrance within the AOI. The stream width (top of bank) is 15-20 feet with the channel depth approximately 10-12 feet. Water was flowing in the stream at the time of the field investigation. The width of flow was two to three feet with six to eight inches of water depth. Flow through the mostly silty stream bottom was clear with no noticeable odor. The ordinary high-water mark was determined along the bed-and-banks and by observing a change in the plant community. No scour, deposition, shelving, litter/debris, or wracking was observed. No other water bodies were identified within the AOI during the delineation.

Table 3-7
Summary of Streams within the Area of Interest

Stream	Type	Dominant Vegetation	Total Length within AOI (Linear Ft)
1	R4	Buckthorn, green ash, American elm; amur and tatarian honeysuckle, Dame's rocket, smooth brome, poison ivy	300.2

Source: *Wetland Delineation Report, Ann Arbor Municipal Airport, Runway 6/24 Extension*, prepared by Mead & Hunt, Inc., December 2019

Summary of Findings: The RSA and Runway Object Free Area (ROFA) of the proposed Runway 6 extension will intersect the unnamed drain described above; however, the ditch flows inside an existing reinforced concrete culvert at this location. Preliminary design indicates that drain impacts can be avoided. No alignment changes or construction impacts to the unnamed drain are expected. However, if drain impacts are later identified because of design modifications of the Preferred Alternative, coordination with EGLE will be required to determine appropriate permitting and mitigation activities. Other surface water resources (ponds/lakes) in the vicinity of the Airport will not be impacted by the proposed project since they are well outside of the project area.

The proposed construction of the Preferred Alternative will increase impervious surface areas and likely increase storm water runoff. New impervious surfaces are estimated to be 1.88 acres (81,893 square feet). To protect surface and ground water resources, it is proposed that runoff be directed into the Airport's existing storm water management system. Storm water runoff will drain into the Airport's existing drainage system in accordance with its Stormwater Pollution Prevention Plan (SWPPP). The SWPPP will also be updated to include BMPs to reduce erosion and discharge of pollutants from construction activities.

Soil erosion is a source of concern due to possible adverse impacts to surface waters from construction projects. Since the Airport site is generally flat, there is not expected to be a high risk of soil erosion during excavation and other ground disturbing activities. However, some amount of erosion may occur during construction, which will be minimized through the use of appropriate BMPs. The following list of BMPs represents common erosion control measures that should be considered during construction and applied where applicable:

- Sediment traps
- Temporary cement ponds
- Temporary grassing of disturbed areas
- Vegetation cover replaced as soon as possible
- Erosion mats and mulch
- Silt fencing and drainage check dams
- Settling basins for storm water treatment

All excavated soils and staging areas for construction equipment will be placed in non-sensitive upland areas with disturbed areas replanted as soon as possible to reduce the likelihood of erosion.

Mitigation measures prepared under an erosion control plan, in accordance with FAA AC 150/5370-10H, *Standards for Specifying Construction of Airports*, will help minimize long-term impacts to area water quality and to the existing drainage system.

In accordance with Part 91, Michigan Soil Erosion and Sedimentation Control of the Natural Resources and Environmental Protection Act, 1994 Public Act 451, as amended, a soil erosion permit and a storm water runoff control permit are required from Pittsfield Charter Township.

The Airport is also required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for construction activity disturbing one acre or more of soil. Permittees are required to control runoff from construction sites and develop a construction SWPPP that includes erosion prevention and sediment control BMPs.

Surface water impacts from the construction or operation of the Preferred Alternative or implementation of the No Action Alternative are not anticipated.

3.17.4 Ground Water

Ground water is water that is below the surface of the ground within the spaces between soil and rock formations. Ground water quality is primarily governed under the SDWA administered by the USEPA. The study area for ground water includes all areas where the ground could be disturbed by construction of the Preferred Alternative, where impervious surfaces could change rates of ground water infiltration, where airport operations could increase spills or leaks, and where construction vehicles and other equipment could potentially impact ground water due to staging, machinery, storage, and spills.

In evaluating ground water resources in the project area, the following databases were reviewed:

- USEPA Sole Source Aquifer for Drinking Water Database and Mapping Tool
- EGLE Open Data GIS dataset for water wells in south central and southeastern Michigan
- EGLE Open Data GIS dataset for wellhead protection areas in Michigan

The USEPA maintains a database of ground water sources that serve as the sole source of drinking water for a population. According to this database, the proposed project is not within a Sole Source Aquifer for Drinking Water.

The EGLE maintains several databases of water wells and wellhead protection areas in Michigan. According to EGLE's Open Data water wells GIS dataset for southcentral and southeastern Michigan, there are several water wells on ARB property, all of which are outside the proposed project area, as shown in **Figure 3.9 Water Wells**.

Wellhead protection areas represent the land surface area that contributes ground water to wells serving public water supply systems throughout Michigan. The wellhead protection areas define a landscape in which management strategies are employed to protect public water supply from ground water contamination. According to EGLE's Open Data wellhead protection dataset, ARB property is entirely within a wellhead protection area, as shown in **Figure 3.10 Wellhead Protection Areas**.

Summary of Findings: The construction of additional impervious surfaces within a project area can decrease the area of land available for water infiltration. Under the Preferred Alternative, a net increase of approximately 1.88 acres (81,893 square feet) of impervious surfaces will occur due to new pavement construction. The proposed action will slightly decrease groundwater infiltration within the project area due to the additional impervious surfaces; however, this is not expected to tangibly impact ground water recharge rates or impact public water supply.

Based on the information above, no violations to water quality standards under the SDWA are anticipated with the Preferred Alternative since no water wells are within the proposed project area. However, since ARB is located within a wellhead protection area, FAA AC 150/5320-15A, *Management of Airport Industrial Waste* will be implemented and the following ground water BMPs should be considered to prevent and minimize impacts to ground water in the project area:

- Schedule construction activities for dry weather periods, if possible.
- Designate a contained area for equipment storage, short-term maintenance, and refueling at least 100 feet from wetland areas.
- Routinely inspect vehicles and equipment for leaks and repair immediately.
- Clean up leaks, drips, and other spills immediately to avoid soil or surface water contamination.

- Ensure that all spent fluids including motor oil, radiator coolant, or other fluids and used vehicle batteries are collected, stored, and recycled as hazardous waste off site.
- Ensure that all construction debris is taken to appropriate landfills and all sediment disposed of in upland areas or off-site.

In addition, ARB is not certified under 14 CFR Part 139, which is a certification requirement for airports that have regularly scheduled commercial air service. As a part of Part 139 requirements, airports must have aircraft rescue and firefighting (ARFF) capabilities requiring the use of Aqueous Film-Forming Foam (AFFF) containing per- and poly-fluoroalkyl substances (PFAS). ARB is not certified under Part 139, nor has it had an on-site firefighting department; thus, an evaluation of PFAS was not conducted since AFFF has not been used at ARB.

Ground water impacts from the construction or operation of the Preferred Alternative or implementation of the No Action Alternative are not anticipated.

3.17.5 Wild and Scenic Rivers

Wild and Scenic Rivers are those resources that have extraordinary scenic, recreational, geologic, ecosystem, historic, or cultural value as defined in the Wild and Scenic Rivers Act. The Wild and Scenic Rivers Act (16 U.S.C. §§ 1271-1287) creates a national system intended to preserve certain rivers in a free-flowing condition for current and future enjoyment. The national system is administered by the Bureau of Land Management (BLM), the National Park Service (NPS), the USFWS, and the United States Forest Service (USFS). The land surrounding a protected river or river segment determines the agency that administers the national system.

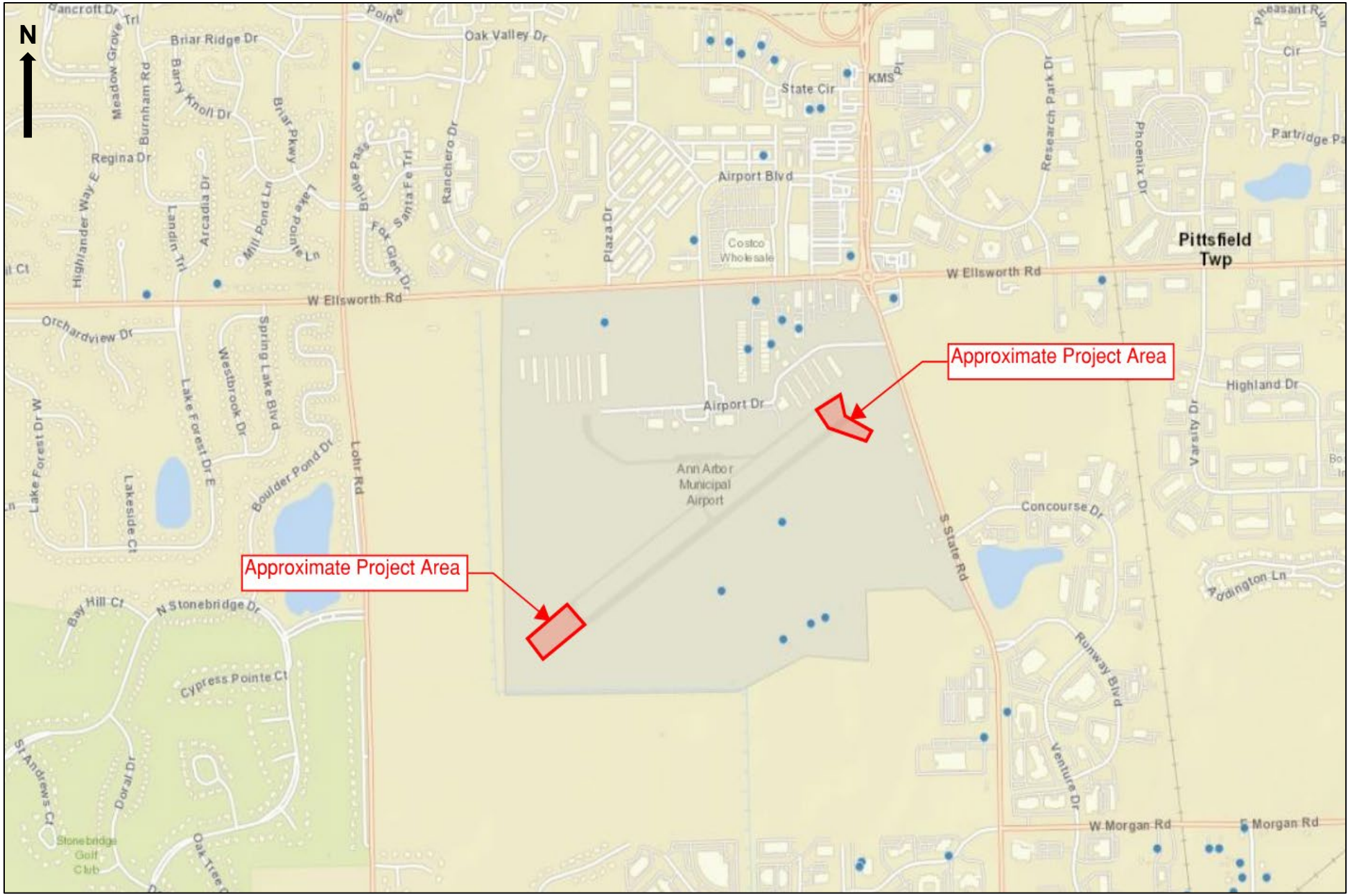
The Nationwide Rivers Inventory (NRI) is a list maintained by the NPS which identifies river segments that possess remarkable natural or cultural values and are of more than local or regional importance. All Federal agencies are required to avoid or mitigate impacts to NRI segments.

According to the National Wild and Scenic Rivers System website, there are no rivers in the National Wild and Scenic Rivers System in Washtenaw County. The closest protected river is the Pere Marquette River, which is approximately 155 miles northwest of ARB.

According to the NPS, the Huron River, a portion of which flows through downtown Ann Arbor, is listed on the NRI. The Huron River is approximately 4.2 miles northwest of ARB at its closest point.

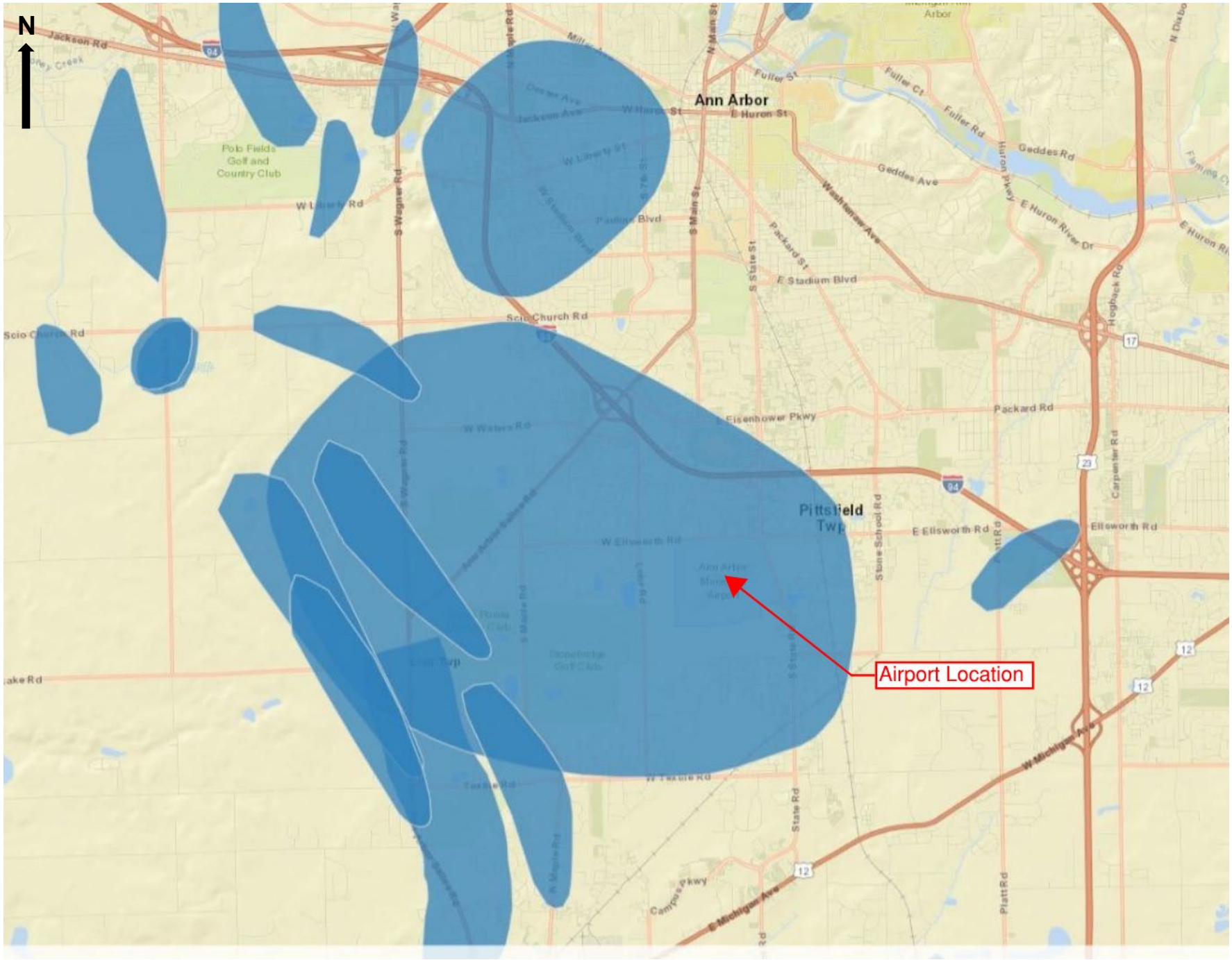
Summary of Findings: There are no Wild and Scenic Rivers located at or within proximity of the project area. The closet NRI river (Huron River) is located more than four miles from the Airport. Impacts to Wild and Scenic Rivers and NRI resources are not anticipated with the construction or operation of the Preferred Alternative or implementation of the No Action Alternative. No mitigation is proposed.

Figure 3.9 Water Wells



Source: Michigan Dept. of Environment, Great Lakes, and Energy, Wellogic

Figure 3.10 Wellhead Protection Areas



Source: Michigan Dept. of Environment, Great Lakes, and Energy, Wellhead Protection Areas

3.18 Cumulative Impacts

Cumulative impacts on the environment commonly result from the incremental change of an action when added to past, present, and reasonably foreseeable development in the area that is not directly associated with the Preferred Alternative, regardless of what agency or person undertakes such actions. According to FAA Order 5050.4B, reasonably foreseeable actions include those "*on or off-airport that a proponent would likely complete and that has been developed with enough specificity to provide meaningful information to decision makers and the interested public."* In some cases, the individually minor impact of separate projects can have substantial effects when considered together over time.

The City of Ann Arbor's Capital Improvements Plan (CIP) outlines a schedule of public service expenditures over the ensuing six-year period (fiscal years 2022–2027). The projects planned at ARB during the 2022-2027 period and the expected years of construction are listed below:

- Precision Approach Path Indicator Runway 24 Installation – 2022 and 2023
- Runway Safety Extension – 2022 and 2023
- Airport Access Road Reconstruction (Airport Boulevard) – 2023 and 2024
- F Row Small Box Hangers (up to four hangars) - 2023
- New Corporate Hangar – 2024
- Six Box Hangars – 2024
- Taxilane for Box Hangars – 2024
- Airport Looping Water Main – 2024 and 2025
- Terminal Auto Parking Lot Expansion – 2025 and 2026
- Airport Stormwater Detention Pond and System – 2026
- Reconstruct Southeast and Northeast Taxiways – 2026
- Terminal Expansion – 2027

Very few improvement projects have been completed at ARB over the last few years beyond routine maintenance activities. The Airport's efforts have been directed at completing the needed Runway 6/24 shift and extension project covered in this EA. One past project of note was the removal of seven ODALS by the FAA located east of State Street in 2021. No environmental impacts were associated with that project.

In addition to the Airport specific projects outlined in the City's CIP, there are other transportation and utility projects included in the plan. Future non-airport projects in the vicinity of ARB during the 2022-2027 period include:

- Ellsworth Road (State Street to Stone School Road) Sidewalks – 2022
- Oakbrook Drive Extension (West of State Street) – 2024 - 2026
- Streetlights: Ann Arbor-Saline Road Corridor – 2024

The Washtenaw County Road Commission also is responsible for construction projects in the vicinity of the Airport. A review of their current projects near the Airport include:

- Mill and Resurfacing of Lohr Road – 2022

- Chipsealing of Ellsworth Road – 2022
- Install Traffic Signal at the intersection of Ellsworth Road and Oak Valley Road - 2022

Other federal or federally assisted transportation improvement activities in Washtenaw County are conducted by MDOT. ARB exists within MDOT's University Region in the southern portion of the state. According to the 2022-2026 Five-Year Transportation Program, MDOT proposes to complete the following bridge and road projects within a five-mile radius of ARB:

- 2022 – Bridge Replacement and Preservation – Jackson Avenue Westbound, I-94 Bridge over I-94 Ramp (Overlay – Epoxy)
- 2022 – Bridge Replacement and Preservation – U.S. 12 Bridge Over I-94 (Overlay – Epoxy)
- 2022 – Bridge Replacement and Preservation – Willis Road Bridge Over U.S. 23 (Deck Replacement)
- 2022 – Bridge Replacement and Preservation – Bemis Road Bridge Over U.S. 23 (Healer Sealer)
- 2022 – Repair and Rebuild Roads – 6.830 miles of U.S. 23 from Stony Creek Road to Ellsworth Road (Road Rehabilitation)
- 2023 – Repair and Rebuild Roads – 3.658 miles of M-14 from I-94 to U.S. 23 (Road Rehabilitation)

Summary of Findings: Despite their proximity, the above-described projects are not expected to result in cumulative impacts when considered with the construction of the Preferred Alternative. Given the minor project related impacts, it is unlikely the construction of the Preferred Alternative, when viewed in light of past, current, and future planned actions, would result in significant cumulative impacts.

Although many current and future non-airport related projects are proposed well outside the Airport environ, coordination between the Airport, the City, Washtenaw County Road Commission, and MDOT is recommended in order to minimize any potential impacts. All future actions on or off Airport property will be subject to avoidance and minimization studies and will undergo agency review and permitting, as required.

Cumulative impacts are not anticipated with the construction or operation of the Preferred Alternative or implementation of the No Action Alternative. No mitigation is proposed.

3.19 Irreversible and Irretrievable Commitment of Resources

An "irreversible or irretrievable commitment of resources" refers to impacts on or losses to resources that cannot be recovered or reversed. Examples include permanent conversion of wetlands, loss of cultural resources, soils, wildlife, agricultural production, or socioeconomic conditions.

"Irreversible" is a term that describes the loss of future options. It applies primarily to the impacts of use of nonrenewable resources, such as minerals or cultural resources, or to those factors, such as soil productivity, which are renewable only over long periods of time.

"Irretrievable" is a term that applies to the loss of production, harvest, or use of natural resources. For example, if farmland is used for a non-agricultural event, some or all of the agricultural production from an area of farmland is lost irretrievably while the area is temporarily used for another purpose. The production

lost is irretrievable, but the action is not irreversible. FAA guidance states that any irreversible or irretrievable commitments of resources which would be involved in the proposed action or reasonable alternative(s) must be identified.

Summary of Findings: Some natural or human-made resources will be spent or produced during implementation of the proposed action such as fuel, construction materials, and debris. Whenever possible, construction materials will be recycled and/or reused to limit waste rather than be discarded in local landfills. Consideration will also be given to the USEPA's *Sustainable Management of Construction and Demolition Materials* and *Large-Scale Residential Demolition* recommended practices and implemented where feasible. However, the Airport is required to follow FAA AC 150/5320-15A, *Management of Airport Industrial Waste* and AC 150/5300-13B, *Airport Design* during construction.

It is unlikely that irreversible or irretrievable commitment of resources will be lost beyond the minor impacts to a floodplain and farming activities at the Runway 6 end. Mitigation for floodplain impacts is easily met by a compensating cut of material in the same floodplain resulting in a no net loss of flood storage. The farmland is excepted from regulatory protection since the project area is in an Urbanized Area. Other environmental resources, such as protected habitat or archeological sites or historic properties, will not be physically altered or destroyed under the proposed project.

Significant impacts to irreversible and irretrievable commitment of resources is not likely with the construction or operation of the Preferred Alternative or implementation of the No Action Alternative. No mitigation is proposed.

3.20 Other Project Considerations

This section discusses other items that, while not specifically covered in previous sections, are important to the understanding of the project's potential impacts on the social, environmental, and economic surroundings.

Conformance with Plans, Policies, and Controls: An airport development project plays an important role in the local and regional economy. Often, a project influences the type and location of specific land uses, the ground transportation network, and the general direction of community growth. When evaluating an action's conformance with plans and policies, there are usually two levels of planning involved. The first level addresses policy plans, which are goals and objectives for the area or jurisdiction. The second addresses specific physical plans that direct development of the physical infrastructure. Coordination with the Airport does not indicate any conflicts with local, county, or regional planning efforts. A proposed runway extension project has been shown on all previous Airport planning documents including the 2008 Airport Layout Plan. The Airport's current ALP can be found in **Appendix B Airport Layout Plan**.

Conformance with Laws and Administrative Rules: In preparing this EA, various federal, state, regional, and local agencies were contacted to solicit their comments on the proposed project as it related to their specific area of expertise or regulatory jurisdiction including permitting and mitigation requirements (**Appendix E Early Agency Coordination**). Based on this coordination, inconsistency with known federal, state, or local

laws or administrative rules is not expected. All phases of the proposed action will adhere to appropriate regulations and permitting requirements including any necessary mitigation measures.

Means to Mitigate Adverse Environmental Impacts: Projects should take care to avoid permanent adverse impacts on the environment. It is important that all adverse environmental impacts be minimized or mitigated if avoidance is not possible. The various impacts of the Preferred Alternative and the potential means to mitigate them to the greatest extent possible are summarized in **Table 3-8 Mitigation Summary of the Preferred Alternative**, found at the end of this chapter. Implementation of the mitigation measures in this table are at the discretion of MDOT AERO and the FAA in light of their individual rules, recommendations, and advisory circulars. While some mitigation measures are required by state or federal regulations, other recommendations, such as BMPs, are to be applied where feasible. Implementation of **Table 3-8 Mitigation Summary of the Preferred Alternative** will be encouraged but is not mandatory unless required by law.

Degree of Controversy on Environmental Grounds: Although the Preferred Alternative is considered consistent with all federal, state, regional, and local plans and laws, public opposition has been documented in the past and was received during the current EA process.

In 2017, the project was subjected to public review at the Draft EA phase and despite the consistency mentioned above, some public opposition on environmental grounds was documented. A record of public comments and Airport responses from the 2017 public involvement process is found in **Appendix N Past Public Comments and Responses**.

In 2022, the project was again subjected to public and agency review at the Draft EA phase. Some public and agency opposition was provided on environmental grounds despite document consistency with applicable federal, state, regional, and local plans and laws.

See **Appendix O Public Hearing & Public and Agency Involvement** for details on the Public Hearing and a summary of the public and agency coordination activities. See **Appendix P Public and Agency Comments on the Draft EA** for a summary of public and agency comments received and Airport responses. See **Appendix Q Public Comments Received** for copies of the actual letters and emails received from the public during the public commenting period with references to find Airport responses to individual comments. See **Appendix R Agency Comments Received** for copies of the actual coordination letters received from local, state, and federal agencies during the agency review period with Airport references to individual comments.

Table 3-8 Mitigation Summary of the Preferred Alternative	
Environmental Factor	**Proposed Mitigation and Permits**
Air Quality	• To further reduce the potential for temporary air quality impacts for both workers and the surrounding area, The Construction Emission Control Checklist (found in **Appendix R Agency Comments Received**) provided by the USEPA should be followed where feasible. • To minimize air emissions from construction equipment the following recommendations may be implemented and incorporated by the Airport during construction, where feasible: o Use low-sulfur diesel fuel (less than 0.05% sulfur) o Retrofit engines with an exhaust filtration device to capture diesel particulate matter before it enters the construction site o Position the exhaust pipe so that the diesel fumes are directed away from the operator and nearby workers, thereby reducing the fume concentration to which personnel are exposed o Use catalytic convertors to reduce carbon monoxide, aldehydes, and hydocarbons in diesel fumes. These devices must be used with low sulfur fuels o Use climate-controlled cabs that are pressurized and equipped with high efficiency particulate air (HEPA) filters to reduce the operator's exposure to diesel fumes o Regularly maintain diesel engines, which is essential to keeping exhaust emissions low, and follow the manufacturer's recommended maintenance schedule o Reduce exposure through work practices and training, such as turning off engines when vehicles are stopped for more than a few minutes, training diesel operators to perform routine inspections, and maintaining filtration devices o Purchase new vehicles that are equipped with the most advanced emission control systems available o With older vehicles, use electric starting aids as block heaters to warm the engine to reduce diesel emissions
Biotic Resources	• Since the Henslow's Sparrow is known to occur at ARB, to avoid potentially impacting Henslow's Sparrows during construction of the Preferred Alternative, no grading within agreed upon restricted mowing areas during the breeding season, which extends from early spring through mid-July. • Tree clearing only allowed between October 1 – March 31 to minimize impacts to any potential bat populations.

Table 3-8 Mitigation Summary of the Preferred Alternative	
Environmental Factor	**Proposed Mitigation and Permits**
	• Vegetation/brush clearing only allowed between October 1 – March 31 to minimize impacts to protect migratory birds. • If during construction a threatened or endangered species or species of special concern is discovered, the USFWS or EGLE should be contacted for guidance and permitting requirements.
Climate	None Required
Coastal Resources	None Required
Dept. of Transportation Act, Section 4(f)	None Required
Farmlands	Although farming activity on Airport property is not protected, the City of Ann Arbor and Broadview Farms will need to renegotiate the existing farming agreement.
Hazardous Materials	• The contractor is required to have a Spill Prevention, Control, and Countermeasure (SPCC) plan in place to be implemented if a spill occurs during construction operations. • An approved erosion control plan is required. • Any waste generated through proposed project improvements will be disposed of in compliance with all federal, state, and local regulations.
Historical, Architectural, Archeological, and Cultural Resources	If cultural resources are encountered during construction, work must stop and the SHPO be notified immediately.
Land Use	Coordinate with the Washtenaw County Road Commission on potential signage to notify drivers that State Street is within the Runway 24 RPZ. Consider implementing recommendations from the WSV to include: • Enclosing the airfield with a deer proof fence • Aggressively culling deer until a wildlife fence can be installed • Consider phasing out agricultural activity on Airport property • Develop and implement a comprehensive Wildlife Hazard Management Plan • Report and review any wildlife strikes • Monitor wildlife populations and abundance on the ARB property. As recommended by the USDA, the Airport is removing land from agricultural production and replacing it with ground cover, expected to be completed in 2024.
Natural Resources and Energy Supply	• Consider using LED lights to reduce energy consumption. • BMPs to reduce energy consumption during construction will be employed, where applicable. • To reduce energy consumption associated with the temporary use of excavators and construction vehicles, equipment should be in good

Table 3-8 Mitigation Summary of the Preferred Alternative	
Environmental Factor	**Proposed Mitigation and Permits**
	working order to ensure the most efficient use of fuel. All vehicles and equipment should be checked for leaks and repaired immediately.
Noise and Noise Compatible Land Use	None Required
Socioeconomics, Environmental Justice, or Children's Environmental Health and Safety Risks	• Runway closure notice will be given to users with a detailed construction schedule as to provide enough time to adjust flight schedules. • If possible, runway closures will not occur during the University of Michigan sporting events when large number of flights are expected.
Visual Effects & Light Emissions	None Required
Water Resources	<u>Wetlands:</u> All delineated wetlands will be shown on construction plans to protect them from any possible direct or indirect impacts and construction documents will require avoidance and erosion control measures. <u>Floodplain Impacts:</u> • An EGLE Part 31, Floodplain Permit will be required. Proposed mitigation will be a compensating cut of material within the limits of the same floodplain in an upland area not classified as a protected resource (e.g. wetland or threatened or endangered species habit) • Final mitigation requirements are at the discretion of EGLE <u>Surface Water:</u> • The proposed construction of the Preferred Alternative will increase impervious surface areas and likely increase storm water runoff. Storm water runoff will drain into the Airport's existing drainage system in accordance with its SWPPP which includes BMPs to reduce erosion and discharge of pollutants from construction activities. • Soil erosion is a source of concern as a possible adverse impact to surface waters from construction projects. The following list of BMPs represents common erosion control measures that should be considered during construction and applied where applicable: ○ Sediment traps ○ Temporary cement ponds ○ Temporary grassing of disturbed areas ○ Vegetation cover replaced as soon as possible ○ Erosion mats and mulch ○ Silt fencing and drainage check dams ○ Settling basins for storm water treatment

Table 3-8 Mitigation Summary of the Preferred Alternative	
Environmental Factor	**Proposed Mitigation and Permits**
	• All excavated soils and staging areas for construction equipment will be placed in non-sensitive upland areas with disturbed areas replanted as soon as possible to reduce the likelihood of erosion. • Mitigation measures prepared under an erosion control plan in accordance with FAA AC 150/5370-10H, Standards for Specifying Construction of Airports, will help minimize long-term impacts to area water quality and to the existing drainage system. • In accordance with Part 91, Michigan Soil Erosion and Sedimentation Control of the Natural Resources and Environmental Protection Act, 1994 Public Act 451, as amended, a soil erosion permit and a storm water runoff control permit are required from Pittsfield Charter Township. • Obtain a NPDES permit for construction activity disturbing one acre or more of soil. • Permittees are required to control runoff from construction sites and develop a construction SWPPP that includes erosion prevention and sediment control BMPs. <u>Ground Water:</u> Since ARB is located within a wellhead protection area, FAA AC 150/5320-15A, *Management of Airport Industrial Waste* will be implemented and the following ground water BMPs should be considered to prevent and minimize impacts to ground water in the project area: • Schedule construction activities for dry weather periods, if possible • Designate a contained area for equipment storage, short-term maintenance, and refueling at least 100 feet from wetland areas • Routinely inspect vehicles and equipment for leaks and repair immediately • Clean up leaks, drips, and other spills immediately to avoid soil or surface water contamination • Ensure that all spent fluids including motor oil, radiator coolant, or other fluids and used vehicle batteries are collected, stored, and recycled as hazardous waste off site • Ensure that all construction debris is taken to appropriate landfills and all sediment disposed of in upland areas or off-site
Cumulative Impacts	None Required
Irreversible and Irretrievable Commitment of Resources	• Whenever possible, construction materials will be recycled and/or reused to limit waste rather than be discarded in local landfills. • Consideration will also be given to the USEPA's Sustainable

Table 3-8 Mitigation Summary of the Preferred Alternative	
Environmental Factor	**Proposed Mitigation and Permits**
	Management of Construction and Demolition Materials and Large-Scale Residential Demolition recommended practices, these will be implemented where feasible.