

Chapter 4 – Environmental Overview

4.1 Introduction

Airport planning and development projects that include Federal involvement must be subject to an environmental review. The FAA is bound by statutory and regulatory requirements to independently evaluate and analyze the environmental consequences of all proposed airport development. This involves a systematic and multidisciplinary approach that verifies compliance with the requirements of the National Environmental Policy Act (NEPA) and other environmental regulations. The FAA may not proceed with programming and funding an Airport Improvement Program (AIP) project until the environmental review is complete.

This chapter presents an environmental review of the projects proposed for development within the next 20 years at the Independence Municipal Airport (IMA). Since Federal funding will be requested for some of these projects, the requirements of the NEPA apply. This environmental review was conducted in accordance with Federal Aviation Administration (FAA) Order 1050.1E, *Environmental Impacts: Policies and Procedures*, and FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*. The environmental review includes a description of potential environmental impacts and identifies the level of environmental analysis and documentation that may be required prior to receiving Federal funding.

4.2 Environmental Impact Categories

Potential environmental impacts were reviewed for two purposes: to minimize or avoid impacts and to provide an indication of the level of analysis that would be required for future NEPA documentation. Potential environmental impacts of the proposed airport projects were considered for each of the 18 environmental impact categories identified in FAA Order 1050.1E. These categories are listed as follows in the order they appear in this Environmental Overview chapter:

- Air Quality
- Coastal Resources
- Compatible Land Use
- Construction Impacts
- Dept. of Transportation Act Section 4(f)
- Farmlands
- Fish, Wildlife, and Plans
- Floodplains
- Hazardous Materials, Pollution Prevention, and Solid Waste
- Historical, Architectural, Archeological, and Cultural Resources
- Light Emissions and Visual Effects
- Natural Resources and Energy Supply
- Noise
- Secondary (Induced) Impacts
- Socioeconomic Impacts, Environmental Justice, and Children’s Health and Safety Risks
- Water Quality
- Wetlands
- Wild and Scenic Rivers

Information was collected by reviewing various resource agencies' websites and coordinating with staff from those agencies. This formal coordination with various Federal, State, and Local environmental agencies was performed to satisfy the requirements of NEPA. Specifically, letters were sent to several Federal, State, and Local environmental resource agencies (22 in all) requesting

their input regarding development alternatives and potential environmental effects. The list of agencies contacted is provided in **Table 4-1**. A copy of the coordination letter and copies of the responses received from ___ of the 22 agencies and/or departments contacted are included in **Appendix B**. Comments and guidance from the various agencies has been incorporated into this Environmental Overview chapter where appropriate.

Table 4-1. List of Federal, State, and Local Agencies Contacted

Government Level and Agency Name	Location
Federal Level (6)	
Environmental Protection Agency (EPA), Region 7	Lenexa, KS
Federal Aviation Administration (FAA), Central Region, Airports Division	Kansas City, MO
U.S. Army Corps of Engineers, Rock Island District	Rock Island, IL
U.S. Department of Agriculture, Buchanan County NRCS	Independence, IA
U.S. Department of Housing and Urban Development (HUD), Region VII	Des Moines, IA
U.S. Fish & Wildlife Service, Rock Island Ecological Services Field Office	Moline, IL
State Level (12)	
Iowa Dept. of Agriculture and Land Stewardship, Div. of Soil Conservation	Des Moines, IA
Iowa Dept. of Natural Resources (DNR), Conservation and Recreation Div.	Des Moines, IA
Iowa DNR, Field Services and Compliance Bureau	Manchester, IA
Iowa DNR, Forestry Bureau	Elkader, IA
Iowa DNR, Geological Survey and Land Quality Bureau	Iowa City, IA
Iowa DNR, Water Quality Bureau (Flood Plain Management)	Des Moines, IA
Iowa DNR, Water Quality Bureau (National Flood Insurance Program)	Des Moines, IA
Iowa DNR, Water Quality Bureau (NPDES)	Des Moines, IA
Iowa DOT, District 6	Cedar Rapids, IA
Iowa DOT, Office of Aviation	Ames, IA
Iowa Homeland Security & Emergency Management	Johnston, IA
State Historic Preservation Office	Des Moines, IA
Local Level (4)	
Buchanan County Conservation	Hazleton, IA
Buchanan County Economic Development	Independence, IA
Buchanan County Zoning	Independence, IA
City of Independence, Buildings	Independence, IA

Source: Snyder & Associates, Inc.

Category 1 – Air Quality

The Clean Air Act of 1970 (CAA) was enacted to protect the nation's air quality, as well as public health. To implement the CAA, the U.S. Environmental Protection Agency (EPA) established National Ambient Air Quality Standards (NAAQS) for outdoor concentrations of six "criteria" pollutants, including carbon monoxide (CO), nitrogen dioxide (NO₂), 8-hour ozone (O₃), sulfur dioxide (SO₂), lead (Pb) and particulate matter with aerodynamic diameters of 10 or 2.5 microns and less (PM_{10/2.5}). Under the Federal CAA, each state must identify non-attainment areas that do not meet the NAAQS. For any non-attainment designation, a State Implementation Plan is developed to demonstrate future attainment of the applicable NAAQS. The following three types of areas apply when considering attainment:

- An attainment area is any area that meets the NAAQS,
- A non-attainment area is any area that does not meet the NAAQS, and
- A maintenance area is any area previously designated non-attainment but is in transition back to attainment.

The FAA document, *Air Quality Procedures for Civilian Airports and Air Force Bases* (Air Quality Handbook) (Addendum 2004) provides guidance on how to assess potential air quality impacts. As discussed in the Air Quality Handbook, two types of analysis may be required: conformity and NAAQS.

Conformity Analysis

A conformity analysis is conducted to determine whether a proposed project would be inconsistent with the State Implementation Plan for a criteria pollutant. The EPA's Green Book¹ designates current attainment/maintenance and nonattainment areas for criteria pollutants in the United States. As Buchanan County, Iowa is not listed on the nonattainment area list, it is designated as "in attainment" for all criteria pollutants. Therefore, a conformity analysis of air emissions associated with the implementation of the proposed projects would not be required.

NAAQS Analysis

A NAAQS analysis is conducted to determine whether the criteria pollutant concentrations at the airport would exceed the NAAQS as a result of implementing the proposed project(s). The number of passengers at larger commercial airports and the level of general aviation and air taxi operations at smaller airports are likely to be good indicators of potential pollutant concerns. According to the Air Quality Handbook, a NAAQS analysis is only required if airport activity exceeds a certain threshold. If the equation in **Exhibit 4-1** is applied, using the number of forecasted passengers and operations at the airport, and the result equals 3.5 or greater, then a NAAQS analysis is required.

¹ <http://www.epa.gov/oaqps001/greenbk/>

Exhibit 4-1. Equation for NAAQS Analysis Requirement

$$1.346 \times \text{MAP} + 0.0194 \times \text{LTO} \geq 3.5$$

- Where **MAP** is Million Annual Passengers defined as the number of enplaned and deplaned passengers divided by one million.
- Where **LTO** is General Aviation Landing and Take-Off. One LTO is equal to one landing and one takeoff, expressed in thousands.

Source: *Air Quality Procedures for Civilian Airports and Air Force Bases (with 2004 Addendum)*.

A forecast of passenger growth is not required for the IMA, so the MAP value for the equation is zero. According to the forecast of aviation demand presented in **Chapter 2: Forecast, Table 2-6**, there is estimated to be 11,920 general aviation and air taxi aircraft operations in 2032. As an “operation” is an arrival or departure, an LTO is the combination of one arrival and one departure. In other words, one LTO equals two operations. For the IMA, there are 5.96 LTOs which is calculated by taking 11,920 and dividing it by two, then dividing by 1,000.

For these activity levels, the equation equals 0.12 which is less than 3.5, and therefore no NAAQS analysis is required. In order to trigger a NAAQS analysis and without passengers, over 360,000 annual aircraft operations would need to be conducted at the IMA, making it one of the busiest general aviation airports in the nation. In summary, neither a conformity analysis nor a NAAQS analysis would be required to complete future NEPA documentation for the proposed projects presuming that Buchanan County remains in attainment for the criteria pollutants.

Category 2 – Coastal Resources

The IMA is not located within a coastal zone management area or coastal barrier area as defined by the Federal government. Therefore, no related analysis would be required for future NEPA documentation.

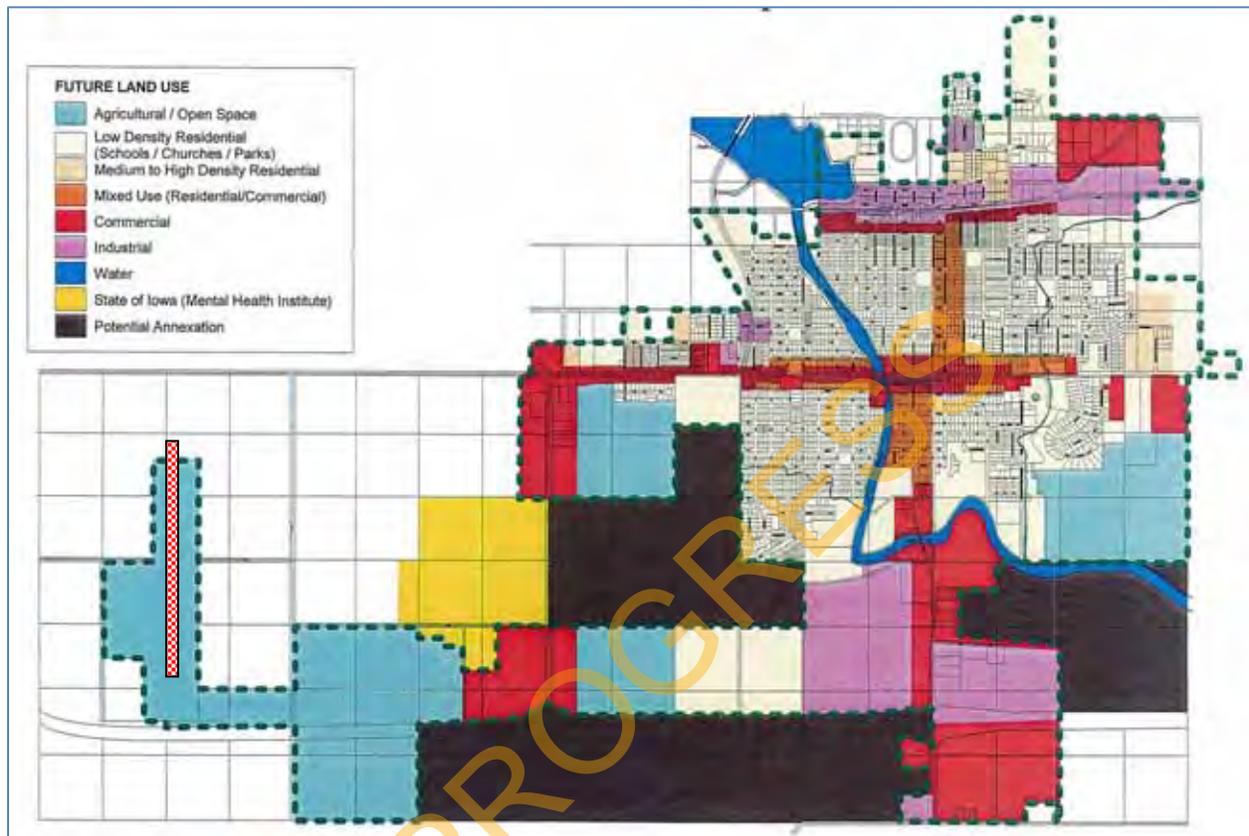
Category 3 – Compatible Land Use*City and County Land Use Planning*

Agency representatives from the city of Independence and Buchanan County were consulted to document existing and future land use in the vicinity of the IMA. Existing land surrounding of the IMA is almost entirely used for agricultural purposes with some rural residential uses (farm houses). According to discussions, there are no city or county plans to change existing land uses surrounding the IMA. As shown in **Exhibit 4-2**, agricultural/open space land use is planned for the area immediately surrounding the IMA with low density residential use planned beyond this.

In formulating a plan that identifies compatible land uses adjacent to the IMA and future on-airport aviation and non-aviation land uses, coordination should be performed with the appropriate FAA guidance, the 2008 Iowa Airport Land Use Guidebook, and local planning initiatives (including the update of the city’s 2002 Comprehensive Land Use Plan planned to begin in FY2014). Lastly, **Chapter 6: Airport Layout Plan**, of this Airport Master Plan Update report will detail the planned

on- and off-airport property which will also be depicted on the Airport Land Use Plan sheet of the Airport Layout Plan set of drawings.

Exhibit 4-2. City Future Land Use



Source: 2002 Independence Comprehensive Land Use Plan Update. The red dotted vertical line at exhibit left represents the approximate location, orientation, and length of Runway 18-36 as it currently exists and was added by Snyder & Associates for reference.

Aircraft Noise

The compatibility of existing and planned land uses in the vicinity of an airport is usually associated with the extent of the airport's noise impacts. Activities that may alter aviation-related noise impacts and affect land uses subjected to those impacts typically involve: airport development actions to accommodate fleet mix changes or the number of aircraft operations; air traffic changes; or new approaches to the airport made possible by new navigational aids.²

However, as concluded later in **Category 13 – Noise**, the current and forecasted aircraft activity at the IMA is below FAA thresholds requiring noise analysis. Given these conditions, it can be concluded that there is no significant noise impact to the community and a similar conclusion could be made regarding compatible land uses. However, before such a statement can be validated,

² FAA Environmental Desk Reference, Chapter 5, Compatible Land Use.

proposed airport development must be examined in the context of other affected resources such as social or induced socioeconomic effects (e.g., community disruption, relocation impacts, etc.). For discussion pertaining to socioeconomic effects, refer to **Category 15 – Socioeconomic Impacts, Environmental Justice, and Children’s Health and Safety Risk**.

Wildlife Attractants

Aside from the effects of noise, the compatibility of land uses in the vicinity of the IMA needs to be addressed to ensure those land uses do not adversely affect safe aircraft operations. In referencing FAA Advisory Circular (AC) 150/5200-33B, *Hazardous Wildlife Attractants on or near Airports*, which provides guidance on certain land uses that have the potential to attract hazardous wildlife on or near public-use airports, the following guidance is provided:

When considering proposed land uses, airport operators, local planners, and developers must take into account whether the proposed land uses, including new development projects, will increase wildlife hazards. Land-use practices that attract or sustain hazardous wildlife populations on or near airports can significantly increase the potential for wildlife strikes.

According to FAA AC 150/5200-33B, these land uses often include the following facilities:

- Municipal solid waste landfills;
- Water management facilities such as drinking water intake and treatment facilities, storm water and wastewater treatment facilities, associated retention and settling ponds, ponds built for recreational/industrial use;
- Existing or proposed dredge spoil containment areas;
- Wetlands, wildlife refuges, and wildlife habitat; or
- Other land uses that attract wildlife that is hazardous to aviation such as golf courses.

To encourage land-use practices that do not attract wildlife, the FAA recommends minimum separations between these hazardous wildlife attractants and the airport. For airports serving piston-powered aircraft, 5,000 feet is recommended between the land use/facility and the airport. This distance increases to 10,000 feet if the airport serves turbine-powered aircraft. In addition, the FAA recommends 5 statute miles between a runway end and a landfill that could cause hazardous bird species to fly across the airport’s approach or departure airspace. As the IMA serves a variety of general aviation aircraft including piston- and turbine-powered aircraft, all three of these minimum separation criteria are applicable to a compatible land use analysis. **Table 4-2** summarizes the land uses and facilities within these distances.

According to the investigation, there is one river, six ponds, five wetlands, one wildlife area, one golf course, and one municipal water treatment facility within the prescribed FAA wildlife hazard/land use distances. As such, additional environmental analysis may need to be performed to determine if these land uses and their distance to the IMA affect aircraft operations. Although from discussions with the FBO, there are currently no significant wildlife issues at the airport resulting from surrounding land uses.

Table 4-2. Significant Environmental and Community Features Near the IMA

Feature	Location	Within FAA Limits?
Rivers, Bodies of Water, and Wetlands		
Wapsipinicon River	1.5 miles NE	Yes
Mental Health Institute Pond (0.6 acres) (a)	1.0 miles E	Yes
Retention Pond near U.S. Highway 20 (5.9 acres) (a)	1.4 miles SE	Yes
Monsanto East Retention Pond (6.6 acres) (a)	1.2 miles SE	Yes
Monsanto West Retention Pond (6.0 acres) (a)	0.8 miles SE	Yes
Farm Pond A (0.07 acres) (a)	0.7 miles SW	Yes
Farm Pond B (0.17 acres) (a)	0.3 miles W	Yes
Wetlands (Refer to Category 17 – Wetlands)	Five within 2 miles	Yes
Parks and Wildlife Areas		
Crumbacher Wildlife Area	1.8 miles SW	Yes
Wapsipinicon River Access County Park	3.0 miles NE	No
Three Elms County Park	3.5 miles E	No
Otterville Bridge State Access Area	4 miles N	No
Golf Courses		
River Ridge Golf Course	1.7 miles NE	Yes
Three Elms Golf Course	3.7 miles E	No
Jessup Golf & Country Club	7 miles NW	No
Landfills and Municipal Waste Facilities		
Independence Waste Water Treatment Plant	3.5 miles E	Yes
Buchanan County Landfill	7.2 miles NNE	No
Blackhawk County Landfill	19 miles W	No

Source: Google Maps, www.google.com. Note (a) Pond names assigned by Snyder & Associates and identified using U.S. Fish & Wildlife Wetlands Mapper, <http://www.fws.gov/wetlands/Data/Mapper.html>.

Category 4 – Construction Impacts

Airport construction may cause various environmental impacts primarily due to dust, heavy equipment emissions, storm water runoff containing sediment and/or spilled or leaking petroleum products, and noise. Thus the construction of new airport facilities may cause temporary impacts to water and air quality, ambient noise levels and local traffic patterns. Impacts from the construction of the proposed airport development would be temporary in nature, typically not lasting more than a few months at a time during various construction stages. These impacts can be minimized with the implementation of best management practices (BMPs).

Category 5 – Department of Transportation Act Section 4(f)

Section 4(f) of the Department of Transportation Act provides that no publicly owned park, recreation area, wildlife or waterfowl refuge, or land of a historic site that is of national, state or local significance will be used, acquired or affected by programs or projects requiring Federal assistance for implementation. Based on available information there are no publicly owned parks, recreation areas, wildlife, or waterfowl refuges in the vicinity of the IMA that will be affected by proposed airport development.

Category 5 to be completed following receipt of agency comments.

*However, consultation with the Iowa State Historic Preservation Officer (SHPO) revealed that there [are] [are not] cultural resources near the IMA. Refer to **Category 10 - Historical, Architectural, Archeological and Cultural Resources** for more information regarding the cultural resources. In the event that a historic resource is found, a Section 4(f) evaluation may be required to complete future NEPA documentation.*

Category 6 – Farmlands

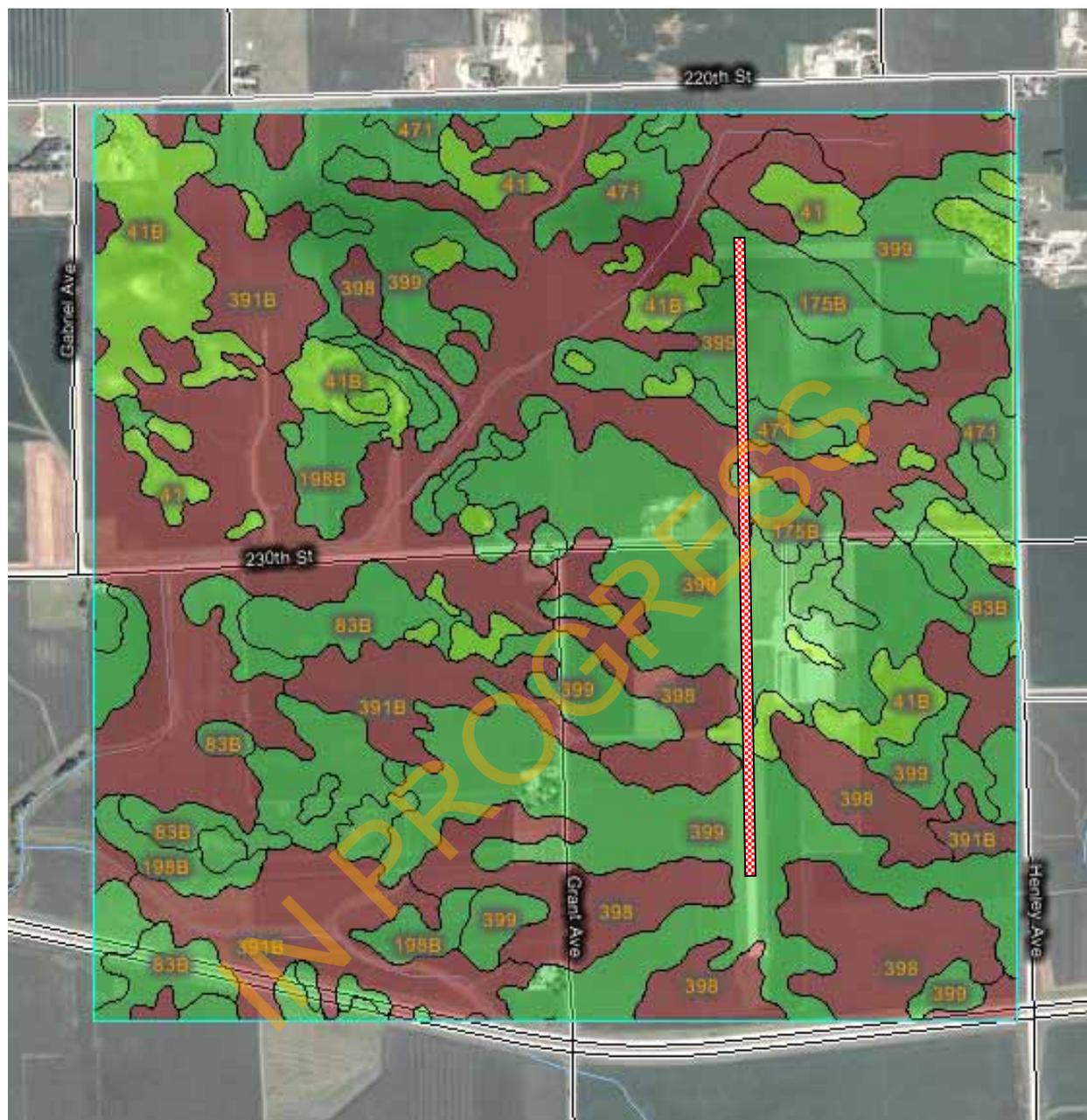
The Farmland Protection Policy Acts (FPPA) of 1980 and 1995 regulate the conversion of important farmland to non-agricultural uses. The purpose of the FPPA is "to minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses..." The FPPA protects prime, unique and locally important farmlands. Based on data from the Natural Resource Conservation Service's (NRCS) Web Soil Survey (a web-based application), soils at and surrounding the IMA are considered prime farmland with some farmland given statewide importance.

The Web Soil Survey results are depicted in **Exhibit 4-3** with the Area of Interest (AOI) shown as a square in this exhibit measuring approximately 1,335 acres. According to the associated farmland classification summary of this AOI:

- Slightly more than 48 percent is prime farmland,
- Nearly 43 percent is prime farmland if it were drained for use, and
- Approximately 9 percent is farmland of statewide importance.

Therefore, the FPPA applies and a Farmland Conversion Impact Rating form (Form AD-1006) must be submitted to the NRCS for any proposed land acquisition. Additional analysis and consultation may be required depending on the final score on this form.

Exhibit 4-3. Farmland Classifications Near the IMA



Source: NRCS Web Soil Survey, <http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>. Not to scale. The red dotted vertical line represents the approximate location, orientation, and length of Runway 18-36 as it currently exists and was added by Snyder & Associates for reference.

Another note regarding farmland is taken from the city's comprehensive plan³. Due to its form and soil quality, the land immediately adjacent to and surrounding the Independence community is highly

³ 2002 Independence Comprehensive Land Use Plan Update, prepared by the Iowa Northland Regional Council of Governments (INRCOG).

advantageous to farming and represents a valuable community resource. According to the comprehensive plan, the following information about area soils is conveyed:

According to the Soil Survey of Buchanan County (1978), the majority of the soils are listed as 'prime' agricultural soils. Further, the Soil Survey Supplement indicates that the Corn Suitability Ratings (CSR), which are a commonly accepted agricultural productivity measure for the soils, support the fact that the soils will be conducive to agriculture. As a general rule, soils that will easily support agriculture will accommodate urban development. Therefore, it appears as if most of the soils, excepting those that are impacted or created by the Wapsipinicon River and its floodplain, may be able to accommodate development.

In addition to reviewing prime and CSR designations, the Comprehensive Plan also focused on the Land Capability Class (LCC) of soils, an eight-level rating system for determining soil viability. LCC ratings of one through three are best for development or agriculture and soils whereas LCC ratings of four through eight "...may require special engineering or improvements in order to make the soils conducive to development or agriculture." Independence soils are generally in "...the top three LCC categories, and thus, would be able to support agricultural activities or development. Therefore, it is important to note that development in the community will most likely absorb 'prime' agricultural soils and areas."

Category 7 – Fish, Wildlife, and Plants

Category 7 to be completed following receipt of agency comments.

[Insert additional text summarizing agency comments].

Category 8 – Floodplains

Floodplains are defined as lowland and flat areas adjoining waters that are subject to a one percent or greater chance of flood in any given year, also referred to as the 100-year flood. The Federal Emergency Management Agency (FEMA) prepares Flood Insurance Rate Maps (FIRMs) which depict areas that fall within the 100-year floodplain boundary⁴. These areas are called special flood hazard areas (SFHAs) and they are further divided into flood insurance risk zones. There are four basic categories of flood insurance risk zones are defined by FEMA.

- Low to moderate risk of flooding: Zones B, C, and X.
- High risk areas are those likely to flood at some point: Zones A, AE, AH, AO and AR.
- High risk coastal areas are even more likely to experience flooding: Zones V and VE.
- Area with undetermined flood risks because of insufficient analysis or data: Zone D.

FIRMs for the IMA area were reviewed. **Exhibit 4-4** depicts a portion of a FIRM Panel that includes the IMA. This FIRM indicates that the IMA, as currently configured, is located within "Zone X" which is defined as area outside of the 500-year floodplain, that is to say area with a 0.2 percent change of flood in any given year. However, land immediately west of the IMA is located within "Zone A" which is land that has a high risk of flooding.

Airport development that is proposed between Runway 18-36 and Henley Avenue consists primarily hangar/building construction and potential non-aviation facilities. The only development that would be located west of Runway 18-36 is the crosswind runway⁵. While there are no areas of flood concern east of the airport, the crosswind runway may impact the Zone A floodplain depending upon its orientation, location, and length. Therefore, further environmental analysis is needed on the various crosswind runway alternatives.

Category 8 to be completed following receipt of agency comments.

[Insert additional text summarizing agency comments].

⁴ The term 100-year flood indicates that the area has a one-percent chance of flooding in any given year, not that a flood will occur every 100 years.

⁵ Although discussed several times throughout this chapter, the recommended crosswind runway project is not included in the development plan of this Airport Master Plan Update. Its inclusion within the Environmental Overview chapter for academic purpose only. For additional information regarding crosswind runway development, refer to the document titled *Exploring Alternative Crosswind Runway Layouts* dated June 2013.

Exhibit 4-4. Areas of High Risk Flooding Near the IMA



Source: FEMA Flood Insurance Rate Map (FIRM) Panel No 19019C0300D, 07/16/2008 Effective Date. Not to scale. The red dotted vertical line represents the approximate location, orientation, and length of Runway 18-36 as it currently exists and was added by Snyder & Associates for reference.

Category 9 – Hazardous Materials, Pollution Prevention, and Solid Waste

Regulatory laws affecting airports include the Resource Conservation and Recovery Act of 1976 (RCRA). Through this legislation, the U.S. Congress directed the EPA to develop and implement programs meant to protect human health and welfare, as well as the environment from improper hazardous waste management practices. Hazardous wastes are those materials that can cause injury or death, or that can damage or pollute the air, land and water. Other pertinent legislation includes the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), also known as the Superfund Act, as well as the Superfund Amendments and Reauthorization Act of 1986 (SARA) that is aimed at toxic waste cleanup efforts.

In accordance with CERCLA, the EPA lists sites on the National Priorities List (NPL). The NPL is defined as, "the list of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States and its territories." Information available through the EPA's EnviroMapper for Envirofacts (a web-based application) was reviewed to identify potential hazardous waste sites on or near the IMA. Based on the EnviroMapper information, there are no NPL sites on or near the IMA.

Brownfields are abandoned, idled, or under-used industrial and commercial facilities (real property) where the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. The mission of the EPA's Brownfields Initiative is to empower States, communities, and other stakeholders in economic development to work together in a timely manner to prevent, assess, safely clean up, and sustainably reuse brownfields. Although the Iowa Department of Natural Resources (DNR) Contaminated Sites Database identified four brownfield sites within the city of Independence (urban core), there are no brownfield sites on or near the IMA.

Solid waste will be generated by the proposed projects. Construction, renovation, and demolition of most airside facilities produce debris such as dirt, concrete, and asphalt. Hangar and building construction, renovation or demolition produces other types of solid waste such as bricks, steel, wood, gypsum and glass. It is expected that all solid waste generated during construction will be disposed of in accordance with Federal, state and local regulations. Therefore, provided there is sufficient capacity at appropriate waste disposal sites, no further analysis will be necessary regarding solid waste.

Category 10 – Historical, Architectural, Archeological, and Cultural Resources

Historical, architectural, archeological and cultural resources are protected by the National Historic Preservation Act of 1966 (16 U.S.c. 470), as amended. Section 106 of this Act requires Federal agencies to consider the effects of proposed projects on historical, architectural, archeological and cultural resources listed, or eligible for listing, in the National Register of Historic Places (NRHP).

Initial identification of listed historic resources was accomplished by reviewing the NRHP and consulting with the Iowa SHPO. A review of the NRHP indicated that there are several historic resources associated with the city of Independence but none are within the vicinity of the proposed development at the IMA.

Category 10 to be completed following receipt of agency comments.

The Iowa SHPO [did] [did not] identify any historical, architectural or archeological resources in the vicinity of the proposed projects. Therefore, [additional] [no additional] analysis is required.

Category 11 – Light Emissions and Visual Effects

The primary sources of light emissions from airports are the lighting for air navigation, obstruction clearance, and security. An analysis of the impact of light emissions on the surrounding environment is required when proposed projects include the introduction of new lighting that may affect residential or other sensitive land uses.

The proposed projects include installation of new lighting associated with the crosswind runway. The new lighting would include Low Intensity Runway Lights (LIRL) or medium intensity runway lights (MIRL), Runway End Identifier Lights (REILs) at both ends of the runway, and the Precision Approach Slope Indicator (PAPI) systems at the touchdown points (again, one system near each runway end).

Additional exterior lighting may be included with proposed hangar and building construction. These lighting improvements are similar to what currently exists at the IMA for Runway 18-36 and its associated taxiway system, the FBO hangar, the Tan Hangar, and the overhead apron lighting.

While these changes in lighting would alter light emissions near the IMA, there are very few light-sensitive land uses near the IMA. Therefore, it is anticipated that only limited analysis will be required to assess the impacts of changes in light emissions. This analysis should be focused on the proposed changes in lighting resulting from the additional REILs which consists of a pair of synchronized flashing lights and the impacts they may have on the nearby farms houses.

Airport improvement activities involving potential disruption of the natural environment or aesthetic integrity of the area or any activities that may affect sensitive locations such as parks, historic sites or other public use areas are relevant visually. The proposed projects at the IMA are not anticipated to alter the environmental setting of the IMA or surrounding areas in a way that disrupts the aesthetic integrity of the area.

Category 12 – Natural Resources and Energy Supply

The FAA requires the environmental analysis of proposed airport projects to include an evaluation of the project's effect on natural resources and energy supply. The analysis takes into account the project's energy consumption, energy conservation, and the use of natural and consumable resources required to construct and maintain the airport facilities and operations. The proposed projects are not anticipated to use unusual materials or those in short supply. In terms of energy, additional runway lighting and NAVAIDS will increase energy consumption. Aviation fuel consumption would also increase due to forecasted growth in the number of aircraft operations. However, with minimal analysis, it could likely be concluded in the NEPA document that projects at IMA would not cause a substantial demand on energy or natural resource supplies, and therefore, would not result in energy demand or natural resource consumption that would exceed supply.

Category 13 – Noise

Noise from airport projects is often the public's primary concern. Therefore, when required, a master plan addressing proposed airport development should consider whether the proposed projects would increase noise impacts over noise sensitive land uses around the airport. If so, then the master plan should highlight these potential impacts. In short, a noise analysis is required when aircraft above a certain size are operating at an airport above a certain number of operations. Per FAA Order 1050.1E, a noise analysis is needed for proposals fitting the following parameters:

- Fixed-wing aircraft with Airplane Design Group I and II (wingspan less than 79 feet) and in Approach Categories A through D (landing speed less than 166 knots)

operating at airports whose forecast operations in the period covered by the study exceed 90,000 annual propeller operations (247 average daily operations) or 700 jet operations (2 average daily operations). The Cessna Citation 500 and any other jet aircraft producing levels less than the propeller aircraft under study may be counted as propeller aircraft rather than jet aircraft.

- Helicopters operating at airports whose forecast operations in the period by the study exceed 10 annual daily average operations with hover times not exceeding 2 minutes. This rule applies to the Sikorsky S-70 with a maximum gross takeoff weight of 20,224 pounds and any other helicopter weighing more or producing equal or greater levels.

As conveyed in **Chapter 2: Forecast**, fixed-wing aircraft within Airplane Design Groups I and II and Approach Categories A through C and helicopters currently operate at the IMA and are expected to continue to do so in the future. However, operations of propeller and jet aircraft and helicopters are not expected to exceed the above operational thresholds. Using the information presented in **Chapter 2: Forecast, Table 2-6**, the forecasted operations by propeller and jet aircraft and helicopters is presented in **Table 4-3**.

Table 4-3. Forecast of Propeller, Jet, and Helicopter Operations

Item	Base Year	Forecast Year			
	2012	2017	2022	2027	2032
Propeller	7,270	8,200	9,120	10,050	10,720
Jet	500	550	600	650	950
Helicopter	1,330	1,330	1,330	1,330	1,330
Total Operations	9,100	10,080	11,050	12,030	13,000
<i>Average Daily Aircraft</i>	<i>21.3</i>	<i>24.0</i>	<i>26.6</i>	<i>29.3</i>	<i>32.0</i>
<i>Average Daily Helicopters</i>	<i>3.6</i>	<i>3.6</i>	<i>3.6</i>	<i>3.6</i>	<i>3.6</i>

Source: Analysis by Snyder & Associates, Inc.

By the year 2032, the forecast of propeller aircraft operations is slightly below 11,000 annually; jet aircraft operations are forecast to reach 950 annually (assuming one jet aircraft is based at the IMA – currently there are none). Considering that a good portion of these jet aircraft operations are conducted Cessna Citation 500 and aircraft with similar noise energy (such as the Beechjet 400A and the Raytheon Premiere 1A), these jets could be counted as propeller aircraft as noted above. In doing so, the average daily number of propeller aircraft is 32. Helicopters that operate at the IMA include the Bell 206B (based at the IMA) and itinerant military helicopters such as the Bell TH-58 Jet Ranger, Sikorsky UH-60 Black Hawk, and Boeing CH-47 Chinook. The annual daily average of helicopter operations is estimated at less than four per day. As propeller and helicopter operations are below the FAA's threshold for requiring a noise analysis, additional analysis is required.

Category 14 – Secondary (Induced) Impacts

Secondary impacts include any shifts in patterns of population movement and growth, the demand for public services, and changes in business and economic activity that are influenced by airport development. According to FAA Order 1050.1E, secondary impacts would not normally be significant except where there is also a significant impact to another category; particularly noise, compatible land use, or social impacts. It is not anticipated that the proposed projects would result in impacts exceeding the threshold of significance in any impact category; therefore significant secondary impacts would not be expected. However, if analysis shows that a significant impact would occur, secondary impacts should be evaluated as part of future NEPA analysis.

Category 15 – Socioeconomic Impacts, Environmental Justice, and Children’s Health and Safety Risk

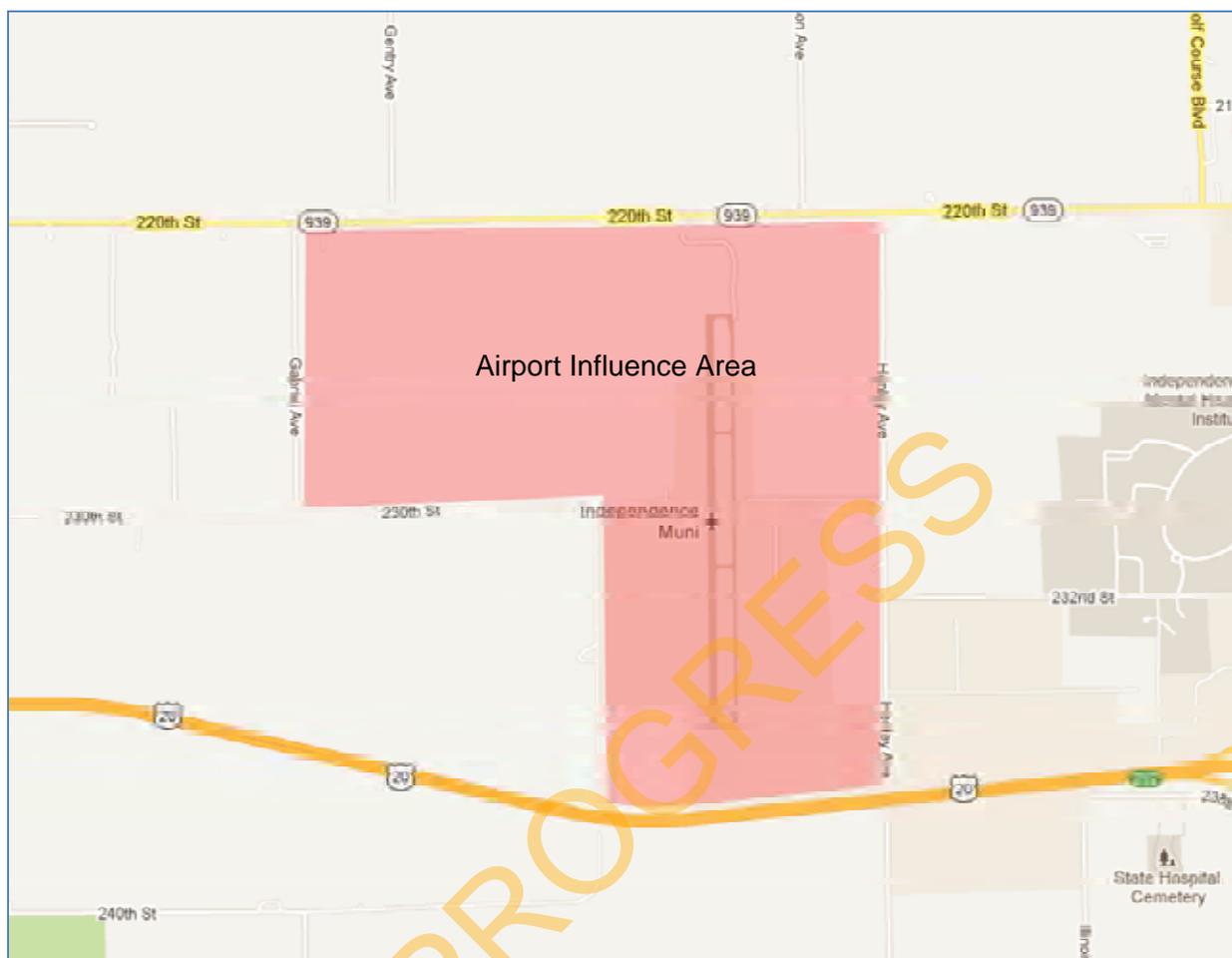
To address socioeconomic impacts, proposed airport projects are evaluated to determine whether they would require relocation of residences or businesses, alter surface transportation patterns, divide established communities, disrupt orderly planned development, or create an appreciable change in employment. With the exception of the proposed crosswind runway, all proposed projects are on existing airport property. Proposed land acquisition is limited to parcels mostly west of the airport to support the crosswind runway. Aviation and non-aviation related development would be located between Runway 18-36 and Henley Avenue. As shown in **Exhibit 4-5**, development of the IMA will be confined to the area bounded by 220th Street (Iowa Highway 939) to the north, Henley Avenue to the east, U.S. Highway 20 to the south, and Grant/Gabriel Avenues to the west.

Except for one project, no residences/businesses or roads would be closed or relocated and, therefore, the proposed airport projects are not anticipated to result in socioeconomic impacts. One crosswind runway would required the removal/relocation of a farm residence and the realignment of Grant Avenue.

The FAA is directed to identify and assess the potential for proposed projects to result in environmental justice impacts. Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, regulates against federal actions that would result in high and adverse human health or environmental impacts that would disproportionately impact minority and low income population.

The FAA is also directed to identify and assess disproportionate impacts to children's environmental health and safety risks pursuant to Executive Order No. 13045, *Protection of Children from Environmental Health Risks and Safety Risks*. This Executive Order states that, "Environmental health risks and safety risks mean risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest (such as the air we breathe, the food we eat, the water we drink or use for recreation, the soil we live on, and the products we use or are exposed to)." Therefore, the analysis of potential impacts to children's environmental health and safety risks is linked to the analysis of potential air quality, hazardous materials, and water quality impacts.

None of the proposed projects is anticipated to result in impacts exceeding the thresholds of significance for any of the impact categories. Therefore, it may be concluded that the proposed projects would not likely result in high adverse human health or environmental impacts and thus would not disproportionately impact minority and/or low-income populations nor children's environmental health and safety risks. However, in the event that future NEPA analysis shows that a proposed project would result in a significant impact, analysis of potential environmental justice and children's health and safety will be required.

Exhibit 4-5. Airport Influence Area

Source: Image from Google Maps, www.google.com. Not to scale.

Category 16 – Water Quality

The Federal Water Pollution Control Act, as amended by the Clean Water Act (CWA) of 1977, establishes water quality standards for restoring and maintaining the integrity of the nation's waters. Section 401 of the CWA requires certification by the state that the prospective federal permits comply with the state's applicable effluent limitations and water quality standards. Section 402 of the CWA established the National Pollutant Discharge Elimination System (NPDES) to limit pollutant discharges into streams, rivers and bays.

Category 16 to be completed following receipt of agency comments.

[Insert additional text summarizing agency comments].

Category 17 – Wetlands

Executive Order 11990, *Protection of Wetlands*, requires Federal agencies to minimize the destruction, loss or degradation of wetlands resulting from their actions. Section 404 of the CWA, as amended, requires regulation of discharges or fill matter into Waters of the United States, including jurisdictional wetlands. Jurisdictional wetlands are wetlands connected or adjacent to navigable waters of the U.S. The U.S. Army Corps of Engineers (USACE) has primary responsibility for implementing, permitting and enforcing the provisions of Section 404.

A review of the U.S. Fish & Wildlife's Wetlands Mapper (a web-based application) indicated that there are five wetlands located within two miles west of the IMA between U.S. Highway 20 and 220th Street (Iowa Highway 939). The five wetlands, along with the IMA and U.S. Highway 20, are depicted in **Exhibit 4-6**. Data regarding these wetlands are presented in **Table 4-4**.

Based on the proposed airport improvements, impact to these wetlands is not expected. However, as no other wetland information was available to document whether there are any other wetlands on or near the IMA, a field survey of potentially impacted areas should be conducted to confirm whether there are any wetlands present as part of preparing future NEPA documentation.

Exhibit 4-6. Location of Wetlands Near the IMA



Source: NWI Wetlands Mapper, <http://www.fws.gov/wetlands/Data/Mapper.html>. Not to scale. In this exhibit, Runway 18-36 is shown in its current configuration.

Table 4-4. Information on Wetlands Near the IMA

Name	Acres	Location	Description
Wetland A	0.31	1.10 miles W	Freshwater Forested/Shrub Wetland (a)
Wetland B	1.16	1.25 miles W	Freshwater Forested/Shrub Wetland (a)
Wetland C	2.22	1.80 miles W	Freshwater Emergent Wetland (b)
Wetland D	3.27	2.00 miles W	Freshwater Forested/Shrub Wetland (a)
Wetland E	1.38	2.05 miles W	Freshwater Forested/Shrub Wetland (a)

Source: NWI Wetlands Mapper, <http://www.fws.gov/wetlands/Data/Mapper.html>, with wetland names assigned by Snyder & Associates. Distances measured from midpoint of Runway 18-36.

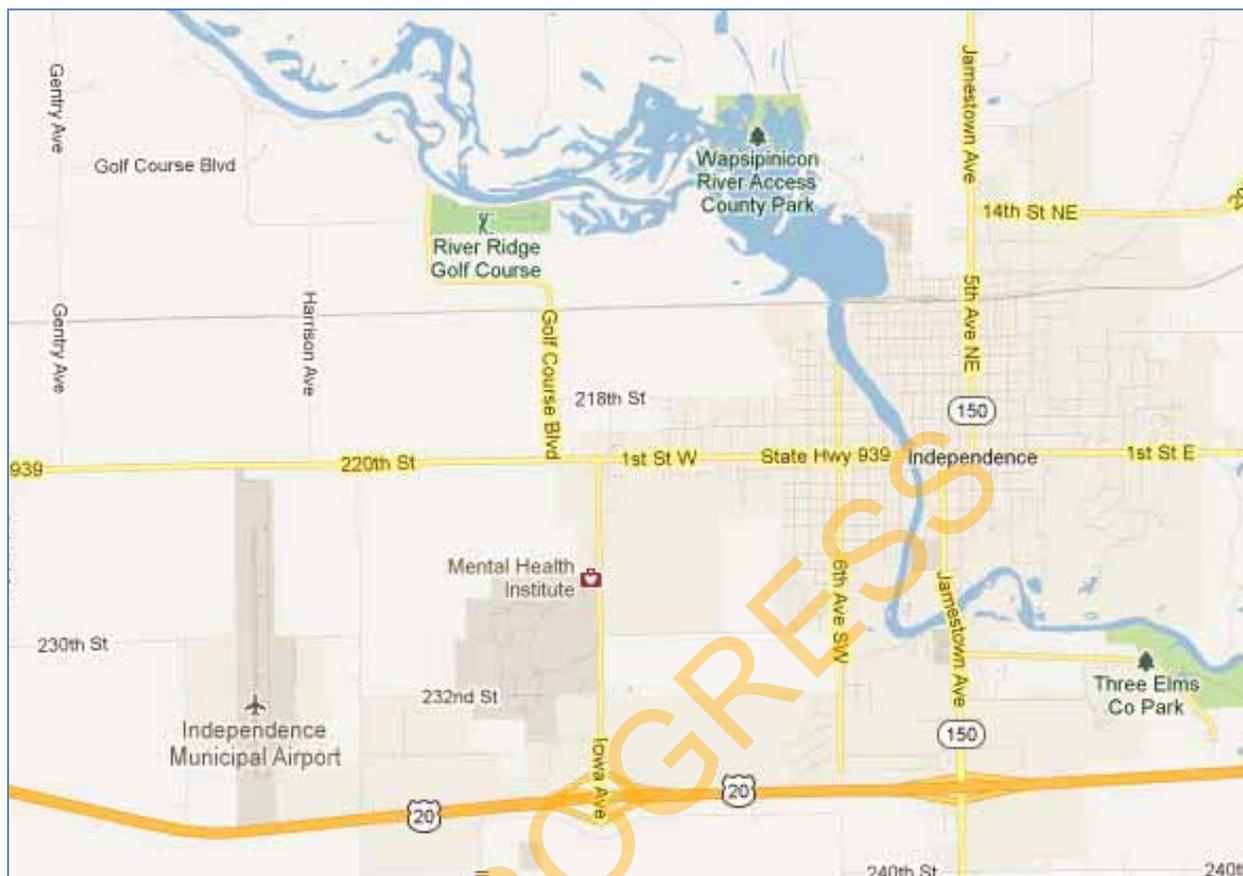
Note (a): Per its classification code, surface water is present for brief periods during growing season, but the water table usually lies well below the soil surface for most of the growing season. Plants that grow both in uplands and wetlands may be characteristic of this water regime.

Note (b): Per its classification code, surface water is present for extended periods especially early in the growing season, but is absent by the end of the growing season in most years. The water table after flooding ceases is variable, extending from saturated to the surface to a water table well below the ground surface.

Category 18 – Wild and Scenic Rivers

Wild and scenic rivers are those rivers having remarkable scenic, recreational, geologic, fish, wildlife, historic, or cultural values. The Department of the Interior manages the Wild and Scenic Rivers Act commonly referred to as the National Wild and Scenic Rivers System (WSRS). The National Park Service maintains the Nationwide Rivers Inventory (NRI) – a listing of more than 3,400 free-flowing river segments in the United States that are believed to possess one or more "outstandingly remarkable" natural or cultural values judged to be of more than local or regional significance.

Although Iowa has no rivers listed in the WSRS, it does have several listed in the NRI. One of these rivers is the Wapsipinicon River whose reach extends from the city of Frederika in northeast Iowa to the Mississippi River; 195 miles to the southwest. Per the NRI, the Wapsipinicon River is described as a "...designated Iowa 'Protected Water Area.' [It is a...] wide, wooded flood plain with only limited development and agricultural encroachment; [has a] wide diversity of fish and wildlife habitat; [an] exposed geologic fault; [and] historically valuable Stone City quarries." **Exhibit 4-7** depicts the portion of Wapsipinicon River is located in Buchanan County near the IMA.

Exhibit 4-7. Segment of the Wapsipicon River Segment Near the IMA

Source: Image from Google Maps, www.google.com. Not to scale. In this exhibit, Runway 18-36 is shown in its current configuration.

Under a 1979 Presidential Directive and related Council on Environmental Quality procedures, all federal agencies must seek to avoid or mitigate actions that would adversely affect one or more NRI segments. The proposed action could affect an NRI river, if it is determined that the proposed action could have an adverse effect on the natural, cultural, and recreational values of the NRI segment. According to the National Park Service, adverse effects on NRI rivers may occur under conditions which include, but are not limited to:

- Destruction or alteration of all or part of the free flowing nature of the river;
- Introduction of visual, audible, or other sensory intrusions which are out of character with the river or alter its setting;
- Deterioration of water quality; or
- Transfer or sale of property adjacent to an NRI river without adequate conditions or restriction for protecting the river and its surrounding environment.

Upon review of the proposed development at the IMA, the following points are presented for consideration:

- Although the IMA is located within the vicinity of the Wapsipinicon River, the two are separated by approximately 1.5 miles. Also, proposed actions at the IMA will either remain on airport property or immediately adjacent to airport property. Therefore, physical changes proposed for the IMA will not result in any direct physical changes to the river.
- Over the 20-year planning period, the role (use) of the IMA is expected to remain the same and there are no appreciable changes in the level aircraft activity or traffic patterns surrounding the IMA. That is to say, there are no appreciable changes in the manner in which aircraft fly around the IMA and over the Wapsipinicon River. The current setting of the river is would not be altered.
- Lastly, proposed development would maintain current storm water drainage patterns which generally flow south towards U.S. Highway 20; away from the Wapsipinicon River. Therefore, no deterioration of water quality is expected as the result of proposed airport development.

In ruminating on the above statements, it is reasonable to conclude that proposed development at the IMA would have no adverse effect on this NRI river and that no further analysis is required for this environmental impact category.

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4.3 Summary of Environmental Impact Categories

Summary paragraph to be added and Table 4-5 to be completed following receipt of agency comments.

Table 4-5. Summary of Environmental Impact Categories

Category	Category
1. Air Quality	10. Historical, Architectural, Archeological, and Cultural Resources
2. Coastal Resources	11. Light Emissions and Visual Effects
3. Compatible Land Use	12. Natural Resources and Energy Supply
4. Construction Impacts	13. Noise
5. Dept. of Transportation Act Section 4(f)	14. Secondary (Induced) Impacts
6. Farmlands	15. Socioeconomic Impacts, Environmental Justice, and Children’s Health and Safety Risks
7. Fish, Wildlife, and Plants (TBD)	16. Water Quality (TBD)
8. Floodplains	17. Wetlands
9. Hazardous Materials, Pollution Prevention, and Solid Waste	18. Wild and Scenic Rivers

Table Legend

<i>Green Highlighted Category</i>	<i>Red Highlighted Category</i>
<i>Proposed airport development has no impact or impact can be mitigated on this category. No further environmental analysis needed.</i>	<i>Proposed airport development is likely to impact this category and additional environmental analysis is required.</i>

Source: Analysis by Snyder & Associates Inc.

4.4 Recommended NEPA Documentation

The proposed airport projects were reviewed in order to identify the level of environmental review that may be required prior to implementing the projects. Projects involving Federal funding or approvals constitute Federal actions and therefore are subject to environmental review in accordance with NEPA. For FAA funded or approved projects, NEPA documentation is developed in accordance with FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures*, and FAA Order 5050.48, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*. Order 1050.1E is used to determine the appropriate level of NEPA review.

Three levels of environmental review/documentation exist for actions requiring Federal funding or approval: categorical exclusion (CE), environmental assessment (EA), or environmental impact statement (EIS). A CE is appropriate when the proposed airport project is included in the list of categorically excluded actions in Chapter 3 of FAA Order 1050.1E. This list includes those types of actions that the FAA has found to not normally require an EA or EIS except in the case of extraordinary circumstances. "Extraordinary circumstances" exist when the proposed project involves any of the circumstances listed in paragraphs 304a through 304k of FAA Order 1050.1E, and may have a significant effect. If the proposed airport project is not included in paragraphs 307 through 312 of FAA Order 1050.1E, an EA or EIS must be prepared.

The Cat-Ex Checklist

Some projects have proven to impart no significant impact to the environment, and as such, may be categorically excluded from an extensive environmental review. If a project qualifies for a categorical exclusion, the airport does not need to prepare a formal EA or other environmental documentation. To aid in determining if a project is eligible for exclusion, the FAA has developed a Categorical Exclusion (Cat-Ex) Checklist which can be used as long as the proposed project meets both of the following criteria:

1. The proposed project is a federal action subject to NEPA. A project is a federal action if it is listed in a subparagraph of FAA Order 5050.4B, Chapter 1, paragraph 9g.
2. The proposed project is identified in FAA Order 1050.1E, paragraphs 307 through 312.

If the project meets both criteria, then it is acceptable to use the FAA's Cat-Ex Checklist to determine if the project could be categorically excluded. According to checklist instructions, it may not be necessary to complete the checklist to determine if a project can be categorically excluded. If the proposed project is listed in Table 6-1 of Order 5050.4B, no further review is necessary. Conversely, if the proposed project is listed in Table 6-2 of Order 5050.4B, then the Cat-Ex checklist can be used as environmental documentation.

If the proposed airport project is included in the list of categorically excluded actions and does not involve extraordinary circumstances, the project is exempted from environmental review. However, if the proposed project is included in the list of categorically excluded actions, but would involve extraordinary circumstances, then the responsible FAA official must decide if the situation calls for a CE or preparation of an EA or EIS. The decision of whether to prepare an EA or an EIS is based on

the likelihood of significant impacts and the potential for mitigation of any significant impacts. An EA is prepared when the proposed project is not expected to result in significant impacts. An EA may also be prepared if there are significant impacts but mitigation can be incorporated into the proposed project such that the level of impact is reduced below the level of significance.

Table 4-6 shows the recommended level of environmental review/documentation for each phase of the Airport Capital Improvement Program (CIP). The recommended level of environmental review/documentation is based on FAA Order 1050.1E and consideration of the potential for environmental impacts as discussed in the preceding sections. A summary of Table 4-6 is as follows:

- For the majority of projects recommended for the IMA, it is acceptable to use the FAA's Cat-Ex Checklist to determine if the project could be categorically excluded from the formal NEPA process.
- For five projects – acquiring the aircraft tow tub, Jet A fuel truck, and the snow removal equipment; obtaining lower approach minimums to Runway 18-36; and updating the Airport Master Plan – no further environmental documentation is needed.
- One project will required an EA as its environmental documentation: the crosswind runway. Before the runway can be built, the city would need to acquire land for the runway itself and sufficient land to fully control the Runway Protection Zones and the areas alongside the runway out to the Building Restriction Line. For standalone land acquisition projects, a CE does not exist and an EA is required. And since the land acquisition is connected to and necessary for the crosswind runway project, an EA is required for it as well. The land acquisitions and the crosswind runway project scopes of work can be combined in a single EA.

Table 4-6. Categorical Exclusion Summary

Purpose Category and Generalized Project Description	Question 1	Question 2	Question 3	Question 4		Question 5
	Is the proposed project listed in Order 5050.4B, Chapter 1, paragraph 9g?	Is the proposed project listed in Order 1050.1E, Chapter 3, paragraphs 307 to 312?	Can the Cat-Ex Checklist be used?	Is the proposed project listed in Table 6-1 or 6-2 of Order 5050.4B?		What further environmental documentation is needed?
	<i>Cite subparagraph.</i>	<i>Cite subparagraph.</i>	<i>Must be "yes" to both Questions 1 and 2.</i>	<i>Cite page number.</i>		<i>If listed in Table 6-1, then none. If listed in Table 6-2, then complete the Cat-Ex Checklist.</i>
Projects to Accommodated Present-Day Demand and Maintain Current Airport Standards						
Replace 18 and 36 PAPIs	Yes, subparagraphs (1) and (3)	Yes, paragraph 309b	Yes	No	Yes: 6-10	Complete Cat-Ex Checklist
Install Remote Communications Outlet (RCO)	Yes, subparagraphs (1) and (3)	Yes, paragraph 309a	Yes	No	Yes: 6-11	Complete Cat-Ex Checklist
Construct Conventional Hangar	Yes, subparagraphs (1) and (3)	Yes, paragraphs 310f, 310h	Yes	No	Yes: 6-13	Complete Cat-Ex Checklist
Acquire Aircraft Tow Tug	Yes, subparagraph (1)	Yes, paragraph 309h	Yes	Yes: 6-9	No	None
Construct SRE Storage Building	Yes, subparagraphs (1) and (3)	Yes, paragraph 310f	Yes	No	Yes: 6-10	Complete Cat-Ex Checklist
Rehabilitate Runway 18-36	Yes, subparagraph (1)	Yes, paragraphs 309b, 310e	Yes	No	Yes: 6-10	Complete Cat-Ex Checklist
Rehabilitate Taxiways	Yes, subparagraph (1)	Yes, paragraphs 309b, 310e	Yes	No	Yes: 6-10	Complete Cat-Ex Checklist
Rehabilitate Terminal Apron	Yes, subparagraph (1)	Yes, paragraphs 309b, 310e	Yes	No	Yes: 6-10	Complete Cat-Ex Checklist
Construct Aircraft Deicing Apron	Yes, subparagraphs (1) and (3)	Yes, paragraph 310d	Yes	No	Yes: 6-11	Complete Cat-Ex Checklist
Rehabilitate Access Road and Vehicle Parking Areas	Yes, subparagraph (1)	Yes, paragraphs 310a, 310w	Yes	No	Yes: 6-10	Complete Cat-Ex Checklist
Projects to Meet Current FAA Standards and Improve Safety						
Obtain Lower Approach Minimums to Runway 18-36	Yes, subparagraphs (1) and (3)	Yes, paragraphs 307p, 309c	Yes	Yes: 6-8	No	None
Construct Crosswind Runway (Phases 1 and 2)	Yes, subparagraphs (1) and (3)	No	No	No	No	Prepare an EA
Update Airport Master Plan (2013 and 2020)	Yes, subparagraphs (1) and (3)	Yes, paragraphs 307i, 307o, 307p	Yes	Yes: 6-8, 6-9	No	None
Projects to Accommodate Forecasted Demand						
Construct 13-unit T-Hangar and Taxilanes	Yes, subparagraphs (1) and (3)	Yes, paragraphs 310f, 310h	Yes	No	Yes: 6-10	Complete Cat-Ex Checklist
Acquire Jet A Fuel Truck	Yes, subparagraph (1)	Yes, paragraph 309h	Yes	Yes: 6-9	No	None
Acquire SRE/Maintenance Equipment	Yes, subparagraph (1)	Yes, paragraph 309h	Yes	Yes: 6-9	No	None
Construct Conventional Hangar and Apron/Taxilane	Yes, subparagraphs (1) and (3)	Yes, paragraphs 310f, 310h	Yes	No	Yes: 6-13	Complete Cat-Ex Checklist
Reconstruct and Expand Terminal Apron	Yes, subparagraphs (1) and (3)	Yes, paragraphs 309b, 310e	Yes	No	Yes: 6-10	Complete Cat-Ex Checklist

Source: Analysis by Snyder & Associates, Inc.

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