# Final Environmental Assessment

**Cuyahoga County Airport (CGF)**

Report prepared by

Mead & Hunt

May 6, 2015

# FINAL ENVIRONMENTAL ASSESSMENT

for

# THE PROPOSED RUNWAY 6/24 EXTENSION AND SAFEY AREA IMPROVEMENTS

at the

# CUYAHOGA COUNTY AIRPORT
# CUYAHOGA COUNTY, OHIO

Prepared by:

**Mead & Hunt, Inc.**

**May 6, 2015**

This Environmental Assessment becomes a Federal document when evaluated and signed by the responsible FAA official.

Katherine S Delaney

Responsible FAA Official

5/15/15

Date

**Preface**

The National Environmental Policy Act (NEPA) of 1969 requires that federal agencies identify and consider the social, economic, and environmental impacts of proposed actions as part of their decision making process. NEPA also requires that federal agencies provide information to the public and regulatory agencies and consider their input when reaching decisions. This Environmental Assessment (EA) has been prepared to satisfy these requirements, as well as all applicable state requirements.

The proposed actions that require the preparation of this EA for improvements at the Cuyahoga County Airport include:

- Runway Safety Area (RSA) grading improvements to meet FAA design standards
- Remove stopway at Runway 6 approach end
- Extend Runway 6 approach end approximately 550 feet
- Install EMAS at Runway 6 approach end
- Displace threshold approximately 320 feet from new Runway 6 approach end
- Relocate Runway 24 approach end 150 feet in order to fit standard EMAS
- Install EMAS at Runway 24 approach end
- Displace Runway 24 threshold approximate 500 feet
- Closure of taxiways to accommodate Runway 6/24 relocation
- Construct new connector taxiways to accommodate runway 6/24 relocation
- Extension of Runway 6/24 runway and taxiway lighting facilities
- Relocation of navigational aids (NAVAIDS):
    - Runway 6 Runway End Identifier Lights (REILs)
    - Runway 6 Precision Approach Path Indicator (PAPIs)
    - Runway 24 Glide Slope (GS) Antenna
    - Runway 24 PAPIs
    - Runway 24 Medium-Intensity Approach Lighting System with Runway Alignment Indicator (MALSR)
- Development of new or revised approach and departure procedures, including flight check
- Property acquisition/easements
- Tree clearing in approach areas and transitional areas

This EA has been prepared in accordance with the requirements of NEPA, Title V of the Public Law 97-248 of the Airport and Airway Improvement Act of 1982, FAA Order 5050.4B, *NEPA Implementing Instructions for Airport Actions*, and FAA Order 1050.1E, *Environmental Impacts Policies and Procedures*. The intent of the EA is to serve as a decision making tool to be used by the public and local, state, and federal officials in evaluating the proposed development at the Cuyahoga County Airport.

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# Section 1.0 Purpose and Need

## 1.1 Introduction

The Cuyahoga County Airport - Robert D. Shea Field (Airport or CGF) currently has a single runway, designated Runway 6/24, that is 5,102 feet long and 100 feet wide. The runway is not compliant with current Federal Administration Aviation (FAA) design standards and the pavement condition of the runway is reaching a critical point of disrepair due to age.

More than a dozen corporate hangars front the corporate aircraft parking apron in an alignment with the runway and parallel taxiway. Based aircraft are housed in T-hangars at two locations on the airfield. The fixed based operator (FBO) area is north of the Runway 6 end and provides fueling, aircraft maintenance and other services. The taxiway system includes a full parallel taxiway and several access taxiways that connect the T-hangars, corporate hangars and apron areas, and the FBO area with the runway. **Figure 1-1 Future Airport Layout Plan**, shows the current airport configuration as well as the improvements identified as the Preferred Alternative from the 2010 Airport Master Plan to bring the airport into compliance with FAA design standards.

After being identified through the planning process but prior to moving into the design and construction phase of a project, an Environmental Assessment (EA) is required by the National Environmental Policy Act (NEPA) of 1969. This EA will identify a Preferred Alternative that meets the project Purpose and Need and then evaluate and document the effects of the proposed project on the surrounding environment. The results of this EA, including input from other agencies, will guide the decision made by the FAA at its conclusion. At that time, the project will either be cleared to proceed or will be required to undergo additional environmental analysis.

## 1.2 Project Location and History

The Airport, owned by Cuyahoga County, is located approximately 11 miles east of downtown Cleveland, Ohio. It serves the aviation needs of eastern Cuyahoga County and western Lake and Geauga Counties in the northeastern region of Ohio.

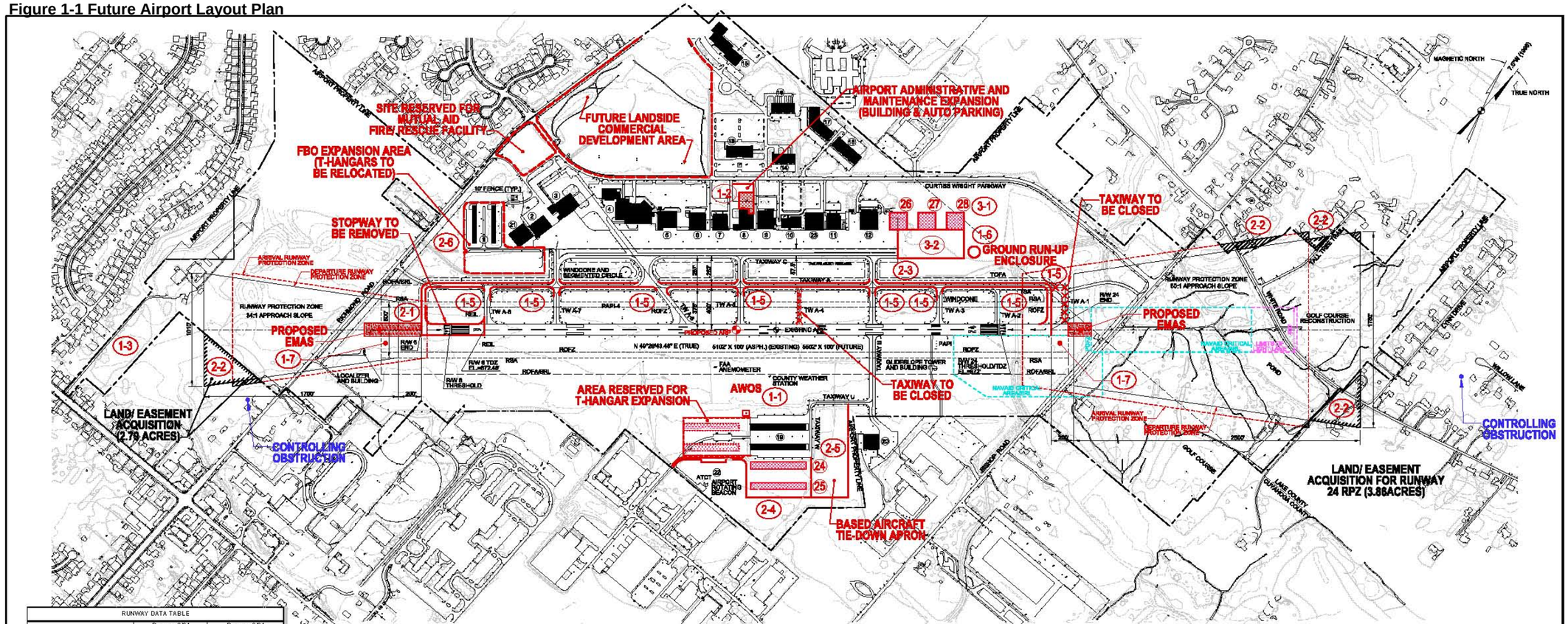
The land area of the Airport consists of approximately 660 acres that lie within the political boundaries of two counties, Cuyahoga and Lake, and three cities, Richmond Heights, Highland Heights, and Willoughby Hills. The Airport is principally located in Richmond Heights to the east of Richmond Road, north of Highland Road, and south of White Road. On the east side of the Airport is Bishop Road (with an Airport parcel extending east of the road that incorporates a golf course). The Airport is located approximately 10 minutes from Interstate 90, a major east-west highway, and

Interstate 271, a major north-south highway. **Figure 1-2 Location Map** shows the Airport and the surrounding vicinity.

Cuyahoga County undertook an Airport Master Plan update beginning in 2003. An important reason for undertaking the 2003 Airport Master Plan Update was to consider how best to address known runway safety area deficiencies. According to the standards established in FAA Order 5200.8(10)b, the existing Runway Safety Area (RSA) lengths are currently deficient at both runway ends. A draft final report was presented to the Cuyahoga County Commissioners in February 2009. It included the inventory and forecast phases of the study, the selection of a design aircraft, and thirty-five airfield development concepts and a No-Build Alternative.

The findings of the study justified a 6,000-foot runway length and recommended a 900-foot runway extension with the relocation of both Richmond and Bishop Roads. The public strongly opposed the recommendation and clearly demonstrated their opposition. As a result, the consulting team for the Master Plan was directed to reconsider solutions with fewer off-site impacts. Four additional airfield development alternatives were developed. Also, several alternatives were revisited that had been dismissed during the initial evaluation process because they did not meet the airport's user needs. In July 2010, the Master Plan was approved with an Ultimate Layout Plan (Alternative 38) reflecting the long term needs of the airport (6,000 feet of runway length) while Alternative 23 (5,502 feet of runway length) was identified as the Preferred Alternative for an interim development to address runway safety area improvements as well as improvements to the pavement conditions. The project objective and goals address these interim development needs.

**Figure 1-1 Future Airport Layout Plan**




| RUNWAY DATA TABLE | | |
|---|---|---|
| Runway Data | Runway 6/24 Existing | Runway 6/24 Proposed |
| Effective Gradient (%) | 0.1% | 0.1% |
| Wind Coverage (%) | 86.93% (10.5 knots) | 86.93% (10.5 knots) |
| Max. Elevation (MSL) | 879' | 879' |
| Runway Length | 5,102' | 5,502' |
| Runway Width | 100' | 100' |
| Surface Type | asphalt, grooved | asphalt, grooved |
| Pavement Strength | | |
| Single Wheel | 43,000 lbs. | n/a |
| Dual Wheel | 55,000 lbs. | 100,000 lbs. |
| Dual Tandem | 100,000 lbs. | n/a |
| Approach Type | NPI / PIR | NPI / PIR |
| Approach Surface Slope | 34:1 / 50:1 | 34:1 / 50:1 |
| Approach Minimums | 1-1¼ mile / ¾ mile | 1-1¼ mile / ¾ mile |
| Visual Approach Aids | PAPI-4L, REIL / PAPI-4L, MALSR | PAPI-4L, REIL / PAPI-4L, MALSR |
| Instrument Approach Aids | LOC BC / ILS/DME, NDB or GPS | LOC BC / ILS/DME, NDB or GPS |
| Runway Lighting | HIRL | HIRL |
| Runway Marking | NPI / PIR | NPI / PIR |
| Airport Reference Code (ARC) | D-II | D-II |
| Critical Aircraft | Gulfstream IV | Gulfstream IV |
| Runway Object Free Area (ROFA) | | |
| Length Beyond Runway | 1,000' | 600' (w/EMAS) |
| Width | 800' | 800' |
| Runway Safety Area (RSA) | | |
| Length Beyond Runway | 1,000' | 600' (w/EMAS) |
| Width | 500' | 500' |
| Runway Obstacle Free Zone (ROFZ) | | |
| Length Beyond Runway | 200' | 200' |
| Width | 400' | 400' |
| Precision Obstacle Free Zone (POFZ) | | |
| Length Beyond Runway | 200' | 200' |
| Width | 800' | 800' |
| Runway Protection Zone Dimensions | | |
| Runway 6 | 500' x 1,010' x 1,700' | 500' x 1,010' x 1,700' |
| Runway 24 | 1,000' x 1,750' x 2,500' | 1,000' x 1,750' x 2,500' |
| Runway End Coordinates (NAD 83) | | |
| Latitude | 6: 41° 33' 38.073" N | 6: 41° 33' 32.294" N |
| Longitude | 6: 81° 29' 36.392" W | 6: 81° 29' 45.394" W |
| Displaced Threshold - Lat. | | 6 DT: 41° 33' 36.147" N |
| Displaced Threshold - Long. | | 6 DT: 81° 29' 39.391" W |
| Latitude | 24: 41° 34' 10.818" N | 24: 41° 34' 10.818" N |
| Longitude | 24: 81° 28' 45.372" W | 24: 81° 28' 45.372" W |
| Displaced Threshold - Lat. | | 24 DT: 41° 34' 08.894" N |
| Displaced Threshold - Long. | | 24 DT: 81° 28' 48.368" W |
| Runway End Elevations (MSL) | 872.48' / 878.67' | 871' / 878.67' |
| TDZ Elevation (MSL) | 872.48' / 878.67' | 872.48' / 872' |

| AIRPORT DESIGN STANDARDS COMPARISON | | |
|---|---|---|
| Item | Design Standard ARC D-II | Existing Dimension |
| Runway Safety Area | | |
| Width | 500' | 500' |
| Length (Beyond Runway End 24) | 1,000' | 105' |
| Length (Beyond Stopway End 6) | 1,000' | 510' |
| Runway Object Free Area | | |
| Width | 800' | 800' |
| Length (Beyond Runway End 24) | 1,000' | 0' |
| Length (Beyond Stopway End 6) | 1,000' | 285' |
| Runway to Taxiway Centerline Separation | 400' | 375' |

| AIRPORT DATA TABLE | | |
|---|---|---|
| Airport Data | Existing | Proposed |
| Airport Elevation (MSL) | 879' | 879' |
| Airport Reference Point (NAD 83) | | |
| Latitude | 41° 33' 54.446" N | 41° 33' 52.200" N |
| Longitude | 81° 29' 10.884" W | 81° 29' 14.382" W |
| Mean Max Temperature of Hottest Month | 81.4° F | 81.4° F |
| Airport Terminal Area NAVAIDS | ATCT, lighted windsock, segmented circle, beacon | ATCT, lighted windsock, segmented circle, beacon, AWOS |
| Magnetic Variation | 7.5° W | 7.5° W |
| Date of Magnetic Variation | 1995 | 1995 |
| NPIAS Service Level | RL | RL |
| State Service Level | TC | TC |
| Wind Coverage Crosswind Component @10.5 knots & 13 knots | | |
| VFR | 87.13%; 93.40% | 87.13%; 93.40% |
| IFR | 85.06%; 92.26% | 85.06%; 92.26% |
| All Weather | 86.93%; 93.29% | 86.93%; 93.29% |
| Airport Reference Code | D-II | D-II |
| Aircraft Approach Category | D | D |
| Airplane Design Group | II | II |
| Design Aircraft | Gulfstream IV | Gulfstream IV |
| Tail Height | 24.4' | 24.4' |
| Taxiway Lighting | MITL | MITL |
| Taxiway Marking | Standard | Standard |

NOTE: THE FAA'S APPROVAL OF THIS AIRPORT LAYOUT PLAN (ALP) REPRESENTS ACCEPTANCE OF THE GENERAL LOCATION OF FUTURE FACILITIES DEPICTED. DURING THE PRELIMINARY DESIGN PHASE, THE AIRPORT OWNER IS REQUIRED TO RESUBMIT FOR APPROVAL, THE FINAL LOCATIONS, HEIGHTS, AND EXTERIOR FINISH OF STRUCTURES. FAA CONCERN IS OBSTRUCTIONS, IMPACT ON ELECTRONIC AIDS, OR ADVERSE EFFECT ON CONTROLLER VIEW OF AIRCRAFT APPROACHES AND GROUND MOVEMENT AREAS, WHICH COULD ADVERSELY AFFECT THE SAFETY, EFFICIENCY, OR UTILITY OF THE AIRPORT.

| FACILITIES TABLE | | | | |
|---|---|---|---|---|
| Existing | | | Proposed | |
| # | Facility Name | Top Elevation | # | Facility Name | Top Elevation |
| 1 | T-Hangars | 898' MSL | 1 | T-Hangars (to be relocated) | |
| 2 | Corporate Wings Hangar | 895' MSL | 2 | Corporate Wings Hangar | 895' MSL* |
| 3 | Corporate Wings Hangar | 895' MSL | 3 | Corporate Wings Hangar | 895' MSL* |
| 4 | Flight Options Hangar | 890' MSL | 4 | Flight Options Hangar | 890' MSL* |
| 5 | Flight Options Hangar | 895' MSL | 5 | Flight Options Hangar | 895' MSL* |
| 6 | Corporate Wings Hangar | 895' MSL | 6 | Corporate Wings Hangar | 895' MSL* |
| 7 | Flight Options Hangar | 900' MSL | 7 | Flight Options Hangar | 900' MSL* |
| 8 | County/Admin/Maintenance/ARFF Building | 884' MSL | 8 | County/Admin/Maintenance/ARFF Building | 884' MSL |
| 9 | Eaton Corporation Hangar | 895' MSL | 9 | Eaton Corporation Hangar | 895' MSL* |
| 10 | Destination Building | 900' MSL | 10 | Destination Building | 900' MSL* |
| 11 | National City Bank Hangar | 895' MSL | 11 | National City Bank Hangar | 895' MSL* |
| 12 | Fine Star Aviation Hangar | 903' MSL | 12 | Fine Star Aviation Hangar | 903' MSL* |
| 13 | Horizon Building | 898' MSL | 13 | Horizon Building | 898' MSL* |
| 14 | Curtiss Wright Center - II | 868' MSL | 14 | Curtiss Wright Center - II | 868' MSL* |
| 15 | Associates Estates | 860' MSL | 15 | Associates Estates | 860' MSL* |
| 16 | Curtiss Wright Center - I | 865' MSL | 16 | Curtiss Wright Center - I | 865' MSL* |
| 17 | Curtiss Wright Center - III | 868' MSL | 17 | Curtiss Wright Center - III | 868' MSL* |
| 18 | Curtiss Wright Center - IV | 872' MSL | 18 | Curtiss Wright Center - IV | 872' MSL* |
| 19 | Zomar T-Hangars | 900' MSL | 19 | Zomar T-Hangars | 900' MSL* |
| 20 | Swagelok Hangar | 920' MSL | 20 | Swagelok Hangar | 920' MSL* |
| 21 | Corporate Wings Hangar | 895' MSL | 21 | Corporate Wings Hangar | 895' MSL* |
| 22 | Air Traffic Control Tower | 968' MSL | 22 | Air Traffic Control Tower | 968' MSL |
| 23 | Corporate Hangar | 905' MSL | 23 | Corporate Hangar | 905' MSL* |
| | | | 24 | T-Hangars | 910' MSL* |
| | | | 25 | T-Hangars | 910' MSL* |
| | | | 26 | Corporate Hangar | 905' MSL* |
| | | | 27 | Corporate Hangar | 905' MSL* |
| | | | 28 | Corporate Hangar | 905' MSL* |

* building top elevation estimated

NOTE THERE ARE NO LINE OF SIGHT ISSUES WITH THE ATCT AND NONE ARE EXPECTED IN THE FUTURE.

| DEVELOPMENT PROJECT PHASING |
|---|
| Phase 1 (2006-2010) |
| 1-1 Purchase and Install Automated Weather Observation System (AWOS) and Upgrade Runway Sensor System |
| 1-2 Airport Administrative and Maintenance Expansion (Building and Auto Parking) |
| 1-3 Airport Perimeter Fencing |
| 1-4 Electrical Improvements (Transformer and Field Lighting Loop) |
| 1-5 Rehabilitate Taxiways A, A1, A2, A3, A5, A6, A7 and A8 |
| 1-6 Aircraft Run-Up Enclosure (Design and Construct) |
| 1-7 Runway Safety Area Improvements |
| Phase 2 (2011-2015) |
| 2-1 Runway Rehabilitation and Extension of Runway and Parallel Taxiway to 5,502' (Design and Construct) |
| 2-2 Land/Easement Acquisition for Runway 6-24 Improvements |
| 2-3 Relocate Taxiway A (Design and Construct) |
| 2-4 Design and Construct Two 10-Bay T-Hangars |
| 2-5 Design and Construct Based Aircraft Apron |
| 2-6 Demolition of County T-Hangars |
| Phase 3 (2016-2025) |
| 3-1 Design and Construct Corporate Hangars (3) |
| 3-2 Design and Construct Corporate Apron Expansion |

| LEGEND | | |
|---|---|---|
| Existing | Description | Proposed |
| | Runway Centerline | |
| RSA | Runway Safety Area (RSA) | RSA |
| ROFA | Runway Object Free Area (ROFA) | ROFA |
| ROFZ | Runway Obstacle Free Zone (ROFZ) | ROFZ |
| | Runway Protection Zone (RPZ) | |
| TOFA | Taxiway Object Free Area (TOFA) | TOFA |
| TSA | Taxiway Safety Area | TSA |
| BRL | Building Restriction Line (BRL) | BRL |
| | Airport Pavement | |
| ARP | Airport Reference Point | ARP |
| | Airport Buildings | |
| | Other Buildings | |
| PAPL | Airport Property Line | PAPL |
| | Other Property Lines | |
| | Railroad | |
| | Fence | |
| | Roads | |
| | Tree Line | |
| | Wetlands | |
| | Ground Elevation Contours | |
| | Proposed Land Acquisition | |
| | Proposed EMAS | |

NOTE: TOPOGRAPHICAL CONTOURS ARE IN 5-FOOT INCREMENTS.

| REVISIONS | | |
|---|---|---|
| BY | DATE | CHANGE |
| | | |

**CUYAHOGA COUNTY AIRPORT**

CUYAHOGA COUNTY — STATE OF OHIO

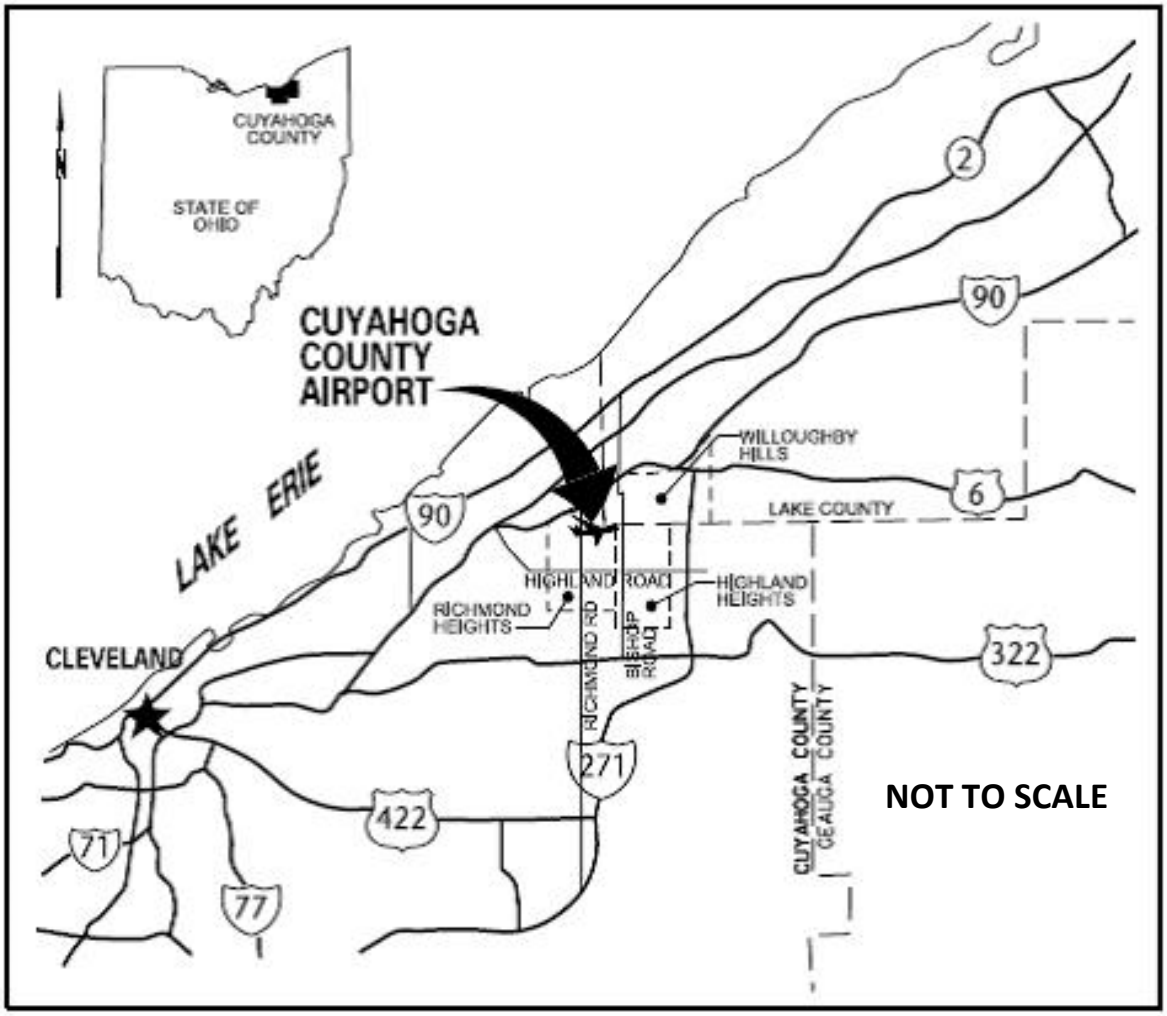
**FUTURE AIRPORT LAYOUT PLAN**

DESIGNED: JCT | DRAWN: JCT | CHECKED: KGK | DATE: MAY 2010 | SHEET 3 OF 17

PROJECT FILE NO.: A27.001.001 | CADD FILE NO.: Cuyahoga Future ALP

C S

**Figure 1-2 Location Map**




Source: CGF Airport Layout Plan

## 1.3 Project Purpose

The purpose of the project is to provide 5,500 feet of usable runway length for aircraft to takeoff in either direction and to establish compliant RSAs per FAA requirements. The project being evaluated in the EA is first and foremost a safety enhancement project to rehabilitate the runway and improve the runway safety areas to the extent practicable. A 400-foot runway extension will also be evaluated as a part of this project. This justification was established through the 2010 Airport Master Plan.

The Airport Master Plan was initially undertaken in 2003. The planning effort included a runway justification study which was part of the Master Plan's Appendix D (*Facility Requirements – Correspondence and Documentation*). It is included here as **Appendix M Runway Justification**. The recommended runway length exercise concluded that "…the recommended future runway length at Cuyahoga County Airport is at least 6,000 feet to meet the needs of the existing business jet operators both based at the Airport and using the Airport on a transient basis."

The Airport Master Plan was completed over a span of seven years. During this time, the initial recommendation for a 6,000 foot runway was revised as a result of public opposition to off-site impacts such as road relocations and community impacts. A change in the course of action was requested by the Airport and summarized in Chapter 5, Section 5.03-42: *Reevaluation of Airfield Alternatives*. It reads in part as follows:

> …It was determined that Alternative 23 is the airfield development alternative that best meets the need of the Airport and users with little or no adverse impacts to the neighboring communities or the environment. This alternative will be developed as the Future Airport Layout Plan for the Airport and Alternative 38 will become the Ultimate Airport Layout Plan.

As part of the Master Plan, user needs for additional runway length are addressed "to the degree possible" with the development of a 5,502-foot runway as shown in Alternative 23. An extension to 5,502 feet will serve as an improvement for business jet users, however it may continue to constrain operations in inclement weather or in terms of trip length. The Master Plan language explains that the plan will add 400 feet of runway length by extending the Runway 6 end and will provide runway safety areas that meet FAA-required design standards using an engineered materials arresting system (EMAS) at each runway end. An important feature of this design plan is that no road realignments are required.

Although the Ultimate Airport Layout Plan, including a 900' runway length, was kept as part of the long term Airport Layout Plan (ALP), the interim plan for development of the Airport focuses on a phased approach to first address the most immediate needs. As noted above, these include RSA improvements to meet current FAA required design standards and a 400' runway extension to a length of 5,502'. The existing runway pavement will be replaced to address its deteriorated condition. The design will also include the use of EMAS at both ends of the runway.

EMAS uses crushable concrete placed at the end of a runway to stop an aircraft that overruns the runway. The tires of the aircraft sink into the lightweight concrete and the aircraft is decelerated as it rolls through the material. Although a longer runway length was justified in the Master Plan, the interim length is shorter largely due to the public opposition to off-site impacts expressed during the Master Plan's development process.

During project definition, each airport design standard is evaluated to determine if it meets standards. If an airport design standard cannot be met to the extent practicable, the airport sponsor must request a modification to design standards from the FAA. A request for modification to design standards (MOS) are anticipated for the following during the design phase of the project:

> <u>Taxiway B Profile</u>
> The proposed work intends to correct non-standard RSA and Runway Object Free Area (ROFA) along the southeast edge of Runway 6/24, as well as remove existing ground obstructions from the FAR Part 77 Primary and 7:1 Transitional surfaces. However, the existing

ground near Taxiways B and U will remain within the ROFA, primary and 7:1 transitional surfaces following completion of this project. The longitudinal profile of Taxiway B within the RSA will be corrected to meet RSA grading criteria. It is not feasible to correct the remainder of Taxiway B without lowering Taxiways B and U, as well as the t-hangers along Taxiway W. Currently Taxiway B is a 4-foot penetration to the southern edge of the Primary Surface for Runway 6/24. As the profile of Taxiway B in this area is already at the steepest grade allowed (1.5%), there is no opportunity to lower the Taxiway at the edge of the Primary Surface without affecting the area to the south, including the existing hangars. Therefore a MOS will be requested to address this area that will remain non-standard with regards to ROFA and Part 77.

Temporary Non-Standard Conditions during Construction

Although the Airport wishes to complete the project over two construction seasons, the availability of FAA funding may dictate four to five years of construction. If the later scenario seems likely, subsequent construction phases will leave non-standard grade changes on the runway until they can be corrected with the next phase of the project. As funding availability becomes clearer, the construction phases will be adjusted to minimize these temporary conditions.

## 1.4 Project Need

The Airport does not currently meet the most current FAA design standards for the RSAs (FAA Advisory Circular 150/5300-13A Airport Design). RSAs are buffer areas around the runway that need to be kept clear for safety in case an aircraft goes off the runway at either end or on the side. As noted earlier, the FAA requires that RSAs be brought into compliance to the extent practicable as part of the runway improvement project according to FAA Order 5200.8(10)b.

At the same time, the runway and taxiway pavement at the Airport needs to be repaired. Preventive maintenance has been done for 30 years without any significant improvement project. Given the average lifespan of runway pavement is 20 years, reconstruction of the runway is overdue.

**Photo of Current Runway Condition**

The FAA made standard RSAs a priority with a directive in 1999 that requires all airports to correct RSA deficiencies. RSA compliance is “triggered” by a runway construction or rehabilitation project. The Airport’s Runway 6/24 is in need of pavement rehabilitation. Addressing the RSA deficiencies is a priority because FAA Airport Improvement Program (AIP) funding for runway construction or rehabilitation is contingent upon a design that meets all FAA standards to the extent practicable, including runway safety areas.

## 1.5 Proposed Improvements

Major development items, which will be covered as a part of this assessment include:

- Runway Safety Area (RSA) grading improvements to meet FAA design standards
- Remove stopway at Runway 6 approach end
- Extend Runway 6 approach end approximately 550 feet
- Install EMAS at Runway 6 approach end
- Displace threshold approximately 320 feet from new Runway 6 approach end
- Relocate Runway 24 approach end 150 feet in order to fit standard EMAS
- Install EMAS at Runway 24 approach end
- Displace Runway 24 threshold approximately 500 feet
- Closure of taxiways to accommodate Runway 6/24 relocation
- Construct new connector taxiways to accommodate runway 6/24 relocation
- Extension of Runway 6/24 runway and taxiway lighting facilities
- Relocation of navigational aids (NAVAIDS):
    - Runway 6 Runway End Identifier Lights (REILs)
    - Runway 6 Precision Approach Path Indicator (PAPIs)
    - Runway 24 Glide Slope (GS) Antenna
    - Runway 24 PAPIs
    - Runway 24 Medium-Intensity Approach Lighting System with Runway Alignment Indicator (MALSR)
- Development of new or revised approach and departure procedures, including flight check
- Property acquisition/easements
- Tree clearing in approach areas and transitional areas
- At this time, given the location of the proposed EMAS bed and the existing Runway 24 Localizer, it is not expected the localizer signal will be impacted. Any signal degradation modeling will be completed during final design.

## 1.6 Summary of Existing and Projected Operations

The airport recently completed an inventory in early 2013 that identified 206 based aircraft and total operations of 34,475. Of the 206 based aircraft, the following categories were reported to the FAA in the FAA 5010 report:

- 88 Single-engine aircraft
- 19 Multi-engine aircraft
- 98 Jet aircraft
- 1 Helicopter

The majority of the Airport's existing activity is generated by business aircraft both from based aircraft and itinerant operations. On-airport businesses include the Cleveland Jet Center, Flight Options LLC and commercial charter services. Companies including Progressive Insurance and

Swagelok have hangars at the airport to support business travel from nearby headquarters. The presence of personal aircraft and flying clubs at the airport drive General Aviation activity. There is no scheduled commercial service and no on-airport military activity at the Airport.

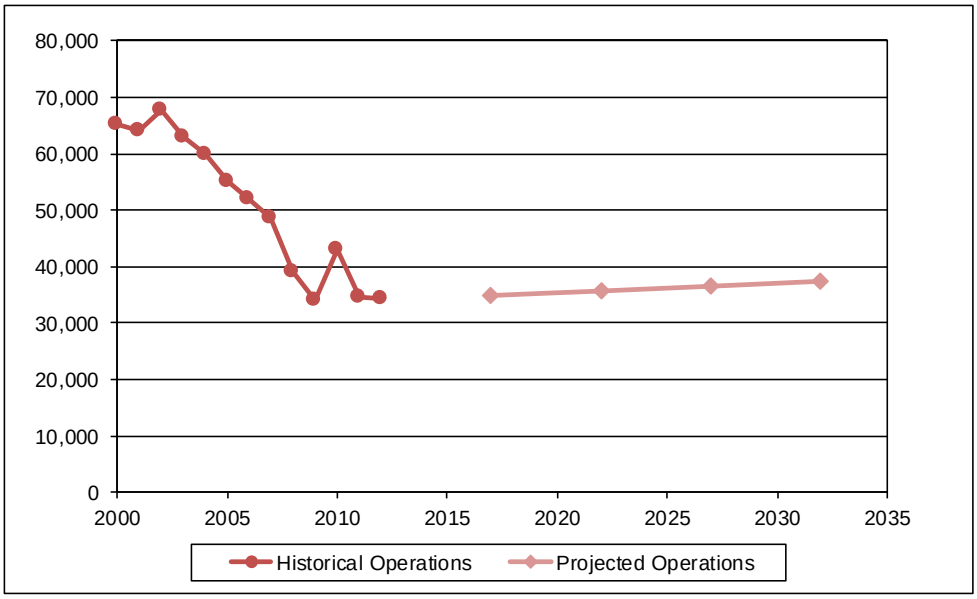
Projected Operations

The number and type of aircraft activity at the Airport has fluctuated in recent history. This is not uncommon in comparison to many US airports as economic uncertainty and increased travel costs have impacted travel behavior. Despite increases in fuel cost, and an economic downturn that has seen a slow recovery, the forecasts developed here suggest the number of based aircraft and total aircraft operations will grow modestly at the Airport over the next 20 years.

The stabilization and expected increase in general aviation activity at the Airport over the planning period mirrors the FAA's expectation that general aviation will experience modest growth at the national level. The FAA's national forecast is based on national economic and aviation trends including US Real Gross Domestic Product forecasts, the size of the national general aviation fleet, and the national general aviation hours flown. A summary of these projections is presented in **Table 1.0 Projections Summary**.

## Table 1.0: Projections Summary

| Year | Operations | | | | Based Aircraft |
|---|---|---|---|---|---|
| | Air Taxi | General Aviation | Military | Total | |
| **Historical** | | | | | |
| 2000 | 9,007 | 56,118 | 52 | 65,177 | 158 |
| 2001 | 11,325 | 52,657 | 101 | 64,083 | 186 |
| 2002 | 13,628 | 53,977 | 62 | 67,667 | 186 |
| 2003 | 11,903 | 50,973 | 67 | 62,943 | 206 |
| 2004 | 9,971 | 49,873 | 60 | 59,904 | 206 |
| 2005 | 7,870 | 47,154 | 51 | 55,075 | 301 |
| 2006 | 8,797 | 43,163 | 97 | 52,057 | 206 |
| 2007 | 9,115 | 39,524 | 95 | 48,734 | 206 |
| 2008 | 6,217 | 32,759 | 167 | 39,143 | 182 |
| 2009 | 4,021 | 30,132 | 35 | 34,188 | 182 |
| 2010 | 2,987 | 40,166 | 2 | 43,155 | 133 |
| 2011 | 2,980 | 31,648 | 14 | 34,642 | 133 |
| 2012 | 3,182 | 31,209 | 82 | 34,475 | 206 |
| **Projected** | | | | | |
| 2017 | 5,099 | 29,834 | 82 | 35,016 | 208 |
| 2022 | 5,213 | 30,502 | 82 | 35,797 | 212 |
| 2027 | 5,333 | 31,201 | 82 | 36,616 | 218 |
| 2032 | 5,458 | 31,936 | 82 | 37,476 | 227 |
| *CAGR (2012-2032)* | *2.73%* | *0.12%* | *0.00%* | *0.42%* | *0.50%* |




Note: Air Taxi activity at Cuyahoga County is generally small business jets with 4 to 10 seats, and propeller aircraft with 4 to 6 seats. This is not scheduled service.

Source: Historical Enplanements - FAA TAF
Historical Operations - Air Traffic Activity Data System (ATADS)
Historical Based Aircraft -FAA Terminal Area Forecast
Projections - Mead & Hunt, Inc., August 2012

A summary of these forecasts is also presented in **Table 1.1 Forecast Levels and Growth Rates** and **Table 1.2 Airport Operations**. For additional details on approved operations and forecasts see the complete *Forecast of Operations Report* included in the **Appendix A Forecast of Operations**. This data was taken from the *Forecast of Operations Report* dated August 2013 which was approved by the FAA on September 27, 2013. The numbering used in this section was retained from the approved forecast report to create the following tables.

The projection of operations based on the Market Share Methodology is almost identical to the Terminal Area Forecasts (TAF), which are the FAA's projections for operations at the Airport. The numbers differ by a less than 1% in 2017 and by less than 3% in 2032. These ranges are certainly within the parameters of variation to be considered consistent with the TAF. The Operations per Based Aircraft numbers also resulted in projections that varied by less than 2% from the TAF and from the preferred methodology over the 20-year planning horizon. This consistency across methodologies offers support to the conclusion that operations will continue to increase at a modest rate through 2032.

**Table 1.1 Forecast Levels and Growth Rates**

| | Specify base year: 2012 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 2012 | 2017 | 2022 | 2027 | 2032 | Average CAGR | | | |
| | Base Yr. Level | Base Yr. + 5yr. | Base Yr. + 10yrs. | Base Yr. + 15yrs. | Base Yr. + 20yrs. | Base Yr. + 5yr. | Base Yr. + 10yrs. | Base Yr. + 15yrs. | Base Yr. + 20yrs. |
| **Operations** | | | | | | | | | |
| Itinerant | | | | | | | | | |
| Commuter/air taxi | 3,182 | 5,099 | 5,213 | 5,333 | 5,458 | 9.9% | 5.1% | 3.5% | 2.7% |
| Total Commercial Operations | 3,184 | 5,099 | 5,213 | 5,333 | 5,459 | 9.9% | 5.1% | 3.5% | 2.7% |
| General aviation | 18,123 | 19,056 | 19,482 | 19,929 | 20,398 | 1.0% | 0.7% | 0.6% | 0.6% |
| Military | 82 | 69 | 69 | 69 | 69 | -3.5% | -1.8% | -1.2% | -0.9% |
| Local | | | | | | | | | |
| General aviation | 13,086 | 10,779 | 11,020 | 11,273 | 11,538 | -3.8% | -1.7% | -1.0% | -0.6% |
| Military | 0 | 13 | 13 | 13 | 13 | NA | NA | NA | NA |
| TOTAL OPERATIONS | 34,475 | 35,016 | 35,797 | 36,616 | 37,476 | 0.3% | 0.4% | 0.4% | 0.4% |
| **Instrument Operations** | 10,482 | 10,697 | 10,936 | 11,186 | 11,449 | 0.4% | 0.4% | 0.4% | 0.4% |
| **Peak Hour Operations** | 23 | 25 | 25 | 26 | 26 | 1.2% | 0.8% | 0.7% | 0.6% |
| **Based Aircraft** | | | | | | | | | |
| Single Engine (Nonjet) | 88 | 88 | 89 | 89 | 91 | -0.1% | 0.1% | 0.1% | 0.2% |
| Multi Engine (Nonjet) | 19 | 19 | 21 | 22 | 23 | -0.3% | 1.1% | 0.9% | 0.9% |
| Jet Engine | 98 | 100 | 102 | 105 | 111 | 0.4% | 0.4% | 0.4% | 0.6% |
| Helicopter | 1 | 1 | 1 | 2 | 2 | 7.9% | 4.0% | 5.3% | 4.2% |
| Other | 0 | 0 | 0 | 0 | 0 | NA | NA | NA | NA |
| TOTAL | 206 | 208 | 213 | 218 | 227 | 0.2% | 0.4% | 0.4% | 0.5% |
| **B. Operational Factors** | | | | | | | | | |
| | Base Yr. Level | Base Yr. + 5yr. | Base Yr. + 10yrs. | Base Yr. + 15yrs. | Base Yr. + 20yrs. | | | | |
| **Average aircraft size (seats)** | | | | | | | | | |
| Air carrier & Commuter | NA | NA | NA | NA | NA | | | | |
| **Average enplaning load factor** | | | | | | | | | |
| Air carrier & Commuter | NA | NA | NA | NA | NA | | | | |
| **GA operations per based aircraft** | 152 | 144 | 143 | 143 | 140 | | | | |

CAGR = Compound Annual Growth Rate

Source: Forecast of Operations Report for the Cuyahoga County Airport
FAA Approval: September 27, 2013

**Table 1.2 Airport Operations**

| | Year | Airport Forecast | TAF | AF/TAF (% Difference) |
|---|---|---|---|---|
| **Total Operations** | | | | |
| Base Yr. Level | 2012 | 34,475 | 34,455 | 0.1% |
| Base Yr. + 5yr. | 2017 | 35,016 | 35,026 | 0.0% |
| Base Yr. + 10yrs. | 2022 | 35,797 | 36,147 | -1.0% |
| Base Yr. + 15yrs. | 2027 | 36,616 | 37,326 | -1.9% |
| Base Yr. + 20yrs. | 2032 | 37,476 | 38,566 | -2.8% |

**NOTES:** TAF = Terminal Area Forecast
AF = Airport Forecast
TAF data is on a U.S. Government fiscal year basis (October through September). Airport Forecast is on a calendar year basis.

Source: Forecast of Operations Report for the Cuyahoga County Airport
FAA Approval: September 27, 2013

## 1.7 Required Environmental Review

The proposed Airport improvements require an EA be prepared under the direction of NEPA. NEPA requires any action that involves federal funding or federal permits to undergo an environmental analysis that evaluates and documents the effects of the proposed project on the surrounding natural, social, and economic environment.

This EA has been prepared in accordance with the requirements of NEPA, Title V of the Public Law 97-248 of the Airport and Airway Improvement Act of 1982, FAA Order 5050.4B, *NEPA Implementing Instructions for Airport Actions*, and FAA Order 1050.1E, *Environmental Impacts Policies and Procedures*.

## 1.8 Intent of Environmental Assessment

The intent of this EA is to provide the environmental documentation necessary to assist local, state, and federal agencies in evaluating the proposed development at the Airport. This EA will serve as a decision-making tool for local, state, and federal officials.

This EA is also developed to further determine whether any potential impacts associated with the proposed development are significant enough to necessitate a greater level of environmental analysis that would be achieved in an Environmental Impact Statement (EIS).

The proposed action will be evaluated, along with a range of alternatives including a No Build / Do Nothing Alternative, to identify a Preferred Alternative that meets the project's purpose and need. This analysis will also include measures to minimize and mitigate possible adverse environmental impacts associated with the Preferred Alternative.

## 1.9 Requested Federal Action

The following actions require approval prior to actual construction of the proposed project:

- This EA will be submitted to the FAA for evaluation. If the FAA concludes the proposed action will not cause a significant environmental impact, they may issue a Finding of No Significant Impact (FONSI) determination. If it is determined that a major or significant impact will result from the proposed action, the FAA may request that an EIS be completed.

- An EA is prepared when the proposed action includes mitigation measures to avoid, eliminate, or reduce impact to the environment. The FAA will carefully and thoroughly review the EA and make a determination if a FONSI can be issued. At the conclusion of the FAA's review of the EA, if it is determined the proposed actions impacts will meet or exceed the significance threshold, then the FAA will prepare an EIS.

- Unconditional approval of the ALP.

- Airport's ability to apply for federal funding.

## 1.10 Project Timeframe

The proposed project timeframe (pending approval of the EA and funding) is:

- Draft EA and Public Hearing: November 19, 2014
- Final EA and FONSI: Spring 2015
- Construction begins: No earlier than 2016

The construction timeframe is expected to be 2 to 5 years. Construction could be done in as few as two years if funding is available or could extend up to five construction seasons.

# Section 2.0 Alternatives Considered

## 2.1 Introduction

In accordance with the Council on Environmental Quality (CEQ) regulations found in 40 Code of Federal Regulations (CFR) § 1502.14(d), an environmental review process requires that all prudent and feasible alternatives be identified and evaluated that might accomplish the objectives of a proposed project.

As the lead federal agency, the Federal Aviation Administration (FAA) is responsible for complying with the policies and procedures of the National Environmental Policy Act (NEPA) of 1969 and other related environmental laws, regulations and orders applicable to FAA actions. This requires the FAA to identify the potential alternatives that are available to achieve the purpose and need for a proposed project and present the basis used to make an informed decision regarding the selection of a Preferred Alternative.

NEPA and FAA regulations do not require the inclusion of a specific number of alternatives or a specific range of alternatives in an Environmental Assessment (EA). However, an EA must consider the Proposed Action and the consequences of taking no action. For alternatives that were considered but eliminated from further study, the Airport Sponsor must briefly explain why such alternatives were eliminated from further discussion.

Pursuant to FAA regulations set forth in Order 1050.1E, *"Environmental Impacts: Policies and Procedures",* an alternatives discussion must include:

- A list of alternatives considered, including the Proposed Action and the No Action alternatives
- Any connected or cumulative actions associated with each alternative
- A concise statement explaining why any initial alternative considered was eliminated from further study
- A statement identifying a Preferred Alternative, if one has been identified
- Any other applicable laws, regulations, executive orders and associated permits, licenses, approvals and reviews required to implement a project alternative

Alternatives discussed in this section were the result of the Cuyahoga County Airport Master Plan Update completed in February 2010. The Master Plan Update included forty (40) airfield development alternatives, eight of which were selected for further evaluation during this EA because they met the Cuyahoga County Airport's (Airport or CGF) need of compliant Runway Safety Areas (RSAs) and 5,500 feet of usable runway length. For additional details of why the project is needed, see **Section 1.0 Purpose and Need**.

The following alternatives are presented and discussed in this section:

Administrative Options:

- No-Build Alternative
- Build a New Airport at a Different Location
- Use Another Airport in the Vicinity

Build Alternatives:

- Alternative 15 – Runway Reorientation (Relocate Bishop & Richmond Road)
- Alternative 16 – Runway 6 Extension to West (Relocate Richmond Road)
- Alternative 17 – Runway 24 Extension to East (Relocate Bishop Road)
- Alternative 18 – Runway 24 Extension to the East (Tunnel Bishop Road)
- Alternative 19 – Road Relocations at Both Runway Ends
- Alternative 23 – Engineered Materials Arresting Systems (EMAS) at Both Runway Ends (Master Plan Preferred Alternative)
- Alternative 24 – Combination of Runway 24 Shift to West and Runway 6 EMAS

An overview of potential impacts is provided in **Section 2.15 Overview of Impacts.** This section quantifies the expected impacts from each build alternative and provides a ranking system for comparison.

## 2.2 Safety Areas

Safety areas, as defined by the FAA in Advisory Circular (AC) 150/5300-13A Change 1, are of importance in evaluating any potential alternative because they are a controlling factor for each runway end and for determining potential impacts. This section includes a definition of the different safety areas that are required by FAA design standards.

Runway Safety Area (RSA): The RSA is a graded area surrounding the runway surface and is constructed to enhance the safety of airplanes in the event of an unintended excursion from the runway's paved surface. This area must be:

- Cleared and graded with no potentially hazardous humps, ruts, depressions or other surface variations
- Adequately drained to prevent water accumulation
- Capable of supporting snow removal equipment, rescue and firefighting equipment, and occasional aircraft passage without causing structural damage to the aircraft
- Free of objects, except for those that need to be located in the RSA because of their function, and then, to the extent practical, mounted on low impact (frangible) structures
- Capable, under normal (dry) conditions, of supporting airplanes without causing structural damage to the airplanes or injury to their occupants

Runway Object Free Area (ROFA): A ROFA is a two-dimensional ground surface surrounding a runway. The ROFA clearing standards preclude above ground objects protruding above the RSA edge elevation, except those required to be located within the ROFA for navigation, ground maneuvering, aircraft taxi and aircraft holding purposes. No other objects are permitted.

The size of an RSA and ROFA is predicated upon specific runway and visibility minimums. **Table 2.0 Runway Safety Area / Runway Object Free Area** illustrates the FAA design standard for CGF and the existing conditions at the Airport.

**Table 2.0**
**Runway Safety Area / Runway Object Free Area**

| Design Element | FAA Standard | Existing Condition |
|---|---|---|
| Runway Width | 100 ft | 100 ft |
| Runway Safety Area | | |
| Width | 500 ft | 310 ft |
| Length Beyond Runway 6 End | 1,000 ft | 43 ft |
| Length Beyond Runway 24 End | 1,000 ft | 57 ft |
| Runway Object Free Area | | |
| Width | 800 ft | 735 ft |
| Length Beyond Runway 6 End | 1,000 ft | 285 ft |
| Length Beyond Runway 24 End | 1,000 ft | 0 ft |

Source: CHA Runway 6/24 Safety Area Improvements, Project Definition Report & 30% Design Report, 2013

Runway Protection Zone (RPZ): The RPZ is a trapezoidal shape centered about the extended runway centerline. The function of a RPZ is to enhance the protection of people and property on the ground, protect airspace and prevent incompatible land uses. Airports are encouraged by the FAA to control the land within the RPZ to prevent the creation of hazards to landing and departing aircraft.

## 2.3 No-Build Alternative

The No-Build Alternative assumes that no action would be taken to reorient or extend Runway 6/24 or establish compliant RSAs. Under this alternative, the Airport would remain in its current state with no plans to provide additional runway length as requested by existing users or to improve safety areas as required by the FAA. As such, the No-Build Alternative does not meet the project's purpose and need of providing a compliant air transportation facility with enhanced takeoff lengths.

Although the No-Build Alternative does not meet the purpose and need of the proposed action, it does serve as a baseline of comparison for environmental impacts associated with other build alternatives and is, therefore, retained for analysis and carried forward for review.

## 2.4 Build a New Airport at a Different Location

Generally, the development and construction of a new airport is considered when an existing airport is approaching or has exceeded operational capacity and it is not feasible to expand at its current location. This is not the case at Cuyahoga County Airport which is projected to have adequate capacity for the 20-year planning horizon.

Substantial improvements and investments have been made at the current site with future improvement projects currently planned. Closing the existing Airport to relocate to a different location would create a significant loss of public and private investment and would be fiscally irresponsible in light of past federal, state and local investments.

The benefits of developing another airport facility are limited. Development of a new site to replace the functions of CGF would likely involve considerable land acquisitions, could have unacceptable environmental impacts, and could cause severe residential and commercial relocations. Site preparation and construction of new facilities to provide equivalent services as CGF would take years to accomplish and the cost of such actions would be substantial.

Although constructing a new airport would accomplish the project's purpose and need of FAA compliant safety areas, this can be met at the existing location more practicably and feasibly with minimal social, environmental or economic (SEE) impacts when compared to the construction of a new airport at a different location. Construction of a new airport is not a prudent use of public funds. As a result, this alternative has been removed from further consideration.

## 2.5 Use Another Airport in the Vicinity

Three airports in the vicinity of CGF were considered as replacement facilities for CGF (Lost Nation Municipal Airport, Burke Lakefront Airport and Cleveland-Hopkins International Airport). Although all three airports meet the project's purpose and need of providing compliant RSAs, as described below, each airport has extenuating circumstances that eliminate it from further consideration.

Lost Nation Municipal Airport is approximately 11 miles from CGF, but only provides a runway length of 5,028 feet. This fails to meet the project's purpose and need of providing 5,500 of useable runway length for takeoff in both directions.

Burke Lakefront Airport is approximately 13 miles from CGF and provides a runway length of 6,603 feet. This runway length would satisfy the need for 5,500 feet of useable runway length as described in project's purpose and need. However, given Burke Lakefront Airport's current infrastructure constraints and physical limitations to expand, it is unlikely that it would be able to absorb the tenants and aircraft operations from CGF.

Cleveland-Hopkins International Airport is approximately 30 miles from CGF and provides several runways that exceed the 5,500 foot runway length needed to satisfy the project's purpose and

need. Hopkins is primarily focused on serving commercial airlines and introducing a significant number of general aviation operations could impact its airfield capacity.

Additionally, CGF is part of the National Plan of Integrated Airport Systems (NPIAS) and is considered significant to the success of the national air transportation system and thus eligible to receive Federal grants under the Airport Improvement Program (AIP). Requiring existing users of CGF to relocate 30 miles from a functioning facility as well as expecting the FAA to surrender an asset that is considered a national resource is unreasonable.

Relocating airport operations to another facility and abandoning the existing infrastructure is not a practicable or feasible alternative since there is a demonstrated need to provide an airport in the local community. These options would cause the FAA and the County to lose their public investment in the facility and would cause businesses to lose their private investment. These actions would be limited by the FAA's Grant Assurances and would have a negative impact on the regional economy. These alternatives do not represent prudent and feasible options and therefore were removed from further consideration.

## 2.6 Alternative 15 – Runway Reorientation (Relocate Bishop & Richmond Road)

With this alternative, Runway 6/24 would be reoriented and constructed to 5,500 feet in length with standard RSAs and ROFAs beyond the runway's thresholds as shown on **Figure 2.1 Alternative 15 – Runway Reorientation (Relocate Bishop and Richmond Road)**. This alternative requires rerouting Richmond and Bishop Roads and Curtiss Wright Parkway as well as the construction of a new runway, parallel taxiway, connecting taxiways and other infrastructure.

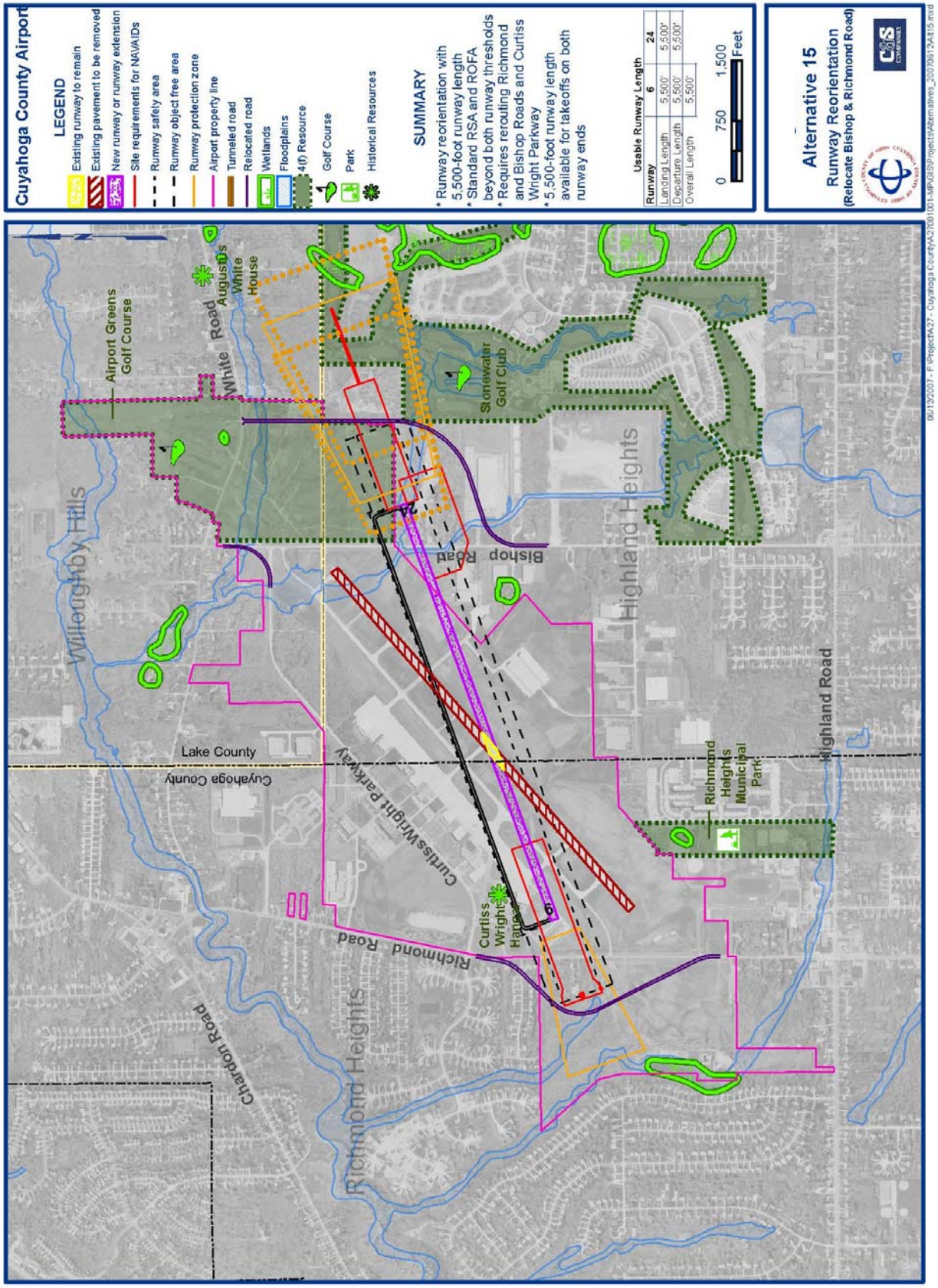
This alternative provides 5,500 feet of pavement for takeoff and landing operations with compliant safety areas. Although Alternative 15 is considered a sound alternative to meet the project's primary purpose and need, it requires significant road relocation and represents an expansion of the airport - both of which are opposed by the local communities. This alternative would require replacement or relocation of infrastructure the airport has already constructed and installed.

Compared to the other build alternatives, Alternative 15 requires the most road relocation and ground disturbance and generally has the most community impacts of all the alternatives being considered. This alternative has the most impact on streams and farmland, but is expected to have the least amount of impacts to wetlands. Alternative 15 also impacts parkland and recreational resources in the area.

Alternative 15 would require property acquisition to extend the airport property boundary and to clear obstructions on the northeast end of the airfield. This alternative cannot be implemented on existing airport property.

Due to the availability of other more fiscally responsible alternatives which are supported locally, Alternative 15 has been eliminated from further consideration.

**Figure 2.1 Alternative 15 – Runway Reorientation (Relocate Bishop and Richmond Road)**



## 2.7 Alternative 16 – Runway 6 Extension to West (Relocate Richmond Road)

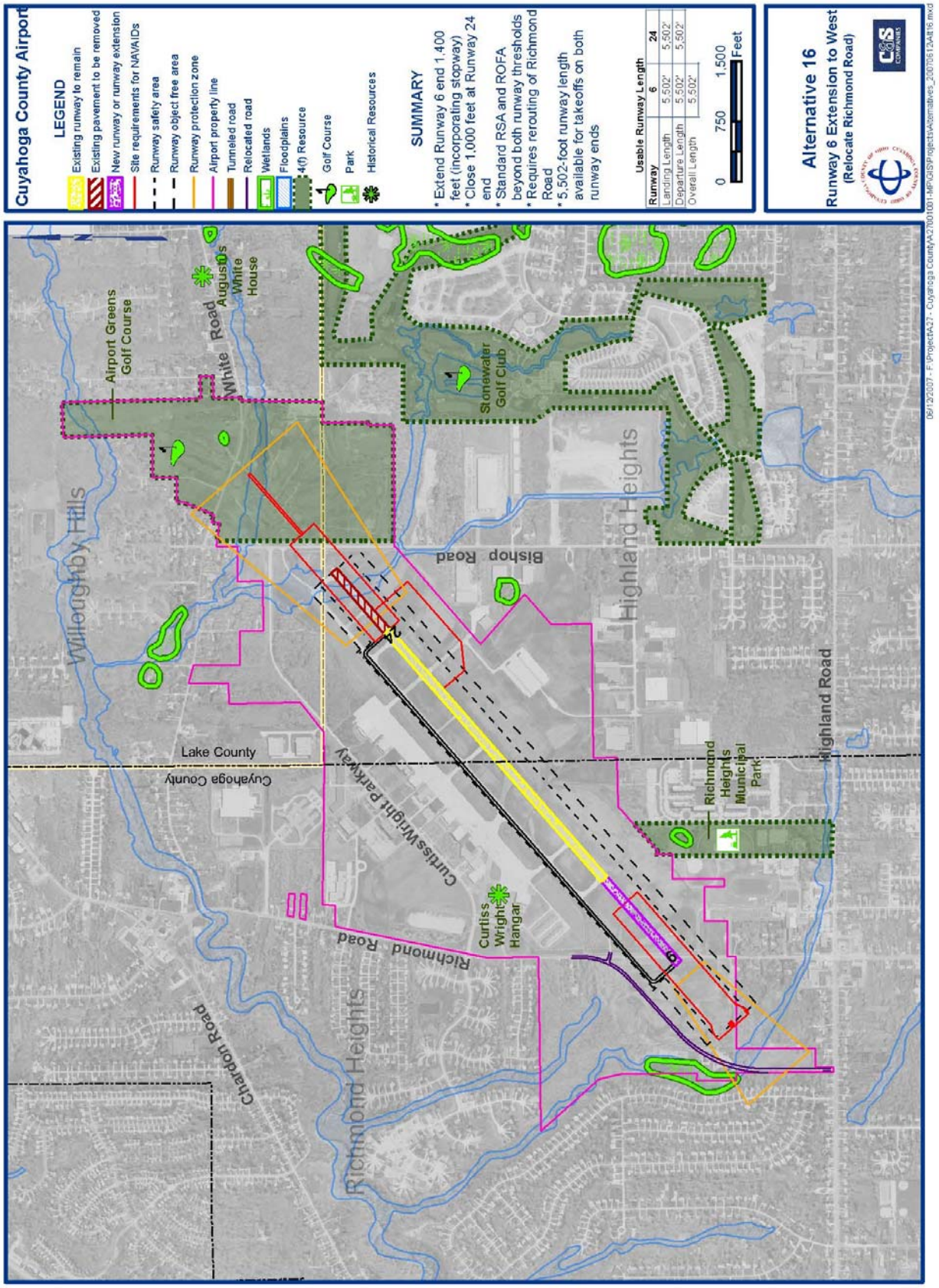
Under this alternative, the Runway 6 end would be extended 1,400 feet and 1,000 feet of Runway 24 would be closed by removing existing pavement (**Figure 2.2 Alternative 16 – Runway 6 Extension to West (Relocate Richmond Road)**). Standard RSAs and ROFAs would be constructed beyond the runway's thresholds. This alternative requires relocating Richmond Road.

This alternative provides 5,502 feet of pavement for takeoff and landing operations with compliant safety areas.

When compared to the other build alternatives, Alternative 16 has the most impacts on wetlands, floodplains and ditches. It also requires a road relocation of Richmond Road. Property acquisition is required to clear runway surfaces and approaches which represents an expansion of the airport off existing airport owned property. Both road relocation and airport expansion are opposed by the local communities.

Although Alternative 16 is considered a viable alternative to meet the project's primary purpose and need, it is removed from further consideration due to the availability of other more feasible and less environmentally damaging alternatives that are supported by the local community.

**Figure 2.2 Alternative 16 – Runway 6 Extension to West (Relocate Richmond Road)**



## 2.8 Alternative 17 – Runway 24 Extension to East (Relocate Bishop Road)

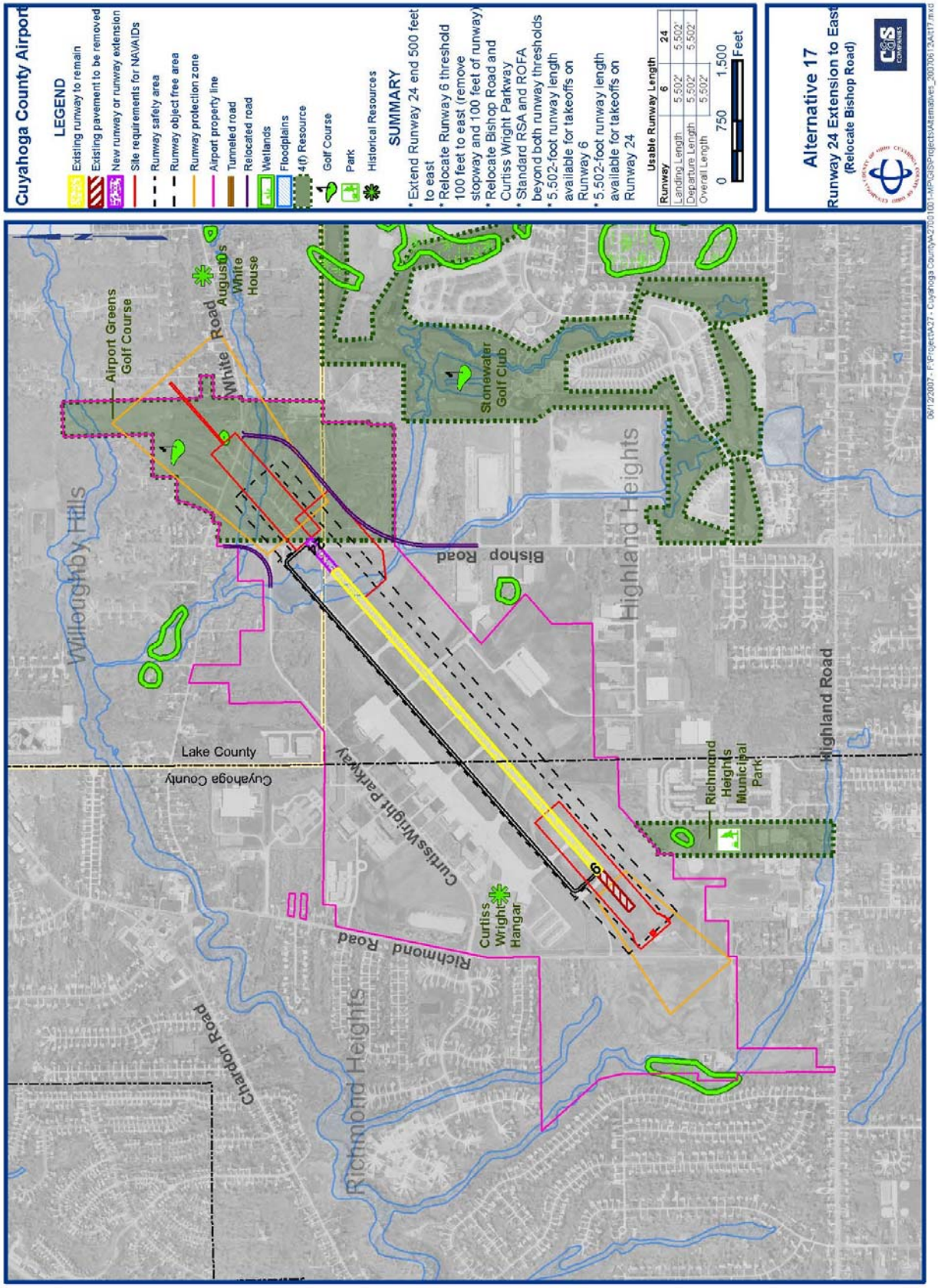
With this alternative, Runway 24 would be extended 500 feet to the east while 100 feet of Runway 6 and the associated stopway would be closed by removing existing pavement (**Figure 2.3 Alternative 17 – Runway 24 Extension to East (Relocate Bishop Road)**). Standard RSAs and ROFAs would be constructed beyond the runway's thresholds. This alternative requires rerouting Bishop Road and Curtiss Wright Parkway.

Alternative 17 provides 5,502 feet of pavement for takeoff and landing operations with compliant safety areas.

Compared to the other build alternatives, Alternative 17 has substantial community impacts in the categories of road relocation and parkland and recreational resources. Although wetlands, floodplains, streams and farmland impacts are not the largest with this alternative, there are other alternatives that have even less environmental impacts. This alternative could be implemented within existing airport property, except for potential obstruction and RPZ clearing at the Runway 24 end of the airfield, by extending across Bishop Road onto the golf course.

Alternative 17 is considered a sound alternative to meet the project's primary purpose and need. However, due to the road relocation (which is opposed by the local community) and the availability of more prudent and feasible alternatives with fewer environmental impacts, Alternative 17 has been removed from further consideration.

**Figure 2.3 Alternative 17 – Runway 24 Extension to East (Relocate Bishop Road)**



## 2.9 Alternative 18 – Runway 24 Extension to the East (Tunnel Bishop Road)

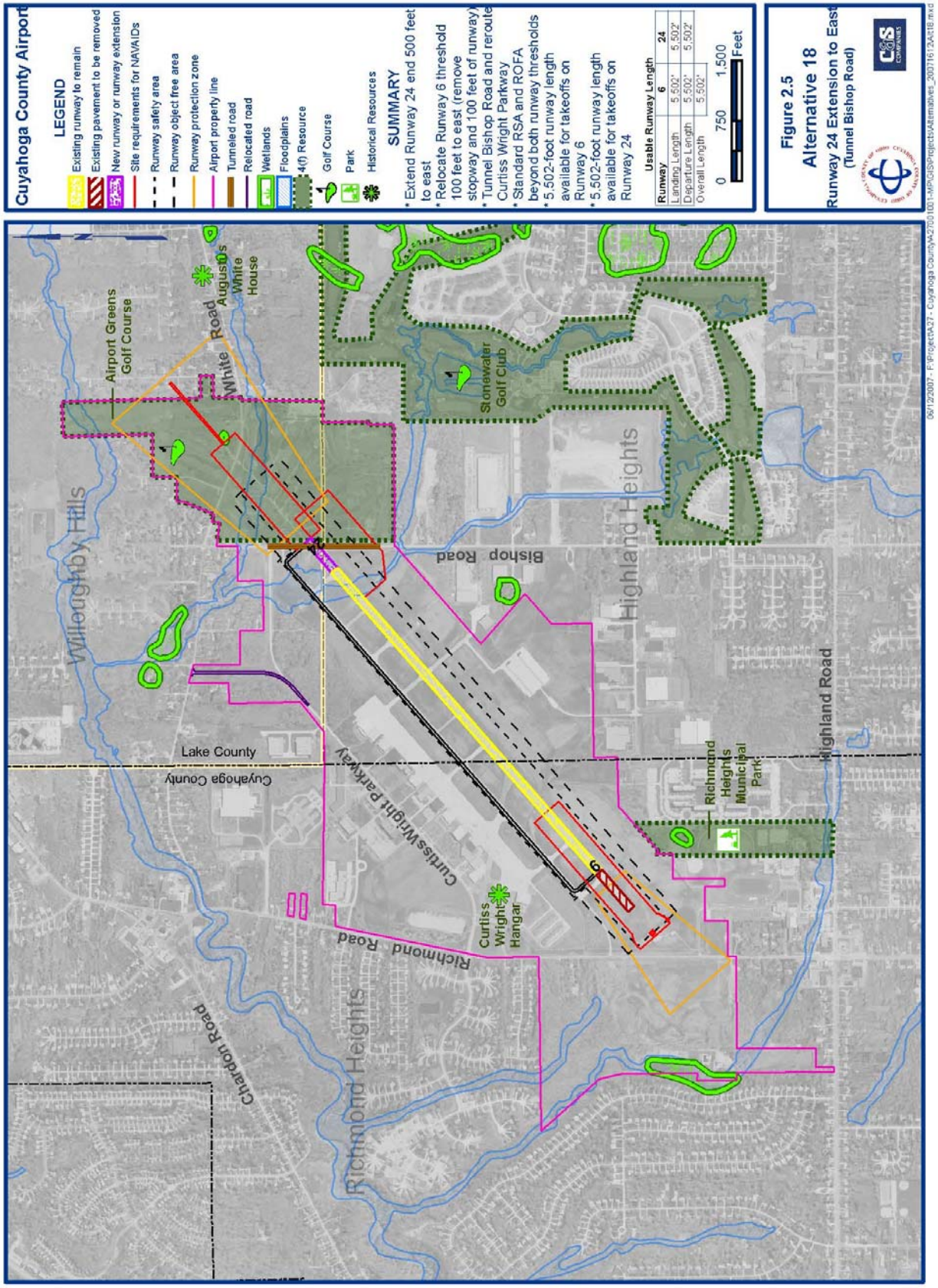
In this alternative, Runway 24 would be extended 500 feet to the east additionally 100 feet of Runway 6 and the associated stopway would be closed by removing existing pavement (**Figure 2.4 Alternative 18 – Runway 24 Extension to East (Tunnel Bishop Road)**). Standard RSAs and ROFAs would be constructed beyond the runway's thresholds. This alternative requires constructing a tunnel under the extended runway for Bishop Road and rerouting Curtiss Wright Parkway.

Like, the previous three alternatives, this alternative provides 5,502 feet of pavement for takeoff and landing operations with compliant safety areas.

Compared to the other build alternatives, Alternative 18 has more impacts to parkland and recreational resources, wetlands, floodplains, streams and farmland and requires more road relocation and ground disturbance than most of the other alternatives. This alternative could be implemented within existing airport property, except for obstruction and RPZ clearing at the Runway 24 end of the airfield, by extending over Bishop Road onto the golf course.

Although Alternative 18 is considered a sound alternative and meets the project's primary purpose and need, it is opposed by the local communities due to the road impacts. In addition, the construction of a tunnel would be cost prohibitive. Due to the availability of other alternatives with lower cost, fewer environmental impacts and greater community support, Alternative 18 has been removed from further consideration.

**Figure 2.4 Alternative 18 – Runway 24 Extension to the East (Tunnel Bishop Road)**



## 2.10 Alternative 19 – Road Relocations at Both Runway Ends

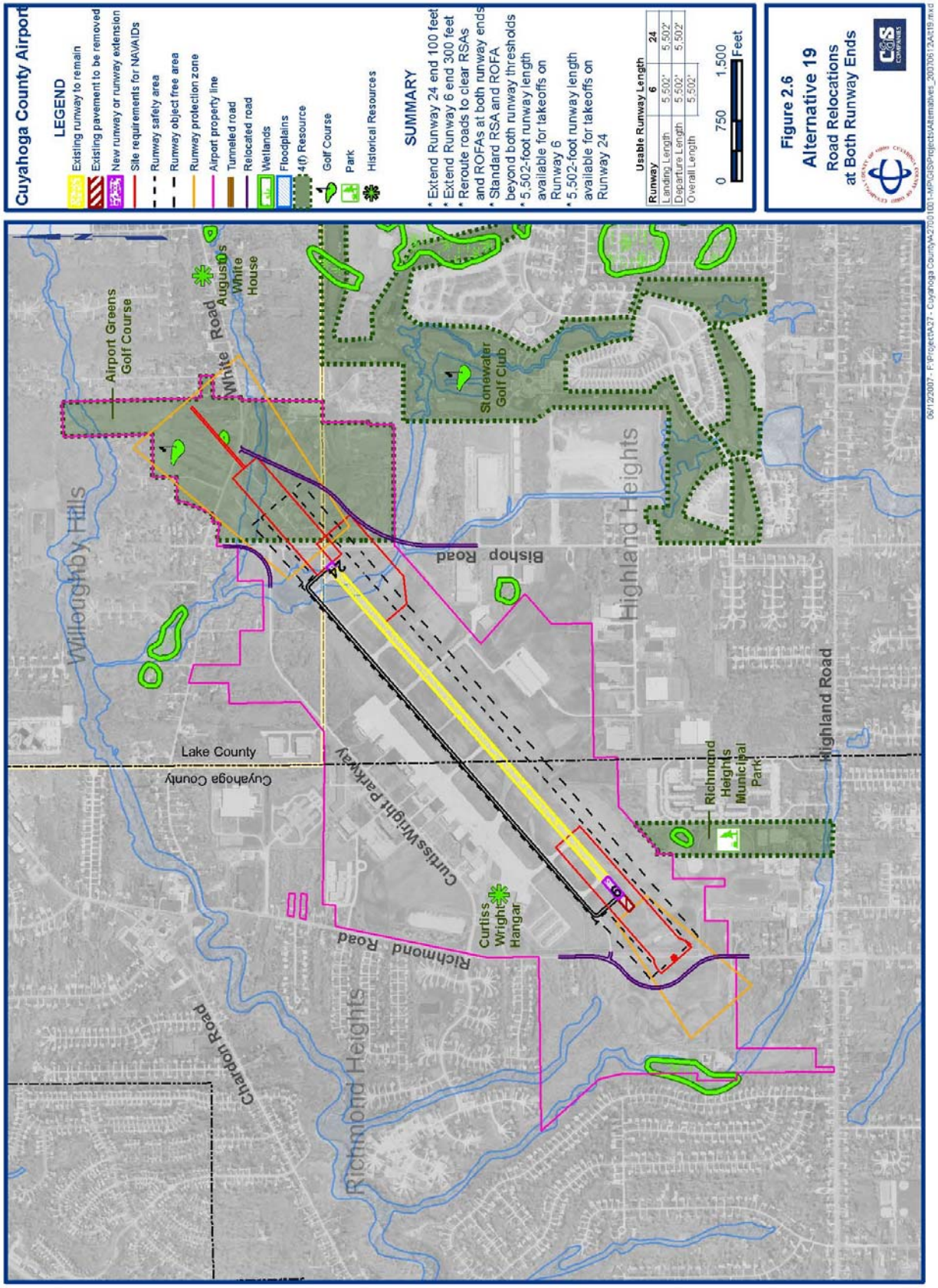
With this alternative, Runway 24 would be extended 100 feet to the east and Runway 6 would be extended 300 feet to the west (**Figure 2.5 Alternative 19 – Road Relocations at Both Runway Ends**). In order to provide standard RSAs and ROFAs, this alternative requires the relocation of Richmond Road, Bishop Road and Curtiss Wright Parkway.

This alternative provides 5,502 feet of pavement for takeoff and landing operations with compliant safety areas.

Compared to the other build alternatives, Alternative 19 has the second highest amount of community impacts (after Alternative 15) with three road relocations and parkland impacts. In terms of other environmental impacts such as wetlands, floodplain and streams, it has neither the most nor least amount of disturbance when compared to the other alternatives. This alternative could be implemented within existing airport property, except potential obstruction and RPZ clearing at both ends of the airfield, by extending over Richmond Road into open space owned by the Airport and over Bishop Road to the golf course.

Alternative 19 is considered a sound alternative to meet the project's primary purpose and need but it requires road relocations, which are strongly opposed by the local communities. Due to the availability of other alternatives with fewer environmental impacts and greater community support, Alternative 19 has been removed from further consideration.

**Figure 2.5 Alternative 19 – Road Relocations at Both Runway Ends**



## 2.11 Preferred Alternative 23 – EMAS at Both Runway Ends (Master Plan Preferred Alternative)

Under this alternative, construction at the southwest end of the runway, relocation of the northeast end of the runway, removal of the stopway and installation of Engineered Material Arresting System (EMAS) at both runway ends is proposed. EMAS uses crushable concrete placed at the end of a runway to stop an aircraft that overruns the runway. The tires of the aircraft sink into the lightweight concrete and the aircraft is decelerated as it rolls through the material.

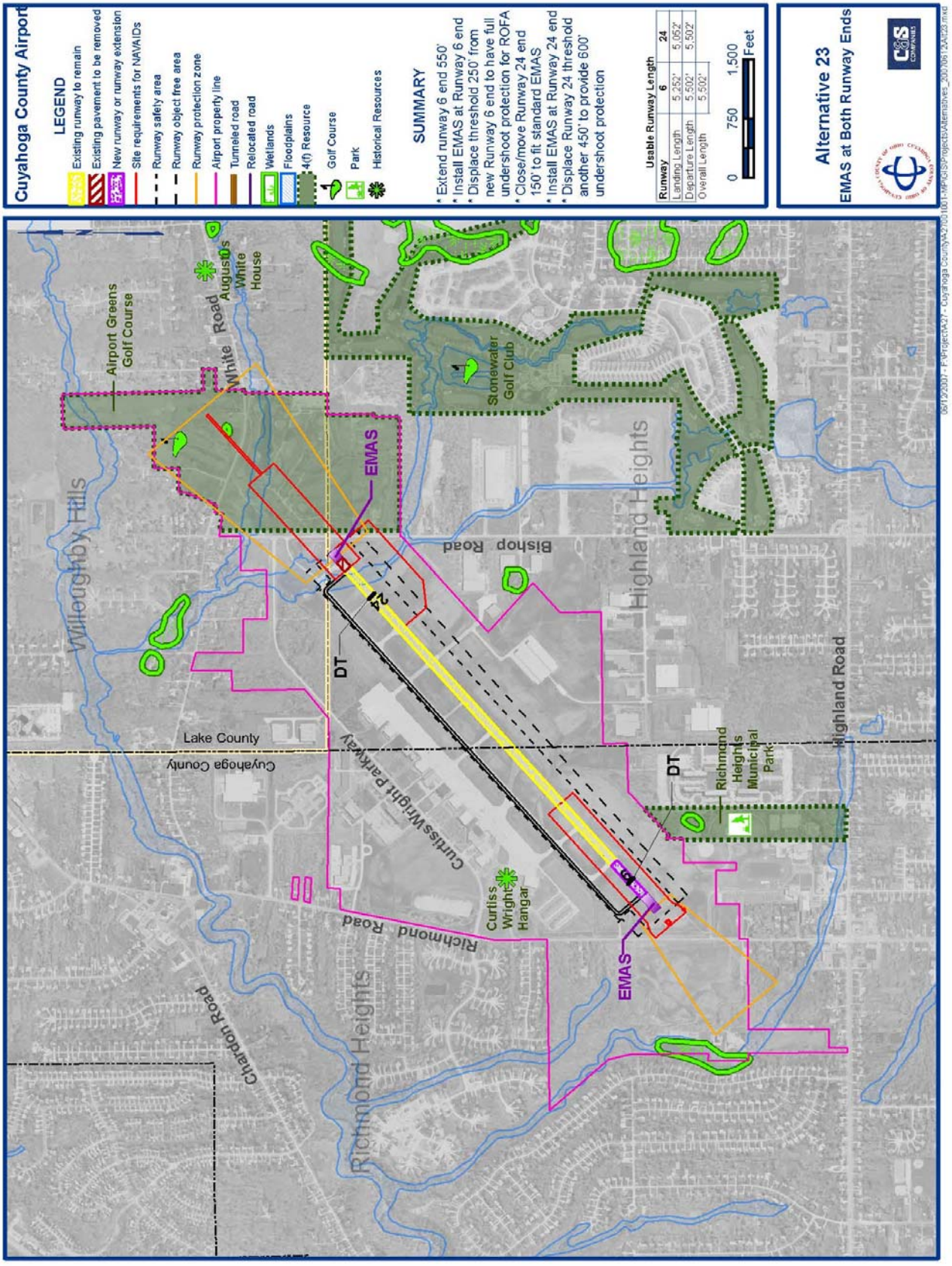
Runway 6 would be extended 550 feet to the west and EMAS would be installed. The threshold for Runway 6 would be displaced 250 feet to provide full undershoot protection for the ROFA. Runway 24 would be shortened by 150 feet to allow EMAS to be installed and the threshold for Runway 24 would also be displaced 450 feet to provide 600-foot undershoot protection (**Figure 2.6 Preferred Alternative 23 – EMAS at Both Runway Ends**).

This alternative provides 5,502 feet of pavement for takeoff operations in both directions with compliant safety areas. Alternative 23 provides less landing distance due to the use of displaced thresholds. The landing distance available is 5,252 feet for Runway 6 and 5,052 feet for Runway 24.

When compared to all of the other build alternatives, Alternative 23 has the least anticipated impacts to floodplains, streams and farmland. It does not impact parkland or recreational resources, has no road relocations and has the least amount of proposed ground disturbance for construction. The construction elements of this alternative can be accomplished entirely on airport property. Off-airport work includes potential obstruction / tree clearing off both runway approaches and proposed property acquisition within each proposed RPZ. This alternative has the least amount of community impacts and is supported by both the general public and elected officials in all three local communities.

Alternative 23 is considered a prudent and feasible alternative and meets the project's primary purpose and need of providing safety areas that meet FAA requirements and 5,500 feet of runway as required for continued viability of the airport. Alternative 23 was the locally preferred alternative in the 2010 Airport Master Plan Update.

**Figure 2.6 Alternative 23 – EMAS at Both Runway Ends (Master Plan Preferred Alternative)**



## 2.12 Alternative 24 – Combination of Runway 24 Shift to West and Runway 6 EMAS

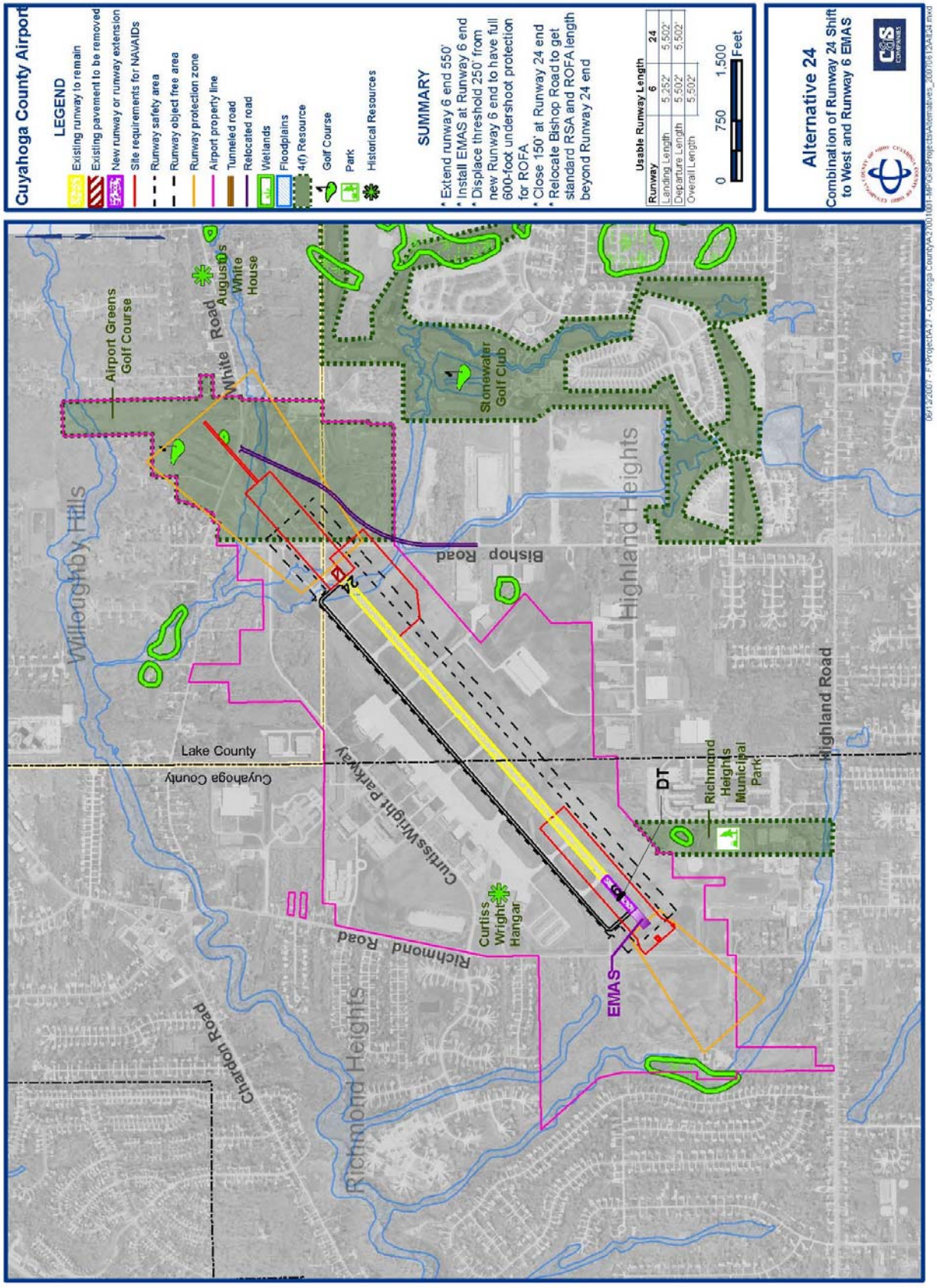
With this alternative, Runway 6 would be extended 550 feet, the stopway would be removed and EMAS would be installed at its end. The threshold for Runway 6 would be displaced by 250 feet and 600 feet of undershoot protection would be provided for the ROFA. Runway 24 would be shortened by 150 feet by removing existing pavement and standard RSA and ROFA would be constructed at this end of the runway **(Figure 2.7 Alternative 24 – Combination of Runway 24 Shift to West and Runway 6 EMAS)**. This alternative requires relocation of Bishop Road.

This alternative provides 5,502 feet of pavement for takeoff operations in both directions and 5,502 feet of landing pavement on Runway 24. This alternative would have compliant safety areas and similar to Alternative 23, it provides a more limited landing distance of 5,252 feet for Runway 6 due to the use of a displaced threshold.

Compared to the other build alternatives – except for Alternative 23 – Alternative 24 would be considered the alternative with the least amount of community and environmental impacts. This alternative has impacts to parkland and recreational resources and requires the relocation of Bishop Road to provide compliant safety areas, but has minimum impacts to floodplains, streams and farmland. Alternative 24 has the least amount of ditch impacts of any of the alternatives being considered. This alternative could be implemented within existing airport property, except potential obstruction and RPZ clearing at both ends of the airfield.

Although Alternative 24 is considered a sound alternative and meets the project's primary purpose and need, it requires a road relocation which is strongly opposed by the local communities. Due to the availability of an alternative with generally fewer expected impacts (Alternative 23) and no road relocations, Alternative 24 is removed from further consideration.

**Figure 2.7 Alternative 24 – Combination of Runway 24 Shift to West and Runway 6 EMAS**



## 2.13 Selection of Preferred Alternative

After analysis of the advantages and disadvantage of each alternative, the alternative that best meets the project's purpose and need, while minimizing impacts to the built and natural environment, is Alternative 23 – EMAS at Both Runway Ends (**Figure 2.6 Alternative 23 – EMAS at Both Runway Ends – (Master Plan Preferred Alternative**)). Alternative 23 best meets the project's purpose and need of providing 5,500 feet of runway for takeoff in both directions as well as providing compliant safety areas and is selected as the Preferred Alternative for the EA.

Preferred Alternative 23 has the least amount of overall community and environmental impacts and does not require any road relocations which have been highly unpopular with both elected officials and citizens from all three local communities. In addition, throughout the public involvement process, this alternative has been repeatedly identified as the alternative most preferred by the public. See
**B Public Involvement Prior to the Draft EA** for details on the public involvement process.

Alternative 23 is considered the most prudent and feasible alternative when compared to the other alternatives. The recommendation that Alternative 23 be selected as the Preferred Alternative for the EA was accepted by Cuyahoga County in early 2014. As a result, Alternative 23 is carried forward in the EA for additional analysis, public comment and agency review.

## 2.14 Summary of Costs of Preferred Alternative 23

During preliminary design of Preferred Alternative 23, detailed cost estimates were developed by the Airport's engineer (CHA Companies) and are shown in **Table 2.1 Estimated Construction Costs of the Preferred Alternative 23**. The cost of Alternative 23 depends on construction phasing and availability of federal and local funding and is subject to change. Final construction costs of the Preferred Alternative will be developed during the final design phase, if the project is ultimately approved following the environmental review process.

**Table 2.1 Estimated Construction Costs of the Preferred Alternative 23**

| Number of Construction Seasons | Cost Estimate |
|---|---|
| One Year | $43,668,181* |
| Two Year | $40,677,013 |
| Three Year (multi-year plan) | $42,058,925 |

*One year costs reflect a cost premium to accelerate work activities through one construction season.

## 2.15 Expected Navigational Aid Impacts of the Preferred Alternative

Certain navigational aids (NAVAIDS) will require relocation with the implementation of the Preferred Alternative 23. Final location of NAVAIDS will be determined during final design. Anticipated NAVAID relocations include:

Runway 6 Precision Approach Path Indicator (PAPI) and Runway End Identifier Lights (REILs): Runway 6 currently has a 4-box PAPI and REILs. The PAPI and REILs for Runway 6 will need to be relocated due to the proposed Runway 6 threshold shift to maintain the optimal threshold crossing height and identification of the new threshold. The existing PAPI and REILs for Runway 6 are owned and maintained by the FAA and therefore will be sited in accordance with FAA Order JO 6850.2B, *Visual Guidance Lighting System.* The Runway 6 PAPIs will be sited on the west side of the runway (left on approach) which is the preferred side. FAA Order JO 6850.2B, states that the inboard Lamp Housing Assembly (LHA #1) should not be closer than 50 feet from the edge of pavement and the separation between the lateral LHAs must be 30 feet (with a +/- 1' tolerance).

Runway 24 Glide Slope: Since the new Runway 24 threshold will be displaced 502 feet southwest of its current location, the glide slope will need to be relocated. In order to meet the requirements of FAA Order 6750.16D, *Siting Criteria for Instrument Landing Systems,* the new glide slope antenna will be located 912 feet southwest of the new Runway 24 displaced threshold and 410 feet southeast of runway centerline to keep it out of the Runway Object Free Area (ROFA). This location will also accommodate the null reference glide slope mast height and provide the required separation between the glide slope antenna and the runway centerline for the Obstacle Free Zone (OFZ) in accordance with FAA Advisory Circular 150/5300-13A.

Runway 24 Precision Approach Path Indicator: Runway 24 currently has a 4-box PAPI collocated with the existing glide slope. The PAPI will also need to be relocated due to the proposed threshold displacement in order to provide a coincidental visual glide path with the electronic version. The existing PAPI for Runway 24 is owned and maintained by the county and will be sited in accordance with FAA Order JO 6850.2B, *Visual Guidance Lighting System.* In order to coincide with the Runway 24 glide slope angle of 3.00 degrees and a TCH of 45 feet, the proposed PAPIs will be located 912 feet southwest of the Runway 24 threshold. The PAPI Obstacle Clearance Surface (OCS) for this location will be verified during final design.

Runway 24 Medium Intensity Approach Lighting System (MALSR): Runway 24 is currently served by an existing FAA owned and maintained MALSR. The existing MALSR extends from the end of the runway northeast along the extended runway centerline and crosses both Bishop Road and White Road. The proposed 502 foot displacement of the Runway 24 threshold will require the threshold bar and the first two light bars to be semi-flush, in-pavement type fixtures since that portion of the system will be in the displaced pavement area and subject to aircraft movement. The third light bar will be in the EMAS bed with the remaining MALSR stations mounted on Low-Impact Resistant (LIR) masts. Adjustments to the heights of the remaining steady-burning light bars and flashers will be necessary to meet the new light plane elevations by the siting criteria. The existing MALSR electronic equipment will be relocated to a new 10 foot by 16 foot fiberglass equipment

shelter. FAA Order JO 6850.2B, states that the MALSR power and control station shall be located no closer than 400 feet to the extended runway centerline. In order to be as close as possible to the MALSR distribution panel, the new MALSR equipment shelter will be located inside the airport boundary fence along the access road near the gate to Bishop Road.

## 2.16 Overview of Impacts

**Table 2.2 Environmental Impact Evaluation** provides an overview of the estimated initial impacts of each build alternative. To quantify preliminary impacts, online database reviews, environmental constraints reviews, consultation with biologists, and agency coordination were conducted. These provided a basis to effectively determine potential impacts of the alternatives being initially considered. Following the selection of the Preferred Alternative, onsite field investigations were conducted to refine the alternative and minimize anticipated impacts. Refined impact estimates for the Preferred Alternative are described in **Section 4.0 Environmental Consequences.**

Preliminary calculations are colored coded either in "red" or "green" to aid in a visual understanding of the potential impacts of each alternative. Red indicates the alternative with the highest impact in a specific category while green indicates the least impact in a particular category. Impacts were calculated based on the expected area of construction for each alternative – commonly referred to as "grading limits of construction". The area of construction was developed by the Airport's engineering consultant and represents their best judgment given the information that was available at the beginning of the analysis phase. The same criteria was used for each build alternative as to allow an "apples-to-apples" comparison to better evaluate the alternatives.

Once the initial impact analysis was completed and a Preferred Alternative was selected, a more refined evaluation was undertaken on the Preferred Alternative. This refined approach included developing preliminary engineering plans (**Appendix C Preliminary Engineering**) on Preferred Alternative 23 in order to identify and avoid impacts to a greater degree. The development process of the Preferred Alternative 23 started with an attempt to first avoid, then minimize and ultimately mitigate potential environmental impacts if avoidance was not possible. As a result of preliminary engineering, impacts initially associated with Preferred Alternative 23 have, in most cases, been avoided or greatly reduced. See **Section 4.0 Environmental Consequences** for refined impact calculations.

| Table 2.2 Environmental Impact Evaluation | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Category** | **Criterion** | **No Action Alternative** | **Alternative 15** | **Alternative 16** | **Alternative 17** | **Alternative 18** | **Alternative 19** | **Alternative 23 (Preferred)** | **Alternative 24** |
| **Community Impacts** | Road Relocation/Tunnel (#) | 0 | 3 | 1 | 2 | 2 | 3 | 0 | 1 |
| | Relocate Richmond Road (yes / no) | No | Yes | Yes | No | No | Yes | No | No |
| | Relocate Bishop Road (yes / no) | No | Yes | No | Yes | Yes | Yes | No | Yes |
| | Relocate Curtiss Wright Parkway Road (yes / no) | No | Yes | No | Yes | Yes | Yes | No | No |
| | Total Road Relocation Length (linear feet) | 0 | 9,050 | 3,750 | 4,400 | 3,000 | 6,850 | 0 | 3,300 |
| | Parkland / Recreational Resources (yes / no) | No | Yes | No | Yes | Yes | Yes | No | Yes |
| | | | | | | | | | |
| **Environmental Impacts** | Wetlands (acres) | 0 | 1.62 | 12.37 | 3.92 | 3.92 | 2.72 | 3.91 | 2.61 |
| | 100-year Floodplain (acres) | 0 | 8.16 | 20.22 | 7.43 | 4.23 | 6.55 | 2.30 | 5.51 |
| | Streams (linear feet) | 0 | 9,040.33 | 6,824.76 | 8,319.31 | 6,354.12 | 8,182.08 | 5,249.42 | 7,617.43 |
| | Ditches (linear feet) | 0 | 1,398.86 | 2,818.31 | 1,618.48 | 2,068.65 | 2,303.99 | 2,068.65 | 1,373.60 |
| | Prime Farmland if Drained (acres) | 0 | 304.74 | 280.55 | 252.09 | 251.67 | 267.33 | 209.28 | 220.53 |
| | Property Noise Impact with 65 DNL (yes / no) | No | No | No | No | No | No | No | No |
| | Total Ground Disturbance (acres) | 0 | 344.00 | 318.77 | 298.71 | 293.49 | 312.28 | 239.86 | 260.68 |

The colors "green" and "red" represent a specific environmental category considered to have the least (green) or the most (red) amount of expected impacts when compared to the other build alternatives. It should be noted that impacts with Alternative 23 have been refined and in most cases, greatly reduced, after selection of the preferred alternative. See Section 4.0 Environmental Consequences for revised impact calculations of Preferred Alternative 23.

# Section 3.0 Affected Environment

## 3.1 Introduction

The Cuyahoga County Airport - Robert D. Shea Field (Airport or CGF) is part of a local and regional community and is connected in a variety of ways. The Airport is an employer and supports local business activity. Also, airport operations impact the land uses that are directly adjacent. This chapter presents geographic, demographic and economic information about the community in order to establish the role of the Airport within the community and the region. The topics discussed include the history of the Airport, existing facilities at the Airport, surrounding land uses, population statistics and industrial and commercial growth characteristics.

## 3.2 Project Location and History

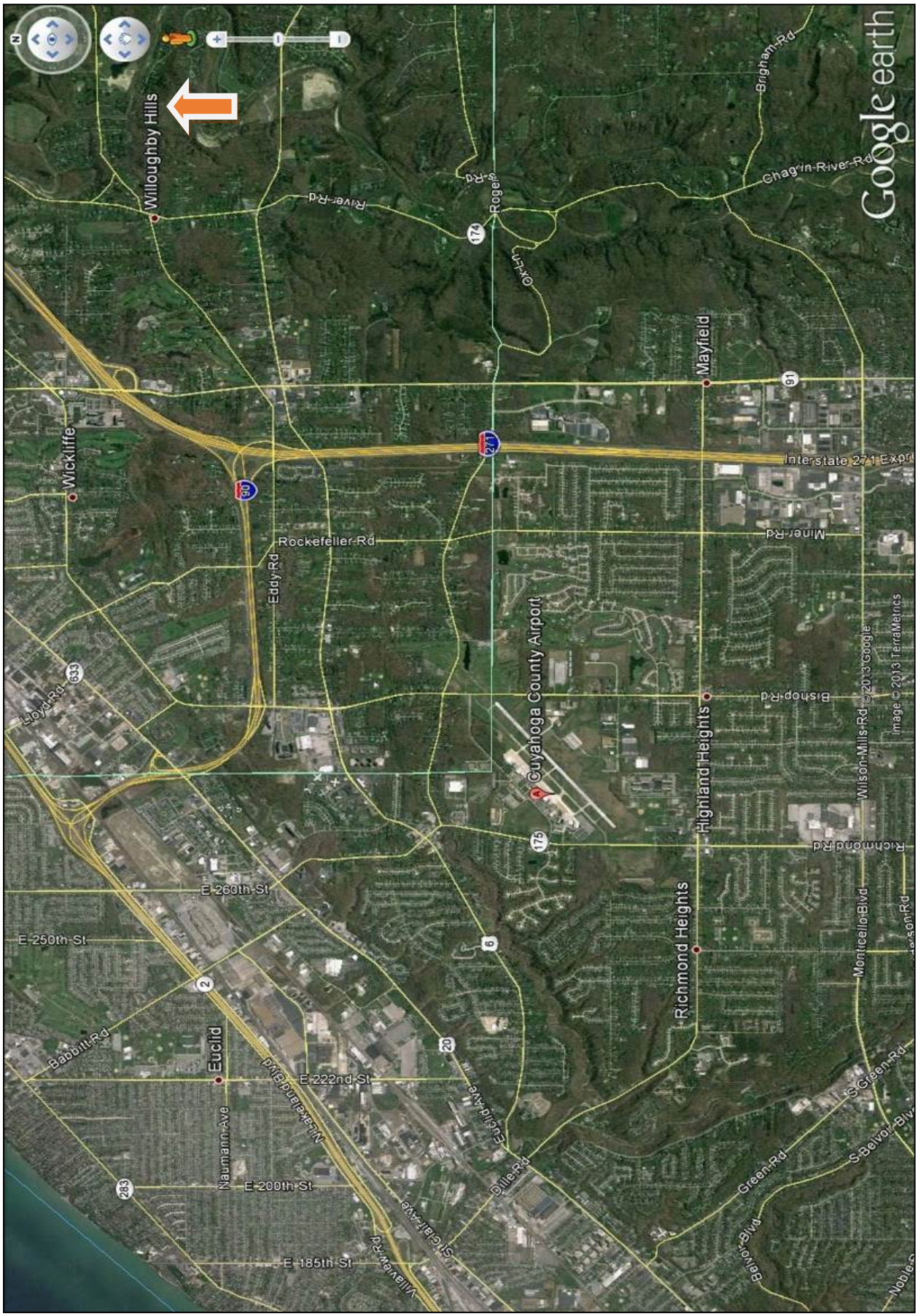
Cuyahoga County is located in northern Ohio along the shore of Lake Erie. The City of Cleveland is located in Cuyahoga County. The Airport is located approximately 11 miles east of downtown Cleveland, Ohio and approximately 4 miles south of the Lake Erie shoreline. The Airport is located between I-90 and I-271 with each major transportation corridor approximately 10 minutes away (**Figure 3-1 Vicinity Map**).

The Airport is located in both Cuyahoga and Lake Counties. It is also located in three cities: Richmond Heights, Highland Heights and Willoughby Hills. The Airport is located between Bishop Road (east), Richmond Road (west), Highland Road (south) and White Road (north). The Airport property includes approximately 660 acres.

The Airport began in Cuyahoga County in 1928 when a privately-owned airport called Curtiss Wright Field opened for business. In 1946, Cuyahoga County purchased the airport property and in 1950, the County Airport opened for business with two grass strip runways. In 1956, the first Airport Master Plan was commissioned. Another Master Plan was adopted in 1977.

In 1999, the Federal Aviation Administration (FAA) made standard Runway Safety Areas (RSAs) a priority through a directive that requires all airports to correct RSA deficiencies; RSA compliance is “triggered” by a runway construction or rehabilitation project. This means that Airport Improvement Project (AIP) funding for runway rehabilitation work is contingent on meeting the FAA’s RSA design standards. According to FAA regulations, the existing RSA lengths at the Airport are currently deficient at both runway ends. The pavement conditions are also poor and in need of improvement. As a result, planning efforts began in 2003 for a combined Airport Master Plan and RSA Study.

**Figure 3-1 Vicinity Map**




**Not to Scale**

In February 2009, the Cuyahoga Board of County Commissioners considered a draft Airport Master Plan Update that recommended Alternative 38 as the Preferred Alternative. Alternative 38 provides 6,002 feet of runway length for take-off in both directions by extending the runway by 900 feet and realigning both Richmond and Bishop Roads. The recommendation was met with significant organized public resistance and the FAA responded by asking Cuyahoga County to consider an intermediate alternative to provide 5,500 feet of runway length for take-off in each direction. As a result, Alternative 23 was recommended as the Preferred Alternative for the intermediate term and Alternative 38 was preserved as the ultimate plan. In 2010, the County Board of Commissioners adopted the current Airport Master Plan Update that this EA is based upon.

## 3.3 Existing Airport Facilities

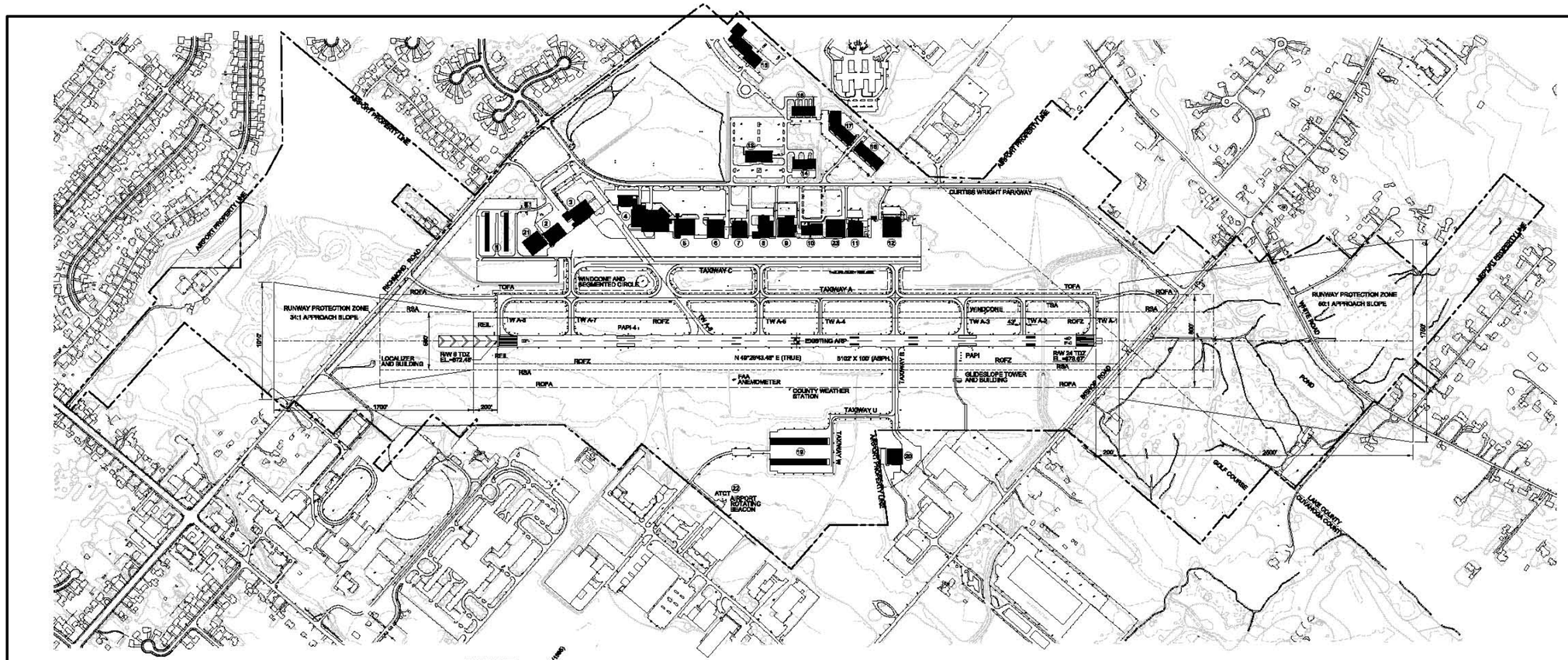
Airside Facilities: The discussion of existing facilities includes both airside and landside facilities. The Airport is equipped with a single runway, designated as Runway 6/24. The runway is 5,102 feet long and 100 feet wide, with a northeast-southwest orientation. At the southwest end of the runway (the Runway 6 end), there is a 500-foot paved stopway/overrun. The runway is served by a full-length parallel taxiway, Taxiway A, along with eight taxiways labeled A-1 through A-8 that provide connections between the runway and Taxiway A. In addition, Taxiway B is a crossfield taxiway that connects the north end of the main apron area to additional aviation facilities on the southeast portion of the field. Taxiways U and W connect with Taxiway B, providing access to the T-hangars on the east side of the airfield. For a graphic representation of the airport facilities see **Figure 3-2 Existing Airport Layout.**

A variety of lighting supports nighttime operations at the Airport. A rotating beacon that identifies the airport location at night is located on the southeast side of the airfield, north of the control tower. Runway and taxiway edge lighting contributes to safe operations at night and during times of poor visibility. The runway has high intensity runway lighting (HIRL) and taxiway edge lighting is medium intensity (MITL). Runway 6 is equipped with a four-light precision approach path indicator (PAPI) on the left side of the runway. A four-light PAPI is located on the left side of Runway 24 as well. Both of these aid a pilot in navigating to the runway during landing. A 1,400-foot medium intensity approach lighting system with runway alignment indicator lights (MALSR) and a glide slope and localizer antenna are associated with the instrument landing system (ILS) for Runway 24. Airfield lighting systems can be activated through a pilot-controlled lighting system (PCL) when the control tower is closed.

To provide additional navigation support, the airfield is equipped with a segmented circle and lighted wind cone located at the intersection of Taxiways A-6 and C. The segmented circle provides traffic pattern information to pilots. Weather reports can be given by the air traffic control tower during the hours of operation.

Landside Facilities: The landside facilities are the ground-based facilities that support the operation, function and promotion of the Airport. These include public and private facilities used for aviation as well as facilities for non-aviation-related commercial enterprises.

**Figure 3-2 Existing Airport Layout**




| PERCENT WIND COVERAGE | | | | | | |
|---|---|---|---|---|---|---|
| | 12 MPH (10.5 Knot) | | | 15 MPH(13 Knot) | | |
| Runway | VFR | IFR | All Weather | VFR | IFR | All Weather |
| 6 | 96.41% | 88.91% | 88.83% | 89.40% | 80.76% | 88.73% |
| 24 | 74.08% | 85.62% | 73.36% | 79.88% | 71.46% | 78.90% |
| 6-24 | 87.13% | 85.08% | 86.93% | 93.40% | 92.26% | 93.29% |

Source: National Climatic Data Center, Asheville, North Carolina
Observations taken at: Cleveland Hopkins International Airport, Cleveland, Ohio
Period Covered: 1994-2003

| FACILITIES TABLE | | |
|---|---|---|
| Existing | | |
| # | Facility Name | Top Elevation |
| 1 | County T-Hangars | 898 MSL |
| 2 | Corporate Wings Hangar | 895 MSL* |
| 3 | Corporate Wings Hangar | 895 MSL* |
| 4 | Flight Options Hangar | 890 MSL* |
| 5 | Flight Options Hangar | 895 MSL* |
| 6 | Corporate Wings Hangar | 895 MSL* |
| 7 | Progressive Insurance Hangar | 900 MSL |
| 8 | County/Admin/Maintenance/ARFF Building | 884 MSL |
| 9 | Eaton Corporation Hangar | 895 MSL* |
| 10 | Destination Building | 900 MSL* |
| 11 | National City Bank Hangar | 895 MSL* |
| 12 | Five Star Aviation Hangar | 903 MSL* |
| 13 | Horizon Building | 898 MSL* |
| 14 | Curtiss Wright Center - II | 868 MSL* |
| 15 | Associates Estates | 860 MSL* |
| 16 | Curtiss Wright Center - I | 865 MSL* |
| 17 | Curtiss Wright Center - III | 868 MSL* |
| 18 | Curtiss Wright Center - IV | 872 MSL* |
| 19 | Zomar T-Hangars | 900 MSL* |
| 20 | Swagelok Hangar | 920 MSL* |
| 21 | Corporate Wings Hangar | 895 MSL* |
| 22 | Air Traffic Control Tower | 968 MSL |
| 23 | Corporate Hangar | 905 MSL* |

* building top elevation estimated

| AIRPORT DESIGN STANDARDS COMPARISON | | |
|---|---|---|
| Item | Design Standard ARC D-II | Existing Dimension |
| Runway Safety Area | | |
| Width | 500' | 500' |
| Length (Beyond Runway End 24) | 1,000' | 105' |
| Length (Beyond Stopway End 6) | 1,000' | 510' |
| Runway Object Free Area | | |
| Width | 800' | 800' |
| Length (Beyond Runway End 24) | 1,000' | 0' |
| Length (Beyond Stopway End 6) | 1,000' | 285' |
| Runway to Taxiway Centerline Separation | 400' | 375' |

| RUNWAY DATA TABLE | |
|---|---|
| Runway Data | Runway 6/24 Existing |
| Effective Gradient (%) | 0.1% |
| Maximum Grade Change | 0.1% |
| Wind Coverage (%) | 86.93% (10.5 knots) |
| Max. Elevation (MSL) | 879' |
| Runway Length | 5,102' |
| Runway Width | 100' |
| Displaced Threshold | n/a |
| Usable Runway Length | 5,102' |
| Surface Type | asphalt, grooved |
| Pavement Strength | |
| Single Wheel | 43,000 lbs. |
| Dual Wheel | 55,000 lbs. |
| Dual Tandem | 100,000 lbs. |
| Approach Surface Slope | 34:1 / 50:1 |
| Approach Minimums | 1-1¼ mile / ¼ mile |
| Visual Approach Aids | PAPI-4L, REIL / PAPI-4L, MALSR |
| Instrument Approach Aids | LOC BC / ILS/DME, NDB or GPS |
| Runway Lighting | HIRL |
| Runway Marking | NPI / PIR |
| Airport Reference Code (ARC) | D-II |
| Critical Aircraft | Gulfstream IV |
| Runway Object Free Area (ROFA) | |
| Length Beyond Runway | 1,000 |
| Width | 800' |
| Runway Safety Area (RSA) | |
| Length Beyond Runway | 1,000' |
| Width | 500' |
| Object Free Zone (OFZ) Width | 400' |
| FAR Part 77 Category | NPI / PIR |
| Runway End Coordinates (NAD 83) | |
| Latitude | 6: 41° 33' 38.073" |
| Longitude | 6: 81° 29' 36.392" |
| Latitude | 24: 41° 34' 10.818" |
| Longitude | 24: 81° 28' 45.372" |
| Runway End Elevations (MSL) | 872.48 / 878.67 |
| Displaced Threshold Elevation (MSL) | n/a |
| TDZ Elevation (MSL) | 872.48 / 878.67 |
| Line of Sight Violations | n/a |

| AIRPORT DATA TABLE | |
|---|---|
| Airport Data | Existing |
| Airport Elevation (MSL) | 879' |
| Airport Reference Point (NAD 83) | |
| Latitude | 41° 33' 54.446" N |
| Longitude | 81° 29' 10.884" W |
| Mean Max Temperature of Hottest Month | 81.4° F |
| Airport Terminal Area NAVAIDS | ATCT, lighted windsock, segmented circle, beacon |
| Magnetic Variation | 7.5° W |
| Date of Magnetic Variation | 1995 |
| NPIAS Service Level | RL |
| State Service Level | TC |
| Wind Coverage Crosswind Component @10.5 knots & 13 knots | |
| VFR | 87.13%; 93.40% |
| IFR | 85.08%; 92.26% |
| All Weather | 86.93%; 93.29% |
| Airport Reference Code | D-II |
| Design Aircraft | Gulfstream IV |
| Taxiway Lighting | MITL |
| Taxiway Marking | Standard |

| LEGEND | |
|---|---|
| Existing | Description |
| | Runway Centerline |
| RSA | Runway Safety Area (RSA) |
| ROFA | Runway Object Free Area (ROFA) |
| ROFZ | Runway Obstacle Free Zone (ROFZ) |
| RPZ | Runway Protection Zone (RPZ) |
| TOFA | Taxiway Object Free Area (TOFA) |
| TSA | Taxiway Safety Area (TSA) |
| | Existing Pavement |
| ARP | Airport Reference Point |
| | Existing Buildings |
| BPL | Airport Property Line |
| | Other Property Lines |
| | Fence |
| | Tree Line |
| | Wetlands |
| 878 | Ground Elevation Contours |
| | Proposed Land Acquisition |
| | Proposed Easement Acquisition |

NOTE: TOPOGRAPHICAL CONTOURS ARE IN 5-FOOT INCREMENTS

| REVISIONS | | |
|---|---|---|
| BY | DATE | CHANGE |

FIGURE 2-5

**CUYAHOGA COUNTY AIRPORT**

CUYAHOGA COUNTY — STATE OF OHIO

**EXISTING AIRPORT LAYOUT**

| | |
|---|---|
| DESIGNED: JCT | DRAWN: JCT |
| CHECKED: KGK | DATE: MAY 2010 |
| PROJECT FILE NO.: A27.001.001 | CADD FILE NO.: Cuyahoga EAL |

SHEET 2 OF 17

C | S

The apron area, which is used for the tie-down, fueling, and taxiing of aircraft and other airport-related service vehicles totals nearly 80,000 square yards of pavement. The apron area serving the corporate hangars is 48,500 square yards.

The airport administration building was constructed in 1973 and incorporates airport management offices, airport maintenance equipment and operations facilities, and Airport Rescue and Fire Fighting (ARFF) facilities. The fire apparatus room has three truck bays opening to the aircraft parking apron. The building contains a total of 21,136 square feet.

The Airport has an Air Traffic Control Tower (ATCT) located on the southeast side of the airfield. The ATCT operates between the hours of 7 AM and 11 PM daily.

Two County-owned T-hangar buildings, able to accommodate 40 aircraft, are located at the south end of the airfield adjacent to Richmond Road. The two T-hangar buildings on the east side of the airfield are privately owned and have access to the runway with a through-the-fence arrangement. Numerous box-style corporate hangars provide storage options for a number of additional aircraft. In total, the airport houses 206 based aircraft, including Flight Options, LLC, which is the world's second-largest private aviation company.

Four aviation fuel systems are located at the Airport. All four facilities are owned by private tenants on the airport providing both 100 low lead (100 LL) and Jet A fuel. The County has two underground tanks to service their maintenance vehicles. One 4,000-gallon tank is for diesel fuel; the second tank with a 2,500-gallon capacity is for unleaded auto fuel. These tanks are located between the airport administration building and Curtiss Wright Parkway. Two other tenants also have vehicle fueling facilities.

Curtiss Wright Parkway is the main access road to most airport facilities. The parkway is aligned with the runway and connects Richmond Road (a state route to the west of the airfield site) and Bishop Road, a county route to the east. From the Airport, there is interstate access within three miles to I-90 via Highland Road and to I-271 via Wilson Mills Road.

The Airport is supported by a full array of public utilities. Specifically, the Airport is served by Cleveland's city sewer and water systems. Electric service is provided by Cleveland Electric Illuminating Company (CEI). East Ohio Gas provides natural gas to the site.

## 3.4 Land Use and Zoning

Land use in Richmond Heights, Highland Heights and Willoughby Hills is primarily residential. In Highland Heights, 98 percent of all housing units are single-family residential while Richmond Heights and Willoughby Hills report 64.8 and 52.8 percent single-family housing units respectively. The 2010 Airport Master Plan Update estimated that the residential population located within a 5-mile radius of the airfield was over 400,000.

Although the overall land use across the three communities is primarily residential, there is a cluster of commercial, industrial and recreational uses around the airport. Directly adjacent to the

Airport on the northwest side of the Airport, Curtis Wright Parkway provides vehicle access to the commercial and industrial uses on the airport side and to commercial uses located across the street to the west. A collection of industrial uses are located on the Airport's southeast side with road access from Bishop Road and Avion Parkway, although only one business has access to the airfield. North of the Airport, at the Runway 24 end, land uses east of Bishop Road are open space and recreation uses, including the Airport Greens Golf Course. South of the Airport at the Runway 6 end, the airport owns and maintains a natural open space west of Richmond Road. Adjacent to the Airport, on the corner of Highland and Richmond Roads, is a block of land that is owned by the Richmond Heights Schools. The Richmond Heights Elementary School (grades K-6) and Secondary School (grades 7-12) are both located on the property. The Richmond Heights Community Park is also located there.

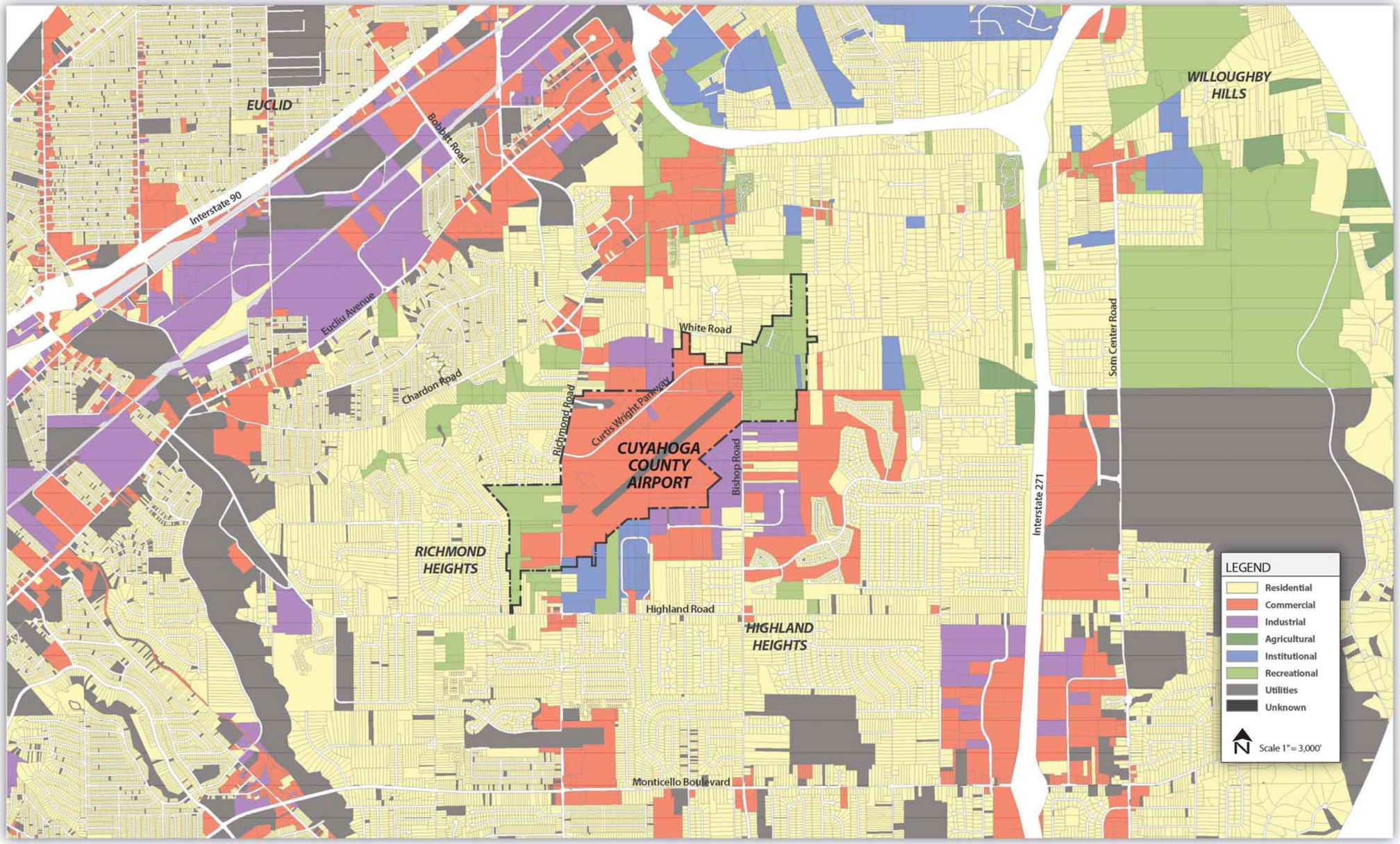
The Willoughby Hills zoning map defines the airfield as industrial. Some properties along Curtis Wright Parkway are also zoned industrial. However, all other properties in the area are zoned single-family residential including frontage parcels on the south side of White Road, and on both sides of Bishop Road. The zoning classification around the Airport in Highland Heights and Richmond Heights is industrial from Richmond Road to Bishop Road. That district continues past Bishop Road to the east. The Stonewater Golf Club and the associated residential development in Highland Heights are zoned "Mixed." There are a few commercial zones at major intersections and some additional industrial zoning along I-271. Otherwise, most property is zoned for residential development in both communities. See **Figure 3-3 Land Use Map** for a graphic representation of the current land use around the airport.

## 3.5 Population Growth Characteristics

The State of Ohio experienced a slight population increase between 2000 and 2010. State population projections anticipate a continued population increase through 2040.[1] The Cleveland-Akron-Elyria Combined Statistical Area (CSA), an eight-county area around Cleveland that includes both Cuyahoga and Lake Counties, experienced a population decline from 2000 to 2010 but that trend reversed after 2010. A gradual, continuous population increase is projected in the CSA region through 2040.[2] Within the CSA, Cuyahoga County experienced an overall population decrease from 2000 to 2010 while Lake County experienced a population increase from 2000-2010. Both county trends are projected to continue through 2040.[3]

[1] Woods & Poole Economics, Inc. 2011
[2] ibid
[3] Ibid

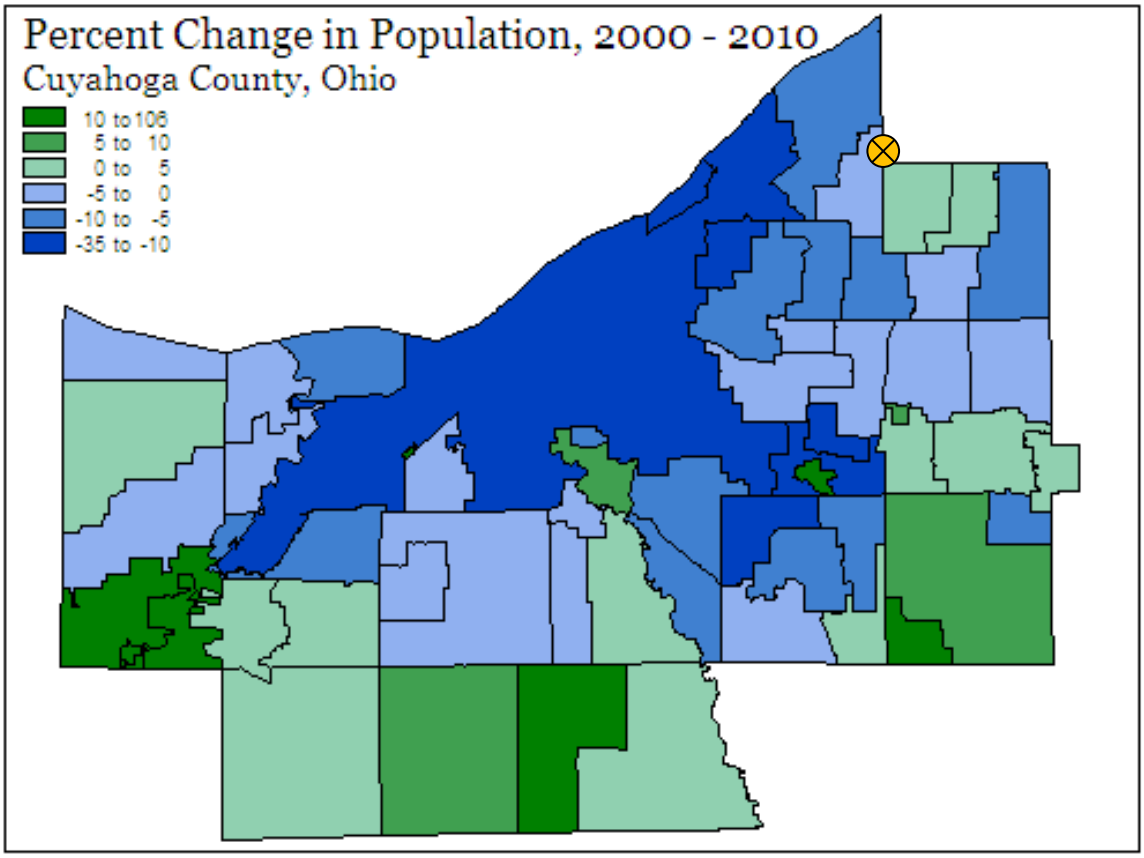
**Figure 3-3 Land Use Map**




Source: Mead & Hunt based on GIS Data from Cuyahoga and Lake Counties

**Figure 3-4 Regional Growth Trends** demonstrates regional population growth characteristics that can be described in relationship to the City of Cleveland in Cuyahoga County and in relation to Painesville in Lake County. Population trends in Cuyahoga County show the largest population decrease in the City of Cleveland, modest declines in communities near Cleveland and population increases on the periphery to the west, south and east.

**Figure 3-4 Regional Growth Trends: Cuyahoga County**



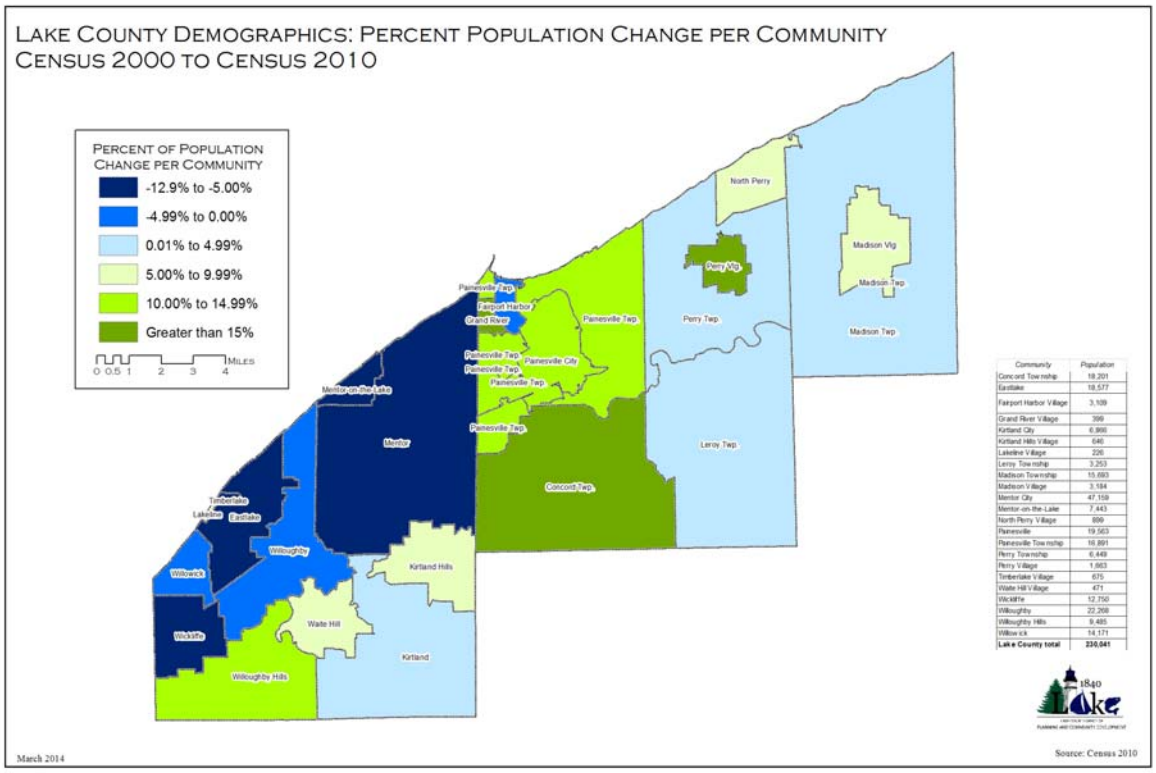

= approximate airport location

Source: Cuyahoga County Planning Commission website
http://planning.co.cuyahoga.oh.us/census/2010population.html

The Cuyahoga County Airport is located on the northeastern edge of the county where Highland Heights experienced a population increase and Richmond Heights a decrease of the smallest magnitude. During the same 10-year period, the US Census Bureau reported a 10.4% population increase in Willoughby Hills and a 1.1% increase in Lake County overall.

Population trends in Lake County (**Figure 3-5 Regional Growth Trends: Lake County**) show population growth in Willoughby Hills, directly adjacent to the Airport, but a loss of population along the lakeshore east of Cleveland. More robust population growth in Lake County appears around Painesville and in Concord Township to the south. Concord Township, which sits at the crossroads of Interstate 90 and State Route 44 grew by more than 15 percent between 2000 and 2010.

**Figure 3-5 Regional Growth Trends: Lake County**



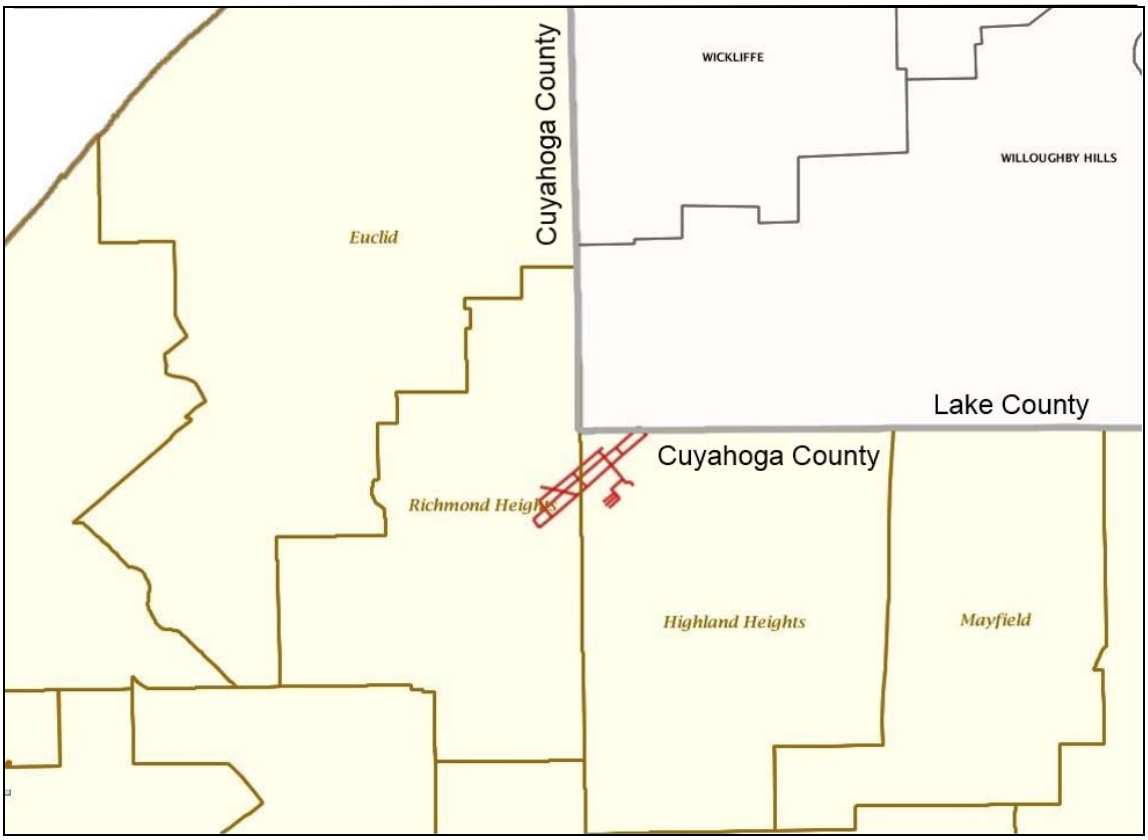

Planning and Community Development, David Radachy, Director

As noted initially, Cuyahoga County overall is projected to experience a population decline from 2012-2040 while Lake County overall is projected to experience a population increase from 2012-2040.[4] The three communities around the airport experienced population growth or minimal decline from 2000-2010, despite the national economic downturn (termed "the Great Recession"). These three communities are likely to experience some level of continued population growth through 2040 in part because of their proximity to the Airport.

Population Characteristics: As noted earlier, the Airport is located in both Cuyahoga and Lake Counties and it is also located in three cities: Richmond Heights, Highland Heights and Willoughby Hills. The political boundaries are shown in **Figure 3-6 Political Boundaries**.

[4] Ibid

**Figure 3-6 Political Boundaries**




Source: Cuyahoga County Geographical Information System (GIS)
http://gis.cuyahogacounty.us/

All three cities surrounding the Airport are affluent communities with median household incomes and housing values that are higher than Cuyahoga County as a whole. Highland Heights has less racial diversity and higher median household incomes than the other two communities. Richmond Heights is much more racially diverse than the other two cities and the county.

While median household income in Richmond Heights is lower than the other two cities, it is still higher than the Cuyahoga County median income. The same can be said for housing value. Willoughby Hills is in between the other two cities in all of these categories. The "persons below the poverty level" percentages in all three cities are significantly lower than the county percentage. See **Table 3-1 Cuyahoga County Airport Environs - Demographic Profile** for a comparison of demographic trends of the project area.

| Table 3-1<br>Cuyahoga County Airport Environs - Demographic Profile | | | | |
|---|---|---|---|---|
| **Criteria** | **Highland Heights** | **Richmond Heights** | **Willoughby Hills** | **Cuyahoga County** |
| White alone, 2012 | 91.0% | 48.5% | 77.6% | 64.8% |
| Black or African American alone, 2012 | 1.9% | 44.9% | 16.1% | 30.2% |
| Asian alone, 2012 | 5.8% | 4.3% | 4.3% | 2.8% |
| All other | 1.3% | 2.3% | 2.0% | 2.2% |
| Median household income, 2007-2011 | $98,327 | $47,665 | $60,336 | $44,088 |
| Median value of owner-occupied housing units, 2007-2011 | $280,800 | $169,900 | $250,600 | $134,900 |
| Persons below poverty level, percent, 2007-2011 | 2.5% | 5.7% | 2.9% | 17.1% |
| Source: US Census Bureau State & County QuickFacts, 2012 | | | | |

## 3.6 Industrial/Commercial Growth Characteristics

The Cleveland-Elyria-Mentor Metropolitan Statistical Area (MSA) is a five-county region around Cleveland. The US Bureau of Labor Statistics produced an economic summary of the MSA dated October 31, 2013. The report provided the following statistics for comparative unemployment rates reported for August 2013. The numbers indicate that the region overall has a lower unemployment rate than the country as a whole (**Table 3-2 Unemployment Rates for August 2013**). The report also indicates that unemployment rates in the Cleveland area decreased between August 2012 and August 2013 except in Lake County where the rate increased from 6.2% to 6.3%.

| Table 3-2<br>Unemployment Rates for August 2013 | |
|---|---|
| **Geographic Area** | **Unemployment Rate** |
| United States | 7.3% |
| Cleveland MSA | 7.0% |
| Cuyahoga County | 7.3% |
| Lake County | 6.3 % |
| Source: US Bureau of Labor Statistics (BLS)<br>Local Area Unemployment Statistics | |

The same report also provides information about average weekly wages for all industries by county compared to the nation and area (**Table 3-3 Average Weekly Wages**). Cuyahoga and Lake Counties had the highest weekly wages by county in the area although they were still lower than those reported for the nation and for the area. Geauga County had the lowest wage range of the five-county area.

Workforce: According to the 2011 County Business Patterns[5], the total 2011 labor force for Cuyahoga County was 646,638. The largest employment sector was *Health care and social assistance*. There were 136,661 employees in 3,618 establishments accounting for 21.5% of the county's total payroll. This is consistent with the list of Top 10 Largest Employers where three of the top six are health care providers. The same County Business Patterns report provides a total 2011 labor force for Lake County of 83,423. The largest employment sector in Lake County was *manufacturing* with 17,843 employees in 617 establishments accounting for 25.8% of the county's total annual payroll.

**Table 3-3**
**Average Weekly Wages - 1st Quarter 2013**
**(all industries by county)**

| Geographic Area | Average weekly wage |
|---|---|
| United States | $989 |
| Cleveland MSA | $948 |
| Cuyahoga County | $825 or more |
| Lake County | $825 or more |
| Geauga County | $724 or less |

Source: US BLS Quarterly Census of Employment and Wages

Major Employers: Many firms have headquarters or major operations located in northeast Ohio which includes Cuyahoga, Geauga, Lake, Lorain and Medina Counties as well as four adjacent counties. Crain's Cleveland Business produced a 2011 list of the region's largest employers. The top 10 are summarized in **Table 3-4 Top 10 Largest Employers**.

Cuyahoga County is also the chosen location for many corporate headquarters. Fortune Magazine created a list of the "Top 1,000 Largest US Corporations" ranked by revenues and 14 of them are located in Cuyahoga County as shown in **Table 3-5 Corporations Headquartered in Cuyahoga County**. The highest ranking on the list is the Progressive Corporation, national insurance provider, with headquarters in Mayfield, Ohio. With these major employers located in the local community, the Airport has a perfect opportunity to provide aviation opportunities for travel.

## 3.7 Environmental Characteristics of the Project Area

The land uses adjacent to the Airport are predominately residential, commercial development, wooded vacant land and recreational facilities (**Figure 3-3 Land Use Map**). The Airport itself is mostly covered with turf grasses that are maintained on a regular basis via mowing with some wetlands, streams and ditches present across the Airport (**Figure 3-7 Environmental Overview Map**).

[5] http://www.census.gov/econ/cbp/index.html

| Table 3-4<br>Top 10 Largest Employers<br>(with headquarters or major operations in northeast Ohio) | | |
|---|---|---|
| **Firm** | **Number of Employees*** | **Industry** |
| Cleveland Clinic | 34,000 | Health care provider |
| US Office of Personnel Management | 15,095 | Federal government |
| University Hospitals/Cleveland | 13,726 | Health care provider |
| Giant Eagle, Inc. | 10,311 | Grocery store chain |
| Progressive Corporation | 8,612 | Insurance and Financial Company |
| City of Cleveland | 8,232 | Municipal government |
| Summa Health System | 8,000 | Health care provider |
| Cuyahoga County | 7,859 | County government |
| State of Ohio | 7,792 | State government |
| United States Postal Service | 7,362 | U.S. Postal Service |
| Source: Crain's Cleveland Business July 2011<br>*Includes employees working in Cuyahoga, Geauga, Lake, Lorain, Mahoning, Medina, Portage, Stark and Summit Counties. | | |

**Table 3-5**
**Corporations Headquartered in Cuyahoga County**
Among Fortune's Top 1000 in 2011
(Within the 1000 Largest U.S. Corporations Ranked by Revenues*)

| Rank | Company | Revenues ($Millions) | Major Products |
|---|---|---|---|
| 164 | Progressive Corporation | 14,963.3 | Insurance |
| 178 | Eaton Corporation | 13,715.0 | Power Management |
| 248 | Parker Hannifin Corp | 9,993.2 | Hydraulic Components |
| 308 | The Sherwin-Williams Company | 7,776.4 | Paints and Chemicals |
| 385 | TravelCenters of America | 5,962.5 | National Travel Center Chain |
| 417 | KeyCorp | 5,458.0 | Financial Services |
| 477 | Cliffs Natural Resources | 4,682.2 | Mining, Crude Oil Production |
| 520 | Aleris International | 5,968.2 | Metals |
| 711 | NACCO Industries | 2,687.5 | Industrial & Farm Equipment |
| 851 | Lincoln Electric Holdings | 2,479.1 | Industrial Equipment |
| 780 | Medical Mutual of Ohio | 2,387.1 | Health Care Insurance |
| 844 | Ferro | 2,101.9 | Chemicals |
| 907 | Applied Industrial Technologies | 1,893.2 | Industrial Components |
| 998 | American Greetings | 1,635.9 | Greeting Cards, Printing |

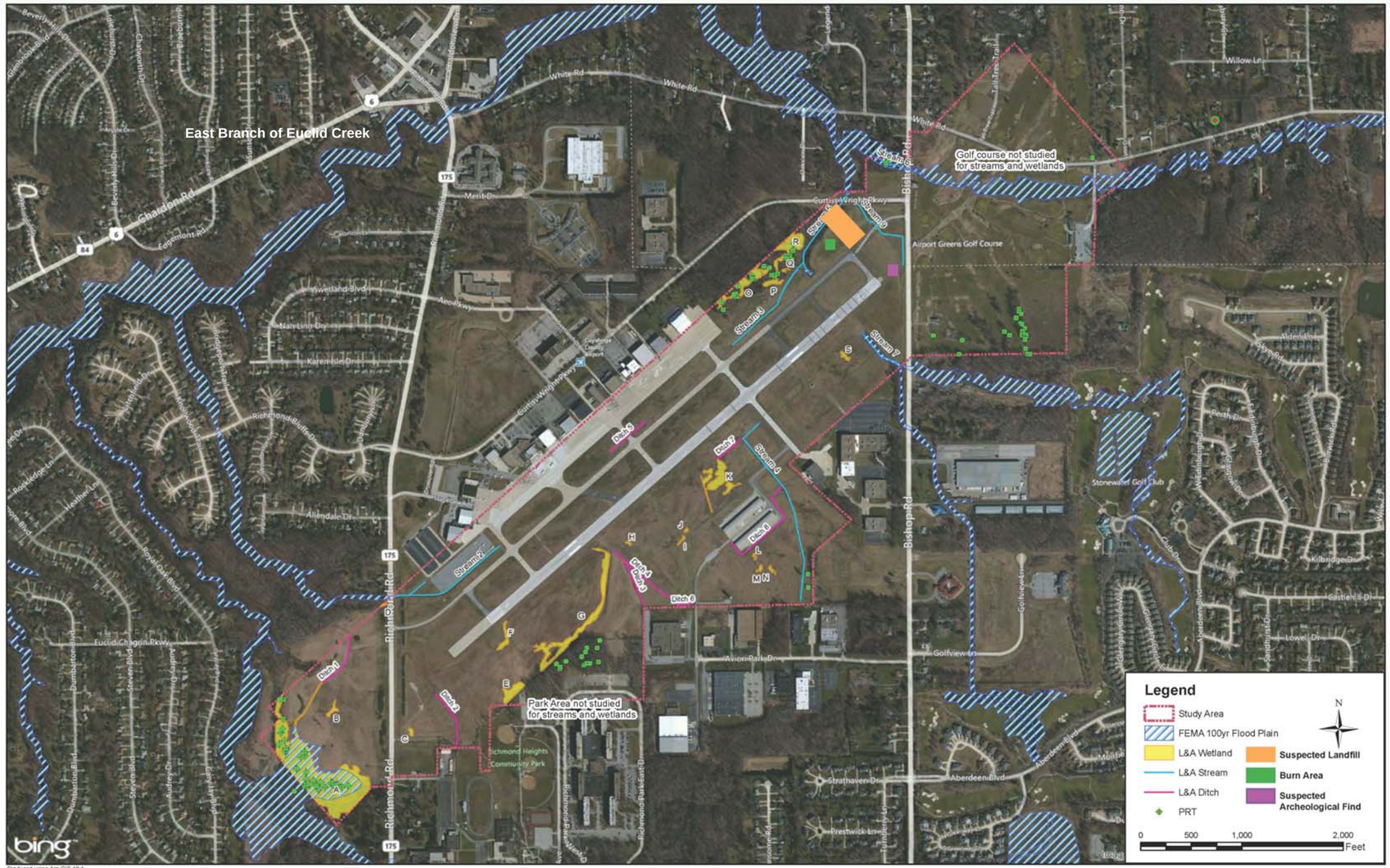
* Source: 2011 Fortune Directory of the Largest U.S. Corporations (online)

**Figure 3-7 Environmental Overview Map**

Cuyahoga County Airport (CGF)

Environmental Assessment

# Environmental Overview



The project study area, or the area of potential impact, is completely contained within existing airport property with the exception of 12 potential parcel acquisitions/easements being in the Runway Protection Zone (RPZ). For a discussion of potential property impacts, see **Section 4.18 Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks**.

As stated in **Section 2.0 Alternative Considered**, airports are encouraged by the FAA to control the RPZ either through acquiring the property or by placing avigation easements restricting incompatible land uses. Avigation easements purchase the right to control the height of objects on the property and the right to remove objects that penetrate various approach surfaces and can limit certain incompatible land uses. Fee acquisitions transfer ownership and usually require that all objects on the property be removed and the site be returned to a clear parcel. Any property acquisitions will comply with Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended.

The Airport has worked judiciously to avoid and minimize potential environmental impacts and to limit construction or land disturbance to areas already owned by the Airport. For additional details on potential property impacts see **Section 4.18 Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks**.

Streams, wetlands, floodplains and wildlife habitat is found throughout the vicinity of the Airport. However, only those resources within the project limits and likely to be impacted were field delineated. Resources outside of the potential impact area were investigated through various databases (i.e. National Wetland Inventory Maps) and published technical documents. A detailed wetland, stream and habitat delineation/survey was conducted by biologists for resources within the project study area in the spring of 2013.

Major water resources in the area include the East Branch of Euclid Creek, its tributaries and associated wetlands and floodplains. The East Branch of Euclid Creek is located northwest of the Airport with various tributaries surrounding the Airport. The East Branch of Euclid Creek drains 23 square miles, consists of over 43 miles of stream segments and flows directly into Lake Erie. The water quality of the Euclid Creek is not in attainment with the Ohio Environmental Protection Agency's (OEPA) water quality standards of a fishable and swimmable water body.[6] As a result, various citizen groups and improvement programs are in place to improve and protect Euclid Creek and its watershed.

Nine streams were identified within the limits of the Airport property. Eight of these appear to be hydrologically connected to the East Branch of Euclid Creek or its tributaries and are regulated under the Clean Water Act (jurisdictional status will be determined by the U.S. Army Corps of Engineers). Although delineated streams were found on Airport property, the Preferred Alternative will avoid streams and no impacts are expected. For a discussion of direct and indirect impacts to the East Branch of Euclid Creek and other water resources in the project area, see **Section 4.20 Water Quality**.

[6] Euclid Creek Watershed Council Community Specific Watershed Fact Sheet, 2011

Nineteen wetland complexes were delineated within the boundaries of the Airport; however only 11 wetland complexes (3.918 acres) are expected to be impacted by the Preferred Alternative. Proposed mitigation consists of an in-lieu fee option as described in the February 9, 2015, U.S. Army Corps of Engineers letter found in **Appendix N Comments on the Draft EA**. See **Section 4.21 Wetlands** for additional information about the wetland resources in the project area and proposed mitigation.

Limited wildlife habitat is found within the project area. As mentioned previously, the Airport property is mostly mowed turf grasses and provides very little quality habitat. However, coordination with the US Fish and Wildlife Service (USFWS) and the Ohio Department of Natural Resources (ODNR) confirmed that the Airport is located within the range of a variety of federal or state threatened or endangered species.

Biologists surveyed the project area and confirmed the existence of potential roosting trees for the Indiana Bat and Northern Long-Eared Bat, but determined habitat for other threatened or endangered species was not present and impacts were not expected. To mitigate for any potential Indiana Bat and Northern Long-Eared Bat impacts, tree removal restrictions will be observed. See **Section 4.8 Endangered and Threatened Species** for additional information.

For a detailed analysis of the expected environmental impacts of the Preferred Alternative and the No-Build Alternative on the ecological resources of the area, see **Section 4.0 Environmental Consequences**.

## 3.8 Resources Not Affected by the Preferred Alternative

As explained in **Section 4.0 Environmental Consequences,** the No-Build and the Preferred Alternative are not expected to affect the following resources:

- Air Quality
- Climate
- Coastal Barriers
- Coastal Zone Management
- Compatible Land Use
- Section 4(f)
- Energy Supplies, Natural Resources, and Sustainable Design
- Farmlands
- Floodplains
- Hazardous Materials
- Historic and Archaeological
- Induced Socioeconomic
- Light Emissions and Visual Effects
- Noise
- Solid Waste
- Wild and Scenic Rivers

- Cumulative Impacts

## 3.9 Resources Potentially Affected by the Preferred Alternative

The No-Build and the Preferred Alternative would likely have minor impacts on the following resources:

- Biotic Resources/Federally-listed Endangered and Threatened Species: Potential habitat for the Indiana Bat and Northern Long-Eared Bat is present within the expected area of impact. Tree removal restrictions will be implemented to avoid potential impacts.
- Construction Impacts: Temporary construction impacts are anticipated. Best management practices will be implemented to minimize the impacts.
- Socioeconomic Impacts, Environmental Justice and Children's Environmental Health and Safety Risks: Cuyahoga County has begun contacting and coordinating with potentially impacted property owners and if property is purchased, residents will be relocated in compliance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. Resources will be made available without discrimination.
- Water Quality: Ditch impacts are expected. Mitigation will be through an in-lieu fee option as described in **Section 4.20 Water Quality**. Best Management Practices (BMPs) will also be implemented during construction and all permitting requirements will be satisfied prior to construction.
- Wetlands: Wetland impacts are expected. Wetland mitigation is expected to be accomplished through an in-lieu fee option as described in **Section 4.21 Wetlands**. All permitting requirements will be satisfied prior to construction.

## 3.10 Summary

This section provided an overview of the Airport and the community and region that surrounds it. The Airport has a single runway and a full complement of airside and landside facilities that support the predominantly business aviation use at the Airport. The social and economic impacts that will be evaluated in the EA will consider the land uses around the area, the demographic trends of the region and the economic impacts connected to the Airport, all of which are described here. Characteristics of the natural environment are also introduced here with a reference to more detailed technical reports in the appendix sections. There are many resources that are not expected to be affected by the No Action or the Preferred Alternative. Minor impacts are expected in four resource areas. This information will be used as a starting point for the analysis of environmental impacts of the Preferred Alternative that follows in **Section 4.0 Environmental Consequences**.

# Section 4.0 Environmental Consequences

## 4.1 Introduction

This section of the Environmental Assessment (EA) presents an analysis of the impacts of the Preferred Alternative and the No-Build Alternative on the social, environmental and economic (SEE) environments of the surrounding area. In this section, the impacts of the No-Build Alternative are compared with those of the Preferred Alternative and used as a baseline for analysis. For a detailed discussion of the Preferred Alternative, see **Section 2.0 Alternatives Considered**.

As previously noted in **Section 2.15 Overview of Impacts**, once Alternative 23 was selected as the Preferred Alternative, it underwent a refinement process that included multiple revisions of the preliminary engineering plans created by CHA Corporation (**Appendix C Preliminary Engineering**) that attempted to first avoid, then minimize and then finally mitigate potential impacts. Revisions included items such as modifying proposed construction limits to avoid streams and wetland areas. Potential impacts have, in most cases, been greatly reduced from the initial calculations described in **Table 2.2 Environmental Impact Evaluation** found in **Section 2.0 Alternatives Considered**. This demonstrates a commitment by the Cuyahoga County Airport (Airport or CGF) to minimize environmental impacts. Revised impacts of Preferred Alternative 23 are provided in **Table 4-2 Environmental Summary of Preferred Alternative 23**, located at the end of this section.

Each subsection in this chapter includes first a brief summary of the regulatory issues and then an analysis of the topic relative to Alternative 23 and the No-Build Alternative, as well as any suggested mitigation plans.

## 4.2 Air Quality

National Ambient Air Quality Standards (NAAQS) have been established for air pollutants that have been identified by the US Environmental Protection Agency (USEPA) as being of concern nationwide. The Clean Air Act (CAA), its amendments and the Final Conformity Rule (40 Code of Federal Regulations [CFR] Parts 51 and 93) direct the USEPA to implement environmental policies and regulations that will ensure acceptable levels of air quality. The CAA and the Final Conformity Rule apply to Preferred Alternative 23.

Analysis and Mitigation of Air Quality Impacts: The CAA requires that a State Implementation Plan (SIP) be prepared for each nonattainment area, and a maintenance plan be prepared for each former nonattainment area that subsequently demonstrates compliance with the standards (and is now known as a maintenance area). The SIP is a state's plan on how it will comply with the NAAQS under the deadlines established by the CAA. USEPA's Conformity Rule requires SIP conformity determinations on plans, programs and projects before they are approved or adopted.

While Cuyahoga County is designated as an attainment area for many of the criteria pollutants, it is designated as a nonattainment area for 8-hour ozone, carbon monoxide (CO), particulate matter ($PM_{10}$ $PM_{2.5}$) and sulfur dioxide ($SO_2$). As such, the USEPA's General Conformity (GC) Rule (40 CFR Part 93) applies for these pollutants.

The project is not expected to cause long-term air quality impacts since an increase in the number of operations or use by larger aircraft is unlikely beyond normal projected growth. The implementation of Preferred Alternative 23 is not an airport capacity enhancement project, rather the project is intended to meet Federal Aviation Administration (FAA) safety area deficiencies and provide adequate runway length for existing Airport users. Emissions / dust generated during construction could affect local air quality levels temporarily, as there are sensitive land uses near the Airport boundary.

For this reason, the air quality analysis conducted for Preferred Alternative 23 provided limited analysis of the Proposed Action's impact on operational emissions, and instead focused on the construction phase impacts. The complete *Air Quality Technical Memorandum* is included in **Appendix D Air Quality**.

The following is a summary of the results of the air quality analysis:

- Because Preferred Alternative 23 is not expected to increase or alter operations at the Airport, operational phase emissions are not predicted to exceed the GC Rules de minimis emission thresholds. As such, air quality impacts from operations of the Proposed Action would not be subject to a conformity determination;
- Construction phase emissions are not predicted to exceed the GC Rules de minimis emission thresholds. As such, air quality impacts from construction of the Preferred Alternative 23 would not be subject to a conformity determination;
- Construction phase impacts are not predicted to exceed a NAAQS at applicable sensitive land uses adjacent to the Proposed Action; and
- Construction phase of the Proposed Action has no potential for Mobile Source Air Toxics (MSAT) effects.

Climate change and greenhouse gases are also a growing concern for the aviation industry. Based on FAA data, operations activity at the Airport relative to aviation throughout the United States represents less than 1% of US aviation activity. Therefore, assuming that greenhouse gases occur in proportion to the level of activity, greenhouse gas emissions associated with existing and future aviation activity would be expected to represent less than 0.03% of US-based greenhouse gases.

Air quality impacts and greenhouse emissions are not expected to be significant from the construction of Preferred Alternative 23 or the No-Build Alternative. A review of potential air quality impacts determined that neither operational phase emissions nor construction phase emissions are predicted to exceed regulatory standards. As a result, air quality impacts are not expected from the Preferred Alternative or the No-Build Alternative.

## 4.3 Biotic Resources and Migratory Birds

This section describes the biological characteristics of the flora and fauna located within the vicinity of the Airport that may be impacted by Preferred Alternative 23. A biotic community is an assemblage of living things residing together, including both plants and animals.

The *Migratory Bird Treaty Act of 1918* (MBTA) and its amendments are the main driver for the protection of migratory birds in the United States. Under the provisions of the MBTA, it is unlawful to "*pursue, hunt, take, capture [or] kill any migratory birds except as permitted by regulations issued by the U. S. Fish and Wildlife Service". The term "take" is not defined in the MBTA, but USFWS has defined it by regulation to mean to "pursue, hunt, shoot, wound, kill, trap, capture or collect" any migratory bird or any part, nest or egg of any migratory bird covered by the conventions, or to attempt those activities".*

In a biological sense, a migratory bird is a bird 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.

Streams, wetlands, floodplains, and wildlife habitat are found throughout the vicinity of the Airport. The East Branch of Euclid Creek is located approximately 3,000 feet to the northwest with tributaries and associated wetlands and floodplains surrounding the Airport (**Figure 4-1 Environmental Overview Map**).

The East Branch of Euclid Creek drains 23 square miles, consists of over 43 miles of stream segments and flows directly into Lake Erie. The water quality of Euclid Creek is not in attainment with Ohio Environmental Protection Agency's (OEPA) water quality standards.[1] Major issues affecting the water quality of Euclid Creek include:

- Uncontrolled runoff of phosphorous and other nutrients from urban development and poor land management practices
- Loss of habitat resulting in low fish populations
- Flash flood events that erode stream banks
- Illegal discharges of septic systems and combined sewer overflow outlets

[1] Euclid Creek Watershed Council Community Specific Watershed Fact Sheet, 2011

**Figure 4-1 Environmental Overview Map**

Cuyahoga County Airport (CGF)

Environmental Assessment

# Environmental Overview

Analysis and Mitigation of Biotic Communities and Migratory Bird Impacts: Although various natural resources are found in the vicinity of the Airport, limited habitat is found within the area of expected disturbance of Preferred Alternative 23. The Airport property is mostly mowed turf grasses and provides very little quality habitat. The project should have minimal overall impacts to biotic resources. The impact area for Alternative 23 is expected to be contained within existing Airport property with the exception of some tree removals off of each runway end that represent obstructions in the runway approaches.

Early coordination with the U.S. Fish and Wildlife Service (USFWS) indicates that there are no federal wilderness areas, wildlife refuges, or designated critical habitat within the study area. However, coordination with other resource agencies resulted in a "mixed" determination of the potential presence of biotic communities. A review by the Ohio Department of Natural Resources (ODNR) found no rare or endangered species within a one mile radius of the Airport. However, coordination with the USFWS and the ODNR Division of Wildlife confirmed that the Airport is located within the range of a variety of federally or state threatened or endangered species including:

- Indiana Bat
- Northern Long-Eared Bat
- Snuffbox Mussel
- Piping Plover
- Kirtland's Warbler
- Canada Darner
- Black Bear
- King Rail

**Typical Airport Habitat**

See **Appendix E Agency Coordination** for agency correspondence relating to biotic communities.

To verify the presence of ecological resources and to determine potential impacts within the study area, an ecological survey to delineate wetlands and water resources, and to evaluate potential habitat was conducted by qualified biologists in the spring of 2013 and 2014. See **Appendix F Ecological Report** for the results of the ecological survey of the project area. (**Appendix F** contains an abbreviated version of the ecological report; the full version is enclosed as a separate technical document.)

Biologists confirmed the existence of potential roosting trees for the Indiana Bat and Northern Long-Eared Bat in and around the Airport, but determined habitat for the other species listed by the various regulatory agencies was not present and impacts are not expected. To mitigate possible impacts to bat habitat, any tree removals will not be allowed from March 31st to October 1st per USFWS direction. See **Section 4.8 Endangered and Threatened Species** for additional information.

As previously mentioned, tree impacts are expected as a part of Preferred Alternative 23. During the analysis of potential obstructions off the end of each runway, many trees were identified that may have to be removed or pruned due to their existing height. Per FAA guidance, obstructions should not penetrate or enter into the approach surfaces of arriving or departing aircraft. Anticipated mitigation for tree impacts would likely be associated with the purchase of avigation easements or in unusual situations, a one-time replacement with a low-growing species to help mitigate impacts. Specific mitigation will be determined during final design in coordination with the property owner, the FAA, and the Airport.

Nine regulated streams were identified within the limits of Airport property. It was determined that eight are hydrologically connected to the East Branch of Euclid Creek or its tributaries and are regulated under the Clean Water Act. To avoid impacts to regulated streams, the design of Preferred Alternative 23 was refined to avoid stream impacts altogether. As a result, no stream impacts are expected. For a discussion on impacts to the East Branch of Euclid Creek and other water resources in the project area, see **Section 4.20 Water Quality**.

Nineteen wetland complexes were delineated within the boundaries of the Airport; however only 11 wetland complexes (3.918 acres) are expected to be impacted by Preferred Alternative 23. Proposed mitigation consists of an in-lieu fee option as described in the February 9, 2015, United States Army Corps of Engineers (USACE) letter found in **Appendix N Comments on the Draft EA**. See **Section 4.21 Wetlands** for additional information about the wetland resources in the project area and proposed mitigation.

Although regulatory agencies did not direct the project team to investigate eagles, two large nests were observed during the ecological surveys adjacent to the study area in the vicinity of the golf course northeast of the Airport. According to golf course staff, these nests were likely used by Bald Eagles in the past, but are now likely occupied by Osprey.

To further investigate the nests, coordination with the ODNR indicated no record of nesting sites for Eagles or Osprey within the vicinity of the Airport. In addition, during field investigations, biologists saw no activity at the nests and it is suspected that the nests are abandoned. Although no longer federally listed as threatened or endangered by the USFWS, bald eagles are protected under the Federal Bald and Golden Eagle Protection Act of 1972 as well as the MBTA. If the nests become active again at a later time, a permit may be required for the removal or relocation of these nests.

Field investigations found that the study area contained marginal potential nesting and foraging areas for migratory birds. The potential nesting and foraging areas were not considered “rare” or “high quality” by the ODNR Natural Heritage Program. Impacts to migratory birds as a result of Preferred Alternative 23 are unlikely due to the characteristics of the proposed area of ground disturbance within existing maintained Airport property. Because a majority of the area is constantly mowed, the resulting vegetation is considered “poor” in its ability to provide shelter or roosting habitat for migratory birds. However, to avoid potential impacts to migratory birds, any vegetation clearing beyond turf grasses will be restricted from March 31st to September 1st.

No adverse impacts to biotic communities or migratory birds are expected with the construction of Preferred Alternative 23 or the No-Build Alternative.

## 4.4 Coastal Barriers

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.

Analysis and Mitigation of Coastal Barriers Impacts: There are no coastal barriers or any areas subject to the *Coastal Barrier Resources Act of 1982* or the *Coastal Barrier Improvement Act of 1990* in the project area. Therefore, Preferred Alternative 23 and the No-Build Alternative will have no adverse coastal barrier impacts, as defined by the *Coastal Barrier Act of 1982* (P.L. 97-348).

## 4.5 Coastal Zone Management

The *Coastal Zone Management Act of 1972* 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".

Analysis and Mitigation of Coastal Zone Management Impacts: The project is not located within a Federal Coastal Zone Management Boundary, as defined by the *Coastal Zone Management Act of 1972*. Therefore, Preferred Alternative 23 or the No-Build Alternative would have no adverse coastal zone impacts.

## 4.6 Compatible Land Use

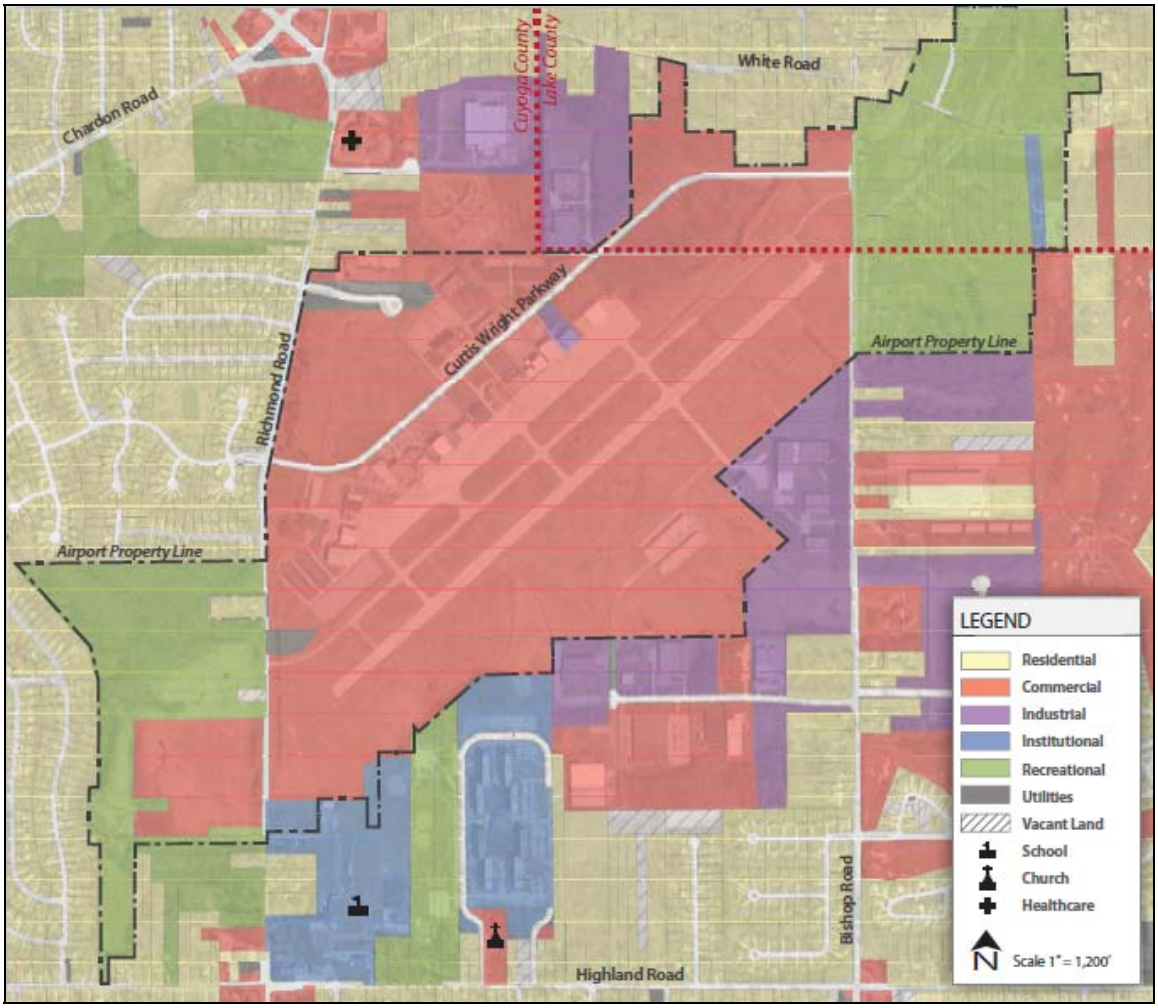
Compatible land use is described in FAA Order 5050.4B*, - NEPA Instructions for Implementing Airport Actions,* as "the compatibility of existing and planned land uses in the vicinity of an airport is usually associated with the extent of the noise impacts related to that airport." The degree of annoyance which people suffer from aircraft noise varies depending upon their activities at any given time. The concept of "land use compatibility" has arisen from the variation in human tolerance of aircraft noise.

In addition, according to FAA Advisory Circular (AC) 150/5200-33B, *Hazardous Wildlife Attractants on or near Airports,* the FAA requires that consideration be given to the potential increases in wildlife attractants that a project may create and that an assessment be taken of potential incompatible land uses near airports such as solid waste landfills, waste water treatment facilities, and wetlands that may act as wildlife attractants.

Analysis and Mitigation of Compatible Land Use Impacts: Overall, land use in Richmond Heights, Highland Heights and Willoughby Hills is primarily residential. However, there is a cluster of commercial, industrial and recreational uses around the Airport that generally provide a buffer between Airport operations and residential development (**Figure 4-2 Land Use Map**). The area zoning map defines the Airport as industrial so the Airport is a permitted use in the current zoning

district. These uses are compatible with Airport operations. **Section 3.0 Affected Environment** provides a detailed inventory of land uses and zoning around the Airport.

**Figure 4-2 Land Use Map**




A noise analysis was completed as part of this project to define expected noise impacts with Preferred Alternative 23 and the No-Build Alternative. Using the FAA Integrated Noise Model (INM) Version 7.0b, potential noise impacts were analyzed out to the year 2022 with Preferred Alternative 23 and the No-Build Alternative. The modeling illustrated that the 65 Day-Night Level (DNL) noise contour does not fall outside of Airport property for existing and future operations and does not exceed the threshold of significance. Noise impacts are not expected with either Preferred Alternative 23 or the No-Build Alternative. See **Section 4.16 Noise** for details on the noise analysis.

No significant land changes would occur with Preferred Alternative 23. All development will take place on existing Airport property and existing land use patterns will remain unchanged.

Analysis and Mitigation of Hazardous Wildlife Attractants: Preferred Alternative 23 will not create or increase hazardous wildlife attractants on or near the Airport. There are no land use elements

of the project that are considered hazardous wildlife attractants. The design of Preferred Alternative 23 will not introduce or expand any natural features associated with wildlife attractants such as water or food sources.

There are existing wildlife attractants around the Airport such as wetlands and water resources (Euclid Creek). These are existing resources and subject to regulatory protection. There are no landfills or wastewater treatment facilities in the vicinity of the Airport.

An analysis of the Runway Protection Zone (RPZ) associated with Preferred Alternative 23 identified 12 parcels that were located within the new RPZ. These parcels must be addressed through acquisitions or easements to provide for compatible land uses. Any relocation will comply with Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. Airports are encouraged by the FAA to control land uses within the RPZ for the protection of Airport users and the adjacent local community.

No significant land use changes are expected with either Preferred Alternative 23 or the No-Build Alternative. Development will take place on existing Airport property and existing land use patterns around the Airport are expected to remain relatively unchanged since there are limited opportunities for new development. Furthermore, as noted in **Section 4.8**, the noise analysis concluded that Preferred Alternative 23 will not cause the 65 DNL noise contour to leave Airport property. Based on this information, it is concluded that Preferred Alternative 23 and the No-Build Alternative are compatible with existing land uses.

## 4.7 Construction

In accordance with the *FAA Environmental Desk Reference for Airport Actions,* the impacts to the environment due to construction activities must be assessed when preparing an EA. Construction impacts are commonly short-term and temporary in nature. Typical impacts resulting from airport construction include air, water, and noise pollution. In addition, surface transportation traffic patterns may be altered during construction. Typical impacts include:

- Noise from construction equipment and related activities at the site
- Noise and dust from delivery of materials through residential areas
- Air pollution from burning debris
- Use and mitigation of borrow and waste sites
- Excessive dust

Analysis and Mitigation of Construction Impacts: Aircraft operations at the Airport will be affected during the construction of Preferred Alternative 23. A phased construction approach is proposed with up to five phases over five years. The final construction schedule will be determined based on FAA funding availability. During construction, various portions of the Airport will be reconfigured to allow the Airport to remain open and functional albeit at a reduced level of service. A critical part of the construction is the use of the parallel taxiway (Taxiway A) as a temporary runway during several phases of construction. At the beginning and end of specific phases, the taxiway will be marked and remarked, respectively, to turn it into a runway and back into a taxiway at the conclusion of construction phases. A summary of the various phases is

provided below and graphically illustrated in **Appendix C Preliminary Engineering**. Construction phases include:

- Phase I: Taxiway A would be converted from a parallel taxiway to a temporary runway meeting design standards for B-II aircraft which represent only a small portion of the Airport fleet mix. This temporary runway could provide as much as 5,000 feet of runway length, with visual approaches to each end. Runway 6/24 would remain open during this phase.
- Phase II: Construction on Runway 6/24 would begin with the south (Runway 6) end. Runway 6/24 would be closed during this phase and the temporary runway (Taxiway A) would be utilized.
- Phase III: Construction on Runway 6/24 would shift to the north (Runway 24) end during this phase and Runway 6/24 would be closed during the construction season. Taxiway A would be converted into a temporary runway.
- Phase IV: Construction on Runway 24 would conclude in this phase with the reconstruction of the primary runway pavements. During this phase, Taxiway A would be used as temporary runway again.
- Phase V: The final phase would be the installation of the EMAS at both runway ends. Runway 6/24 would experience temporary closure during construction, however, Taxiway A would not be used as a temporary runway during this final phase of construction.

Construction activities will cause aircraft disruptions, but disruptions are temporary in nature. Once construction of Preferred Alternative 23 is complete, Airport operations will return to normal. To help minimize and mitigate construction impacts, FAA Advisory Circular 150/5370-10, *Standards for Specifying Construction of Airports*, Item P-156, Temporary Air and Water Pollution, Soil Erosion and Siltation Control will be incorporated in the construction design of Preferred Alternative 23.

Soil erosion is a major source of concern as a possible adverse impact of construction projects. Since the Airport site is generally flat, there is not expected to be a high risk for soil erosion during the excavation and site preparation process. Erosion control measures such as sediment traps, silt fences, and temporary grassing will be employed, as appropriate, during the construction phases. Vegetation cover will be replaced as soon as possible. Soil erosion will be minimized through the implementation of an erosion control plan prepared under the provisions of FAA AC 150/5370-10, *Standards for Specifying Construction of Airports*.

The USEPA was contacted to evaluate the proposed construction at the Airport. Their response included the following short-term recommendations for the construction of Preferred Alternative 23. These recommendations will be considered and incorporated during construction where appropriate:

- Use ultra-low sulfur fuel (less than 15 parts per million) in all diesel engines
- Use add-on controls such as catalysts and particulate traps where suitable
- Minimize engine idling (e.g. 5-10 minutes/hour)
- Use equipment that runs on clean, alternative fuels as much as possible

- Use updated construction equipment that was either manufactured after 1996 or retrofit to meet the 1996 emissions standards
- Use equipment at 75 percent power
- Prohibit engine tampering and require continuing adherence to manufacturer's recommendations
- Maintain engines in top running condition tuned to manufacturer's specifications and turn off when not in use
- Phase project construction to minimize exposed surface areas
- Reduce speeds to 10 and 15 miles per hour (mph) in construction zones
- Conduct unannounced site inspections to ensure compliance
- Locate haul routes and staging areas away from sensitive population centers, if possible

Adverse impacts on water quality due to erosion and subsequent sedimentation are also prime considerations during construction. Per OEPA direction, since over one acre of land is expected to be impacted, a Division of Surface Water (DSW) General National Pollutant Discharge Elimination System (NPDES) permit for construction activities is required. In addition, the Airport currently has an industrial storm water permit in place, however, an updated Storm Water Pollution Prevention Plan (SWP3) is required upon completion of construction.

Mitigation measures prepared under an erosion control plan in accordance with FAA AC 150/5370-10, *Standards for Specifying Construction of Airports,* will help minimize long-term impacts to area water quality and to the existing drainage system. In addition, the specification in FAA AC 150/5320-5C, *Surface Drainage Design*, will be used to draft contract specifications.

There will be no substantial long-term construction impacts associated with Preferred Alternative 23 or the No-Build Alternative. All anticipated construction-related impacts are considered routine and can be easily mitigated through the regulatory permitting process and the use of Best Management Practices (BMPs). See **Appendix E Agency Coordination** for a copy of the USEPA early coordination letter.

## 4.8 Endangered and Threatened Species

As noted in **Section 4.3 Biotic Resource and Migratory Birds**, there are species that need to be considered. This section focuses on the potential impacts of the Proposed Action on species listed as endangered, threatened, or of special concern by the federal and state government. Endangered and threatened species are protected from harm pursuant to federal and state law. Species of special concern are not formally afforded regulatory protection; however, any reduction in their number or habitat is a concern from a state, regional and national perspective.

*The Endangered Species Act of 1973* (ESA), [16 U.S.C. §§ 1531-1544] [PL 93-205] as amended, applies to federal agency actions that may affect an endangered or threatened species and provides for the protection of certain plants and animals, and the habitats in which they are found. In compliance with the ESA, agencies overseeing federally-funded projects are required to obtain information concerning any species listed, or proposed to be listed, which may be present in the area of the proposed project, from the USFWS as well as applicable state agencies with local jurisdiction.

Analysis and Mitigation of Endangered and Threatened Species Impacts: Multiple agencies provided comments on this topic as outlined below. Early coordination with the USFWS indicated that there are no federal wilderness areas, wildlife refuges or designated critical habitat within the proposed project area. Due to the project type, size and location, no adverse effects to any federally-endangered, threatened, proposed or candidate species are anticipated with the exception of the Indiana Bat and Northern Long-Eared Bat. In addition, a review of the Ohio National Heritage Database by the ODNR found no record of rare or endangered species within a one-mile radius of the Airport. See **Appendix E Agency Coordination** for correspondence from regulatory agencies referenced in this section.

According to the USFWS, the proposed project site is within the range of the Indiana Bat, a federally endangered species, and the Northern Long-Eared Bat which is currently a federally proposed endangered species. The Northern Long-Eared Bat was not originally included in the USFWS early coordination, but was added to the target species list through verbal communications as part of an online resource agency meeting held October 17, 2013.

Coordination with ODNR Division of Wildlife also confirmed that the project is within the range of the Indiana Bat and includes five other federally and/or state endangered species:

- Piping Plover
- Kirtland's Warbler
- Canada Darner
- Black Bear
- King Rail

According to the ODNR Division of Wildlife, impacts to the Piping Plover and Kirtland's Warbler are not likely due to their use of the area only as "stopover habitat" during migration and impacts to the Black Bear are unlikely due to the mobility of this species. Impacts to the Canada Darner and King Rail are dependent on impacts to wetlands and marsh vegetation respectively.

In order to move forward with the proposed project, an analysis of the study area and field habitat investigations were performed by qualified biologists in the spring of 2013 and 2014. The field investigations examined the area for potential endangered species and migratory bird habitat. They also identified potential impacts and defined appropriate mitigation. The study area for the analysis included the fenced property of the Airport and adjoining properties. See **Appendix F Ecological Report** for details of the field investigations and habitat surveys, including methods, photographs and maps. (**Appendix F** contains an abbreviated version of the ecological report; the full version is enclosed as a separate document.)

Results of the initial field investigations and subsequent activities are summarized below for each target species.

Indiana Bat and Northern Long-Eared Bat: During the primary field investigations, multiple potential roost trees for the Indiana Bat and the Northern Long-Ear Bat were observed. Field surveys found three types of potential bat habitat: (1) marginal potential bat habitat (few to no potential habitat observed), (2) assumed concentrated potential bat habitat (potential habitat observed on private property with no permission to enter), (3) confirmed concentrated potential bat habitat (direct observation of potential bat habitat).

Dead Potential Roost Tree (top), Living Potential Roost Tree (bottom).

Additional coordination was conducted with the USFWS in April 2014, regarding the results of the habitat surveys and tree clearing restrictions as proposed mitigation. The USFWS indicated the coordination in April 2014 was sufficient to serve as determination of effects for their review and concurrence.

To protect habitat for the Indiana Bat and the Northern Long-Ear Bat, the USFSW recommends saving potential roosting trees and surrounding trees where possible. Where cutting or removal of these trees cannot be avoided, the USFSW restricts such activities from March 31st through October 1st. Because the proposed project may not be able to avoid impacts to potential roosting trees and surrounding trees, cutting or removals will comply with these date restrictions to mitigate impacts to the Indiana Bat as well as the Northern Long-Eared Bat.

Piping Plover and Kirtland's Warbler: According to the primary field investigations, the study area does not contain potential habitat for the Piping Plover due to the Airport's maintenance program and its use as an active airport and contains very limited habitat (young Jack Pine trees) for Kirtland's Warbler. The study area is mostly maintained, grassy areas and does not provide the kind of habitat that these two species prefer. Proposed construction at the Airport is unlikely to result in displacement or disturbance of these protected species.

Canada Darner, Black Bear and King Rail: During the primary field investigations, no Canada Darner, Black Bear or King Rail were observed. The project site contains wetlands of low quality which are unlikely to provide habitat for Canada Darner. The Black Bear is a mobile species and able to vacate the area, and the project site does not contain marsh vegetation required by the King Rail. Therefore, proposed construction at the Airport is unlikely to result in displacement or disturbance of these protected species.

Snuffbox Mussel: While the primary investigation did not determine the presence or absence of the Snuffbox Mussel, the biologist found very limited potential habitat for this species due to the nature of the substrate of the streams within the study area. In addition, as explained in **Section**

**4.20 Water Quality**, no streams are anticipated to be impacted by the construction of Preferred Alternative 23. Impacts to aquatic resources within the study area are unlikely to result in displacement or disturbance of these protect species.

The FAA made the following findings for the species discussed above:

- Snuffbox mussel, Kirtland's warbler, and Piping plover – no effect
- Indiana bat – may affect but is not likely to adversely affect

The USFWS concurred with the FAA's determination on March 3, 2015. The correspondence letter is located in **Appendix N Comments on the Draft EA**. Field investigations and subsequent findings indicate that any adverse impacts from Preferred Alternative 23 or the No-Build Alternative to federal or state-listed endangered, threatened, candidate, or special concern species can be adequately mitigated and no long-term impacts are expected.

## 4.9 Energy Supplies, Natural Resources, and Sustainable Design

This section examines 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 Proposed Action. Energy requirements associated with an airport usually fall into two categories: those which relate to changed demands for stationary facilities and 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.

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.

Analysis and Mitigation of Energy Supply and Natural Resources Impacts: Electrical or gas use required to operate Airport facilities is not expected to noticeably increase as a result of the proposed project. A small amount of increased energy consumption may result from additional runway lighting; however, the amount is expected to be negligible. Where possible, LED lights will be used to further reduce energy consumption.

The nature of the project does not lend itself to increased energy or natural resources use beyond temporary energy consumption associated with construction of the Preferred Alternative. Therefore, the Preferred Alternative or the No-Build Alternative would have no adverse energy supply and natural resources impacts.

## 4.10 Farmlands

The *Farmland Protection Policy Act of 1981* (FPPA) 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.

Pursuant to the FPPA, farmland can be classified as "prime farmland", "unique farmland", or "farmland that is of statewide or local importance." 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 Natural Resource Conservation Services (NRCS).

Analysis and Mitigation of Farmland Impacts: Most of the land inside of Airport boundary is considered prime farmland - if drained. However, soils found off the end of Runway 24 are not classified as prime; this is where the majority of the construction is proposed. There are no active farms in the project area and no farmland will be taken out of production. No prime soils will be drained and any proposed construction in areas with prime soils will be reconstruction of existing pavement.

In addition, agency coordination was initiated with the NRCS at the start of the project. It was determined by the NRCS that the project area has been committed to urban development and is not subject to FPPA. As a result, no farmland impacts from the Preferred Alternative or the No-Build Alternative are expected. See **Appendix G Farmlands** for NRCS correspondence and soil maps of the area.

## 4.11 Floodplains

A floodplain is generally a flat, low-lying area adjacent to a stream or river that is subjected to inundation during high flows. The relative elevation of different floodplains determines their frequency of flooding, ranging from rare, and severe storm events to flows experienced several times a year. For example, a 100-year floodplain would include the area of inundation that has a one percentage chance of flooding in any given year. Construction projects within a 100-year floodplain are discouraged.

Analysis and Mitigation of Floodplain Impacts: Federal Emergency Management Agency (FEMA) geographic information system (GIS) flood data maps were obtained and incorporated to aid in floodplain avoidance during the preliminary design of Preferred Alternative 23 (**Figure 4-1 Environmental Overview Map**). Correspondence from FEMA and the City of Willoughby Hills also confirmed the presence of a Special Flood Hazard Area (SFHA) located east of Bishop Road.

Various floodplains were found in the vicinity of the Airport, mostly adjacent to the East Branch of Euclid Creek and its tributaries. Through a careful refinement of Preferred Alternative 23, no construction activities are anticipated to impact any floodplains, water bodies or tributaries of Euclid Creek within the study area.

Therefore, it is expected that the Preferred Alternative and the No-Build Alternative will have no adverse floodplain impacts. If however, during final design, work is proposed in an area designated as floodplain, a permit would be required. See **Appendix E Agency Correspondence** for correspondence pertaining to area floodplains.

## 4.12 Hazardous Materials

A Phase I Environmental Site Assessment (ESA) was completed in conformance with the scope and limitations of American Society for Testing and Materials (ASTM) Designation: *E 1527-05,b Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process and the FAA Environmental Due Diligence Audit Advisory Circular 1050.19.*

Analysis and Mitigation of Hazardous Materials Impacts: The Phase I ESA was conducted for potential hazardous material sites in and around the Airport and areas outside of the potential limits of construction of Preferred Alternative 23. Field investigations identified a variety of aboveground storage tanks (ASTs), underground storage tanks (USTs), sites listed on the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) List; Emergency Response Notification System (ERNS); and the Ohio Spill Database. Several sites adjacent to the Airport are also listed as Resource Conservation and Recovery Act generators of hazardous waste. An excerpt from the Phase I Technical Report is found in **Appendix H Hazardous Materials Report**. The 500-page Phase I ESA Report is available under separate cover.

According to Mr. Dave Frank of the Cuyahoga County Airport and Chief Turner of the Highland Heights Fire Department, controlled burn-offs of fuels were previously conducted in the grassy area northeast of Taxiway A. Mr. Frank also noted that a historic landfill may be located in this area. Research and interviews with other Airport officials could not collaborate or confirm the existence of a historic landfill. In addition, the OEPA indicated that they have no information on file of the landfill and no additional evidence has been found to substantiate its existence.

In several cases, the Phase I ESA recommended additional investigations. However, at the time of the Phase I ESA study, the limits of construction of Preferred Alternative 23 were not known and thus the potential impact area was much larger than its current limits. As the preliminary design of Preferred Alternative 23 became more refined, any site identified in the Phase I ESA as recommended for additional investigations will be avoided and no disturbance of those sites are expected. Construction of Preferred Alternative 23 is proposed to be on the same alignment and on existing paved areas with the exception of the proposed EMAS beds on which no contaminated sites were found.

Coordination with the OEPA indicates that any potential hazardous waste encountered or generated during the construction efforts must be properly handled or disposed of in compliance with Ohio Administrative Code (OAC) 3745-52-11 and subsequent regulations. See OEPA's letter found in **Appendix N Comments on the Draft EA** for additional information.

The Preferred Alternative and the No-Build Alternative are not expected to have impacts to hazardous materials.

## 4.13 Historic and Archaeological

According to FAA Order 5050.4B, National Environmental Policy Act (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 *Archaeological 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."*

Historical, Architectural, and Cultural Resources Impacts: Section 106 of the National Historic Preservation Act (NHPA) requires federal agencies to consider the effects of their actions on historic properties as defined in 36 CFR Part 800. An analysis was conducted to ascertain whether there are any historical, architectural or cultural resources within the area of potential effect (APE). The results of the investigation are summarized in the following sections.

Analysis and Mitigation of Historical, Architectural and Cultural Resources: The APE for architectural and historical resources was determined in consultation with the FAA and the Ohio Historic Preservation Office (OHPO). It was defined as an irregular polygon that roughly follows the existing southwest/northeast orientation of the runway, encompassing 660 acres of existing Airport property, as well as properties where obstruction mitigation and approach clearing outside of Airport property is expected to occur. Properties within the 65 DNL noise contour for Preferred Alternative 23 were also assessed.

Within the APE, architectural historians looked for buildings, structures, and objects that were at least 50 years old that had retained sufficient historic integrity, and appeared to be potentially eligible for the National Register of Historic Places (National Register) based on architectural and/or historical significance. The National Cooperative Highway Research Program (NCHRP) Report 723 "*A Model for Identifying and Evaluating the Historic Significance of Post-World War II Housing*" was used to survey and evaluate resources within the APE survey area because it was largely comprised of postwar housing and development. A literature review of a 1.24-mile (2-kilometer) radius from the proposed project area was also completed in 2013.

The literature review found that the only previously surveyed resource located in the APE is the Curtiss-Wright Hangar found on Airport property. No new properties located within the APE met the survey criteria. The proposed project activities are not expected to effect the architectural or historical significance of the Curtiss-Wright Hangar. Therefore, no further architecture/history work is recommended.

Archaeological Impacts: A Phase I Archaeological Survey was completed for areas within the APE that have not been previously disturbed. The goals of this survey were to determine whether archaeological resources exist within the study area, and to determine whether any identified resources meet the NRHP Criteria for Evaluation. The archaeological investigations for this project were conducted in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended in 1992, U.S.C. 470f and standard archaeological field techniques based upon 1994 guidelines from the OHPO were employed.

Analysis and Mitigation of Archaeological Impacts: Before fieldwork began, a standard records and literature search was conducted to identify previously recorded archaeological sites and/or historic properties in or near the present project area (within 2 km). Following the records search, three methods of investigation were utilized during this Phase I archaeological survey: visual inspection, soil probing, and systematic shovel testing. The fieldwork consisted of visual inspection of the entire surveyed area which is made up of two areas, known as the EMAS areas, located at each end of the runway. The entire surveyed area was visually inspected to identify readily apparent archaeological resources such as mounds, earthworks, and building or structural remnants, and to document areas of disturbance and/or steep slopes. Then shovel test units were excavated within both EMAS surveyed areas. One potentially historic archaeological site was found (33CU0530) in the northeast EMAS area.

The one previously undocumented site was a small piece of glass, most likely from the Fairmont Glass Works Company and likely deposited during Airport construction activities in the 1970s. Based on the lack of evidence of intact subsurface deposits or cultural features at this site, it is not recommended eligible for inclusion in the National Register and no further testing is recommended.

During construction of Preferred Alternative 23, acquisition of property and/or easements for obstruction and RPZ mitigation may be required. Once the Airport determines which parcels require tree removals, additional archaeological investigations may be needed to determine effect. The Airport proposes to coordinate with OHPO to identify previously undisturbed areas prior to any ground disturbing activities and determine appropriate mitigation. Possible mitigation includes having a qualified archaeologist present during stump removal or grubbing activities to observe and document any historical or archaeological finds. It is expected that most areas are previously disturbed and minimal additional archaeological work will be necessary.

No Native American coordination was conducted as there are no federally recognized tribes in the State of Ohio.

The FAA made a finding of “no historic properties affected.” The OHPO concurred with this federal determination on September 25, 2014 The Preferred Alternative and the No-Build Alternative are not expected to have impacts on historic or archaeological resources. This concludes the Section 106 Consultation Process.

For details of the historic and archaeological investigations and OHPO concurrence, see **Appendix I Section 106 Report**.

## 4.14 Induced Socioeconomic

Induced or secondary socioeconomic impacts are changes in regional growth and development patterns such as shifts in residential and related population distribution and growth, public service demands, and business and economic activity brought about by development of a facility. Induced socioeconomic impacts are further compounded by any substantial adverse impact in the noise, land use and social categories.

Analysis and Mitigation of Induced Socioeconomic Impacts: Because the Airport is currently operational and all proposed improvements will take place on Airport property, neither the pattern of population movement near the project area nor the demand for public services is expected to be altered at the regional level due to the implementation of the Preferred Alternative or the No-Build Alternative.

An economic impact study of the Airport was conducted as part of the EA to calculate the ongoing impacts of the Airport to the economies of Cuyahoga and Lake Counties. The report found that on-airport aviation activity impacts alone, which include the direct effects of both the Airport administration and operations and Airport tenants, directly support 93 jobs and $17.3 million in annual sales, and support an additional 78 jobs in the wider regional economy. The report also looked at multiplier impacts on the wider economy. The report found that nearly 90% of the economic impacts and 90% of the employment supported by the Airport are associated with businesses that are located off-airport in the regional economy. The report concluded that in total, the Airport contributes more than $200 million annually and supports almost 1,000 jobs in the two counties. The economic impact study is included in **Appendix J Economic Study**.

In the short-term, construction activities may directly benefit the regional economy through the creation of temporary, construction-related jobs. Equipment and materials necessary for the construction project will be purchased in the local area, provided they are readily available. In the long-term, Preferred Alternative 23 may support the expansion of existing businesses or attraction of new businesses to the Airport or to the region. Conversely, it is anticipated that under the No-Build Alternative, aviation capabilities and the utility of the Airport could decline if pavement conditions worsen over time. This could have a negative impact on the regional economy.

It is anticipated that the Preferred Alternative will improve the aviation capabilities and utility of the Airport and thus enhance the socioeconomic character of the surrounding area. It is concluded that the Preferred Alternative would have no adverse induced socioeconomic impacts, but under the No-Build Alternative, significant negative socioeconomic impacts are likely.

## 4.15 Light Emissions and Visual Effects

Aviation lighting required for security, obstruction identification, and navigation are the chief contributors to light emissions radiating from airports. An analysis is necessary when projects include the introduction of new or the relocation of existing airport lighting facilities that may affect residential or other light-sensitive areas in proximity to an airport. FAA guidance states that only in unusual circumstances would the impact of light emissions be considered sufficient to warrant a special study and a more detailed examination of alternatives, such as high-intensity strobe lights shining directly into residences or overhead apron, parking, or streetlights creating a glare that affects pilots and air traffic controllers.

Analysis and Mitigation of Light Emissions Impacts: Preferred Alternative 23 will require the relocation of approach lighting and some additional runway and taxiway lighting fixtures. The addition of new lighting structures will be minimal and any new lighting structures will be in locations similar to existing lighting fixtures. Most land uses immediately surrounding the Airport

are commercial or recreational and are not susceptible to lighting impacts. As a result, the Preferred Alternative and the No-Build Alternative are not expected to have any light related impacts.

## 4.16 Noise

As per FAA Order 5050.4B, National Environmental Policy Act (NEPA) *Implementing Instructions for Airport Actions*, any project that proposes an airport, runway location, runway strengthening or a major runway expansion requires a noise analysis. A noise analysis was required for Preferred Alternative 23 under these provisions.

The noise modeling and noise exposure maps were computed using 2012 calendar year operations and the FAA's Integrated Noise Model (INM) Version 7.0b. The INM is an accepted industry tool for evaluating aircraft noise impacts in the greater vicinity of airports. The INM describes aircraft noise in Yearly Day-Night Average Sound Level (DNL). DNL accounts for the increased sensitivity to noise at night (10:00 pm to 7:00 am). The INM has many analytical uses, such as assessing changes in noise impacts resulting from new or extended runways or runway configurations, assessing new traffic demand and fleet mix, assessing alternative flight profiles and assessing modifications to operational procedures. **Appendix K Noise** provides a complete description of the methodology used and the results of the noise analysis.

The FAA's threshold of significance is a 1.5 DNL increase in noise over any noise-sensitive area located within the 65 DNL contour. If an action results in an increase within the 65 DNL contour of 1.5 DNL or greater on any noise-sensitive area, it becomes necessary to do further analysis and quantify in more detail the impact on the specific area and determine possible mitigation measures.

Analysis and Mitigation of Noise Impacts: To accurately understand noise exposure at the Airport, aircraft operational data was obtained from Airport management and the Air Traffic Control Tower (ATCT) staff and was combined with FAA approved aviation forecasts (see **Appendix A Forecast of Operations**). The specific data required for input into the INM includes:

- Aircraft fleet mix and the number of operations in a selected time period
- the time of day each aircraft type uses the Airport
- runway utilization for each aircraft
- flight tracks the aircraft use when approaching or departing a particular runway

Noise contours represent noise exposure over a 24-hour period based on average annual day conditions at the Airport. The weighted DNL metric is used to statistically predict the amount of annoyance that cumulative noise exposure would have on a typical population.

Five scenarios of runway alternative noise contours were developed for the EA:

- Scenario 1 – Existing 2012 operations without Proposed Action (baseline)
- Scenario 2 – Future 2017 operations without Proposed Action
- Scenario 3 – Future 2017 operations with Proposed Action
- Scenario 4 – Future 2022 operations without Proposed Action

- Scenario 5 – Future 2022 operations with Proposed Action

In all five scenarios, the 65 DNL contours remain on Airport property. The proposed 400-foot extension to Runway 6/24, coupled with the future operations, would not cause the 65 DNL contour to fall on other land uses outside the Airport boundary. Since the 65 dB DNL contour does not fall outside Airport property, it can be determined there are no noise impacts associated with Preferred Alternative 23. Similarly, there are no noise impacts associated with the No-Build Alternative.

As noted in **Section 4.7 Construction**, construction of Preferred Alternative 23 is expected to be completed in five phases over the course of five years. During the beginning phases of construction, the short-term use of the parallel taxiway as a temporary runway is proposed. Due to aircraft using the taxiway as a runway, a noise analysis was also completed for the taxiway. The forecasted noise impacts of using the taxiway as a temporary runway were compared to the 2017 No-Build Alternative (2017 is the expected year of first use of the taxiway as a temporary runway). This noise analysis was also conducted using the Day/Night Noise Level (DNL) noise metric.

In the 2017 No-Build Alternative the 65 DNL contours remain on Airport property. In the 2017 Taxiway Alternative the 65 DNL contours intersects with three parcels off Airport property. Two of these parcels were determined to be vacant with the third parcel considered a residential property. Although the 65 DNL does intersect the residential property, it is considered a temporary impact as the taxiway will only be used for a brief amount of time during the construction of the runway. It is determined that the proposed temporary use of the taxiway as an alternative landing surface during construction on Runway 6/24 will not cause significant noise impacts.

It should be noted that the Airport has a noise complaint procedure in place whereby local residents have the ability to register noise complaints to be officially recognized by the Airport.

Preferred Alternative 23 and the No-Build Alternative are not expected to have any long-term noise related impacts.

## 4.17 Section 4(f)

Section 4(f) of the Department of Transportation Act states that the Secretary of Transportation will 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, thereof, unless there is no feasible and prudent alternative to the use of such land and such program, and the project includes all possible planning to minimize harm resulting from the use.

Analysis and Mitigation of Section 4(f) Impacts: A public golf course (Airport Greens), is located on the northeastern side of the Airport within Airport property boundaries. Although the golf course is owned by the Airport, it is still considered a public resource. As a result of the proposed action, some existing approach lights may need to be relocated along an existing gravel road on

the golf course property and some trees will need to be pruned or removed as they represent obstructions to the approach surface; however there will be no impacts to the golf course itself. A lease is currently in place between Cuyahoga County and the golf course that grants the Airport the right to modify navigational aids or perform work that is in accordance with latest Airport Master Plan.

Other Section 4(f) resources located near the Airport that are shown on **Figure 4-2 Land Use Map**. These include the Richmond Heights Community Park on the south side of the Airport and the Richmond Heights Schools property located immediately west of the city park which includes the Elementary School (grades K-6) and the Secondary School (grades 7-12). The school property has recreation facilities including a track and a playground. However, there will be no impacts to either of these properties as a result of construction activities, noise or air quality impacts. Therefore, no Section 4(f) impacts are expected with the Preferred Alternative or No-Build alternative.

## 4.18 Socioeconomic Impacts, Environmental Justice and Children's Environmental Health and Safety Risks

Socioeconomic Impacts: Major airport development projects can impact the socioeconomic conditions of surrounding communities. For this project, social impacts were assessed to determine the effects of Preferred Alternative 23 on the social fabric of the surrounding communities. The types of social impacts that usually arise from airport developments include:

- Relocation of residences, businesses, or farms
- Alteration of surface transportation patterns that may temporarily restrict community access
- Disruption of established communities
- Disruption of orderly, planned development
- Creation of appreciable changes in employment

Analysis and Mitigation of Social Impacts: All proposed construction will take place on existing Airport property. No business or farm relocations will be required as part of this project. However, impacts to residential properties are anticipated as part of Preferred Alternative 23. These impacts include clearing obstructions in the runway and taxiway approaches and potential property acquisition or easements for parcels in the RPZ. Any relocations will comply with Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. See **Appendix L Property Impacts** for details and maps of potential property impacts. See **Figure 4-3 Obstructions** for a graphic explanation of an obstruction.

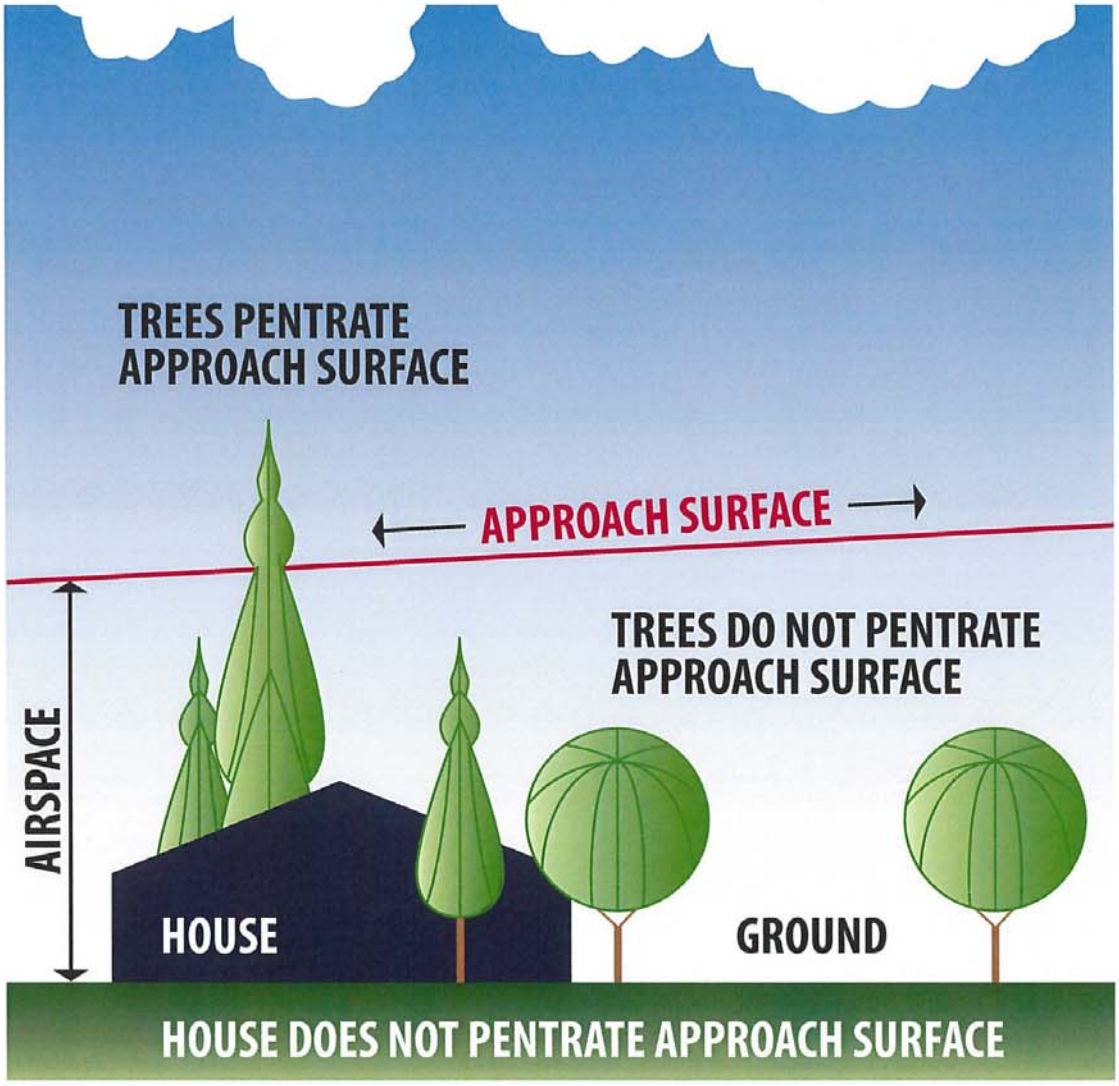
During the analysis of potential obstructions off the end of each runway, it was discovered that various obstructions (mostly trees) at many locations were penetrations of the approach surfaces. Per FAA guidance, obstructions are not permitted to penetrate or enter into these surfaces. Common obstructions include items such as trees, buildings, poles and towers.

**Figure 4-3 Obstructions**

Cuyahoga County Airport (CGF)
Environmental Assessment

# Defining Obstructions

Federal Aviation Regulation (FAR) Part 77 establishes standards for the creation of five surfaces that provide for clear airspace in the vicinity of an airport. The FAR Part 77 surface most critical to this project include the Runway Protection Zones (RPZ) and the Approach Surface. FAR Part 77 also provides criteria for determining and defining objects that may pose potential obstructions to air navigation. As the name implies, obstructions are not permitted to penetrate or enter into the required clear surfaces. These can include items such as trees, buildings, poles, and towers. Obstructions are identified based upon the specific requirements of the FAR Part 77 surfaces associated with each individual runway end.



After the new runway end points were calculated for Preferred Alternative 23, the new RPZ off each runway end was analyzed to determine if incompatible land uses were found. It was determined that a portion of 12 parcels fell within the limits of the new RPZ. Airports are encouraged by the FAA to control land uses within the RPZ through either acquisition or easements for the protection of the Airport users and the local community.

Once obstructions and RPZ incompatibilities are identified and their location confirmed relative to specific parcels, a determination is made whether the parcel should be purchased in fee or if an avigation easement is appropriate. Historically, there have been a blend of properties within the RPZ being purchased in fee as well as avigation easements. Avigation easements purchase the right to control the height of objects on the property and the right to remove objects that penetrate various approach surfaces and can limit certain incompatible land uses.

Fee acquisitions usually require that all objects on the property be removed and the site be returned to a clear parcel. Avigation easements usually require that only the objects that are identified as obstructions be removed to reduce their impact to the approach surface. In the example of a tree, it is usually most desirable to remove the tree to ground level to avoid any future growth. However, pruning may be an option depending upon issues such as the health of the tree, the amount of pruning necessary and the proximity to the RPZ and the approach surface.

As shown in **Appendix L Property Impacts**, obstruction removal (mostly tree clearing/pruning) on both runway ends (6 and 24) will be required as part of Preferred Alternative 23 and some obstruction clearing will also be required on both taxiway ends. As noted in **Section 4.7 Construction**, taxiway tree clearing is required because the taxiway will be used as a temporary runway during various phases of construction. Currently, obstructions (trees) in the runway approaches are classified as either a penetration of the approach surface today or a potential obstruction in the future. Future obstructions are trees that are less than 10 feet below the approach surface elevation, but will most likely grow and become a penetration before construction is complete. The Airport continues to coordinate with the FAA to reduce the amount of tree removal/pruning that will be necessary, however, the maps in **Appendix L Property Impacts** represent the most conservative assessment of the impacts to date base on FAR Part 77 Surfaces. The Airport decided this was the most prudent way to analyze obstructions in order to fully disclose all of the potential impacts.

Avigation easements are not currently in place and will be needed prior to tree clearing/pruning for the approach surface obstructions. Mitigation for tree impacts may include either a one-time monetary compensation associated with the purchase of an avigation easement or in unusual situations, a one-time replacement with a low-growing species (preferably a tree or shrub species not supportive of bird habitat nor known to create a wildlife attractant). Specific mitigation will be determined during final design in coordination with the property owners, the FAA, and the Airport. Removal of the existing trees and the one-time vegetation replacement is included in the project costs. Continued maintenance of the low-growing vegetation is not proposed beyond the initial cost of the plantings in the RPZ. For additional discussion of tree clearing impacts see **Section 4.3 Biotic Communities**.

Preliminary design of the Preferred Alternative suggests that 12 properties may be impacted; three are on the Runway 6 end and 9 are on the Runway 24 end. Of the 12 parcels impacted, three are owned by Cuyahoga County or the City of Richmond Heights. Although full acquisition is preferred for properties within the RPZ, partial acquisition or an avigation easement is also an option for parcels with a small amount of land within the RPZ. Cuyahoga County has begun contacting and coordinating with potentially impacted property owners and if property is purchased, residents will be relocated in compliance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. Resources will be made available without discrimination.

Beyond obstruction and RPZ impacts, no other community disruptions are expected to surface transportation, established communities or appreciable changes in employment. It is concluded that although minor impacts are expected with Preferred Alternative 23, they can be mitigated. As a result, no long-term impacts are expected. The No-Build Alternative will have no adverse social impacts, however, the identified obstructions (trees) would remain and continue to grow and would have to be cleared at some point in the near future.

Environmental Justice and Children's Safety Impacts: 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 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. In compliance with Executive Order 12898, the US Census data presented in **Section 3.0 Affected Environment** was reviewed to determine the characteristics of people living in proximity to the Airport. All three cities surrounding the Airport are affluent communities with median household incomes and housing values that are higher than Cuyahoga County as a whole.

Similarly, FAA Order 1050.1E 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."*

Analysis and Mitigation of Environmental Justice and Children's Safety Impacts: All safety improvements and runway reconstruction work will take place on the current Airport property. Some minor impacts to residential property to address obstructions and RPZ land use compliance are anticipated, but it is expected that these can be mitigated. Obstruction and property impacts are divided equally between Richmond Heights and Willoughby Hills because they are defined by the safety areas off of each runway end. No other environmental health risks are identified with Preferred Alternative 23 and no minority or low-income group would be disproportionately affected by implementation of the project.

In addition, a noise analysis was completed that looked at current and future operations, with and without the project. The analysis determined that the 65 DNL contour (threshold for noise

impacts) did not fall outside Airport property and environmental justice impacts are not expected. See **Section 4.16 Noise** for additional noise discussions.

It is unlikely that the development of either Preferred Alternative 23 or the No-Build Alternative will result in adverse environmental justice impacts or create any environmental health or safety risks that could disproportionately affect children as stated in FAA Order 1050.1E.

## 4.19 Solid Waste

In accordance with FAA Advisory Circular (AC) 150/5200-33B, *Hazardous Wildlife Attractants on or near Airports*, the FAA recommends that solid waste landfills (along with other wildlife attractant uses) be located at least 10,000 feet from an airport serving turbine-powered aircraft.

Analysis and Mitigation of Solid Waste Impacts: The Preferred Alternative is not anticipated to substantially increase the quantity of solid waste generated at the Airport since there are no new large generators of waste being added to the existing Airport facilities. The proposed improvements would, however, generate a small amount of construction debris. Existing solid waste facilities are capable of accommodating the disposal of solid waste and construction-related debris. The USEPA recommends project plans include all waste material or construction debris be recycled and reused on-site where possible.

The closest solid waste facility (ArcelorMittal Cleveland LLC) is approximately 19 miles west of the Airport located in the City of Cleveland. Given that this facility is located well over 10,000 feet away from the Airport, an evaluation for a potential wildlife attractant is not needed nor does a potential hazard from a solid waste facility exist.

Preferred Alternative 23 and the No-Build Alternative are not expected to have any adverse solid waste impacts.

## 4.20 Water Quality

FAA Order 1050.1E references the Clean Water Act, 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 ground and surface water must not be degraded by the planned construction or operations associated with the proposed development.

The water resources of the area are fairly abundant and include ditches, wetlands and streams. Specifically, the East Branch of Euclid Creek and its tributaries are located near the Airport property. The Airport property is relatively flat, with runoff draining to the north and northwest. Surface runoff from the property discharges into several unnamed tributaries to Euclid Creek. The Airport is located within the Cuyahoga River Watershed.

To evaluate potential water quality impacts, a USACE and OEPA compliant stream delineation was conducted by a qualified biologist in the study area of the Airport. The survey was intended to determine the locations and limits of streams and drainage features, appraise their types and functions, assess their regulatory status and evaluate potential impacts from the proposed project (see **Figure 4-4 Environmental Field Work – East** and **Figure 4-5 Environmental Field Work**

**– West**). Final jurisdictional status of onsite water features falls under the authority of the USACE and OEPA. References to jurisdictional status is the opinion of the project team and no USACE jurisdictional determinations have been completed. A jurisdictional determination must be completed prior to the start of construction. See **Appendix F Ecological Report** for additional details of the stream delineation including information about hydrology inventory analyses and the results of field investigations. (**Appendix F Ecological Report** contains an abbreviated version of the ecological report; the full version is enclosed as a separate technical document.)

Streams: The field investigation identified nine streams within the study area. Eight of these appear to be hydrologically connected to the East Branch of Euclid Creek and are regulated under the Clean Water Act.

Drainage Features (Ditches): The field delineation identified eight drainage features or channelized ditches within the study area. Four of these appear to be hydrologically connected to East Branch Euclid Creek and are jurisdictional and regulated under the Clean Water Act. Ditches are maintained by Cuyahoga County.

Airport Deicing Operations: Deicing activities at the Airport are handled in a variety of ways. For operations inside of hangars prior to aircraft departure, deicing agents are applied and drain into the sanitary sewer system for final treatment. For outside ramp and runway deicing operations, deicing agents are applied and excess fluid flows into existing pavement drains and is treated as storm water runoff. The handling of deicing agents is in compliance with the existing industrial storm water permit.

Other Waters: As the Airport uses city water and sewer services, field investigation located two storm water catch basins within the study area. The first receives surface and storm water runoff from the parking areas while the second receives surface runoff from the runway. These basins are not considered regulated natural resources due to the maintenance required to preserve their function.

**Figure 4-4 Environmental Field Work - East**

Cuyahoga County Airport (CGF)

Environmental Assessment

# Environmental Field Work - East

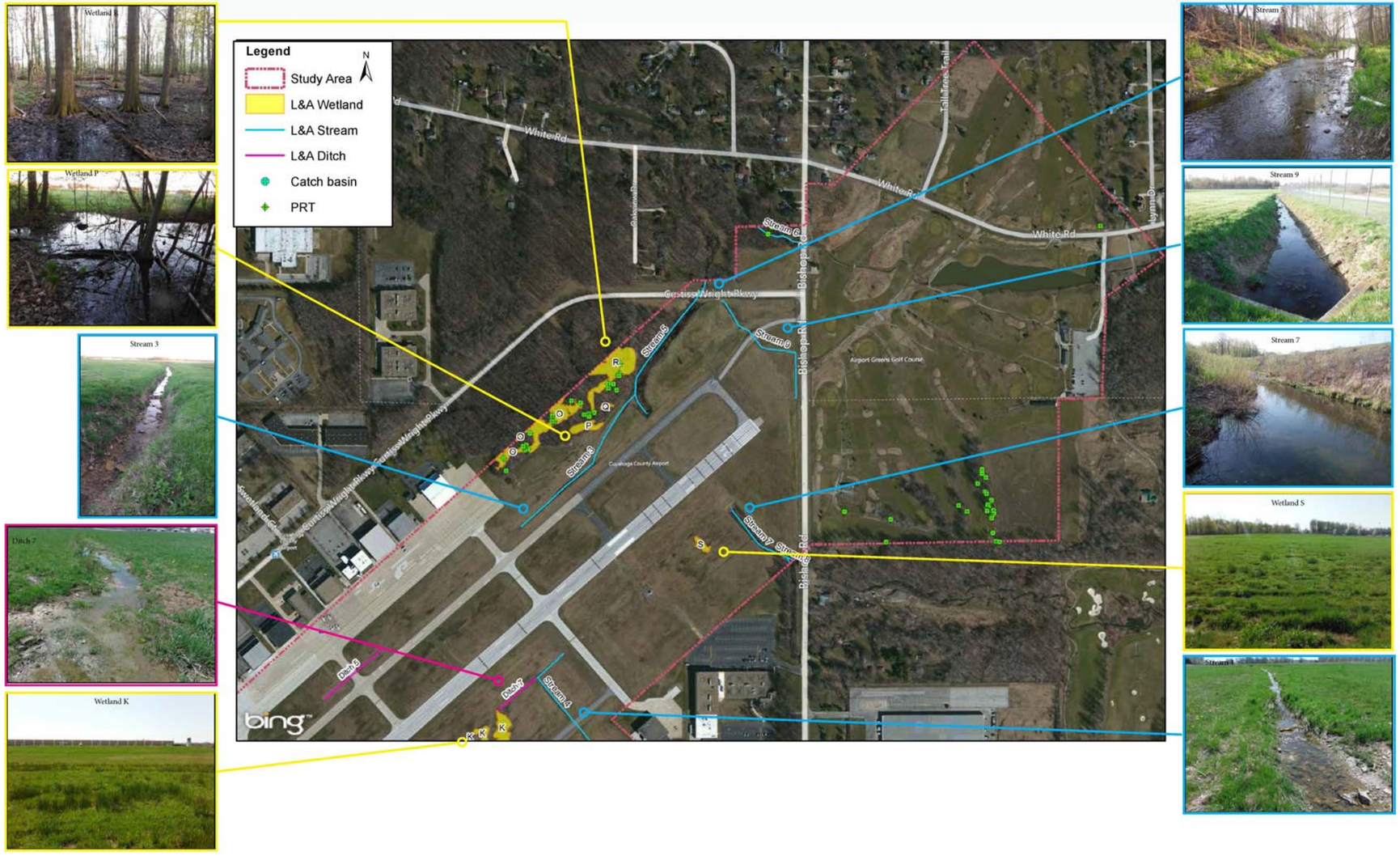
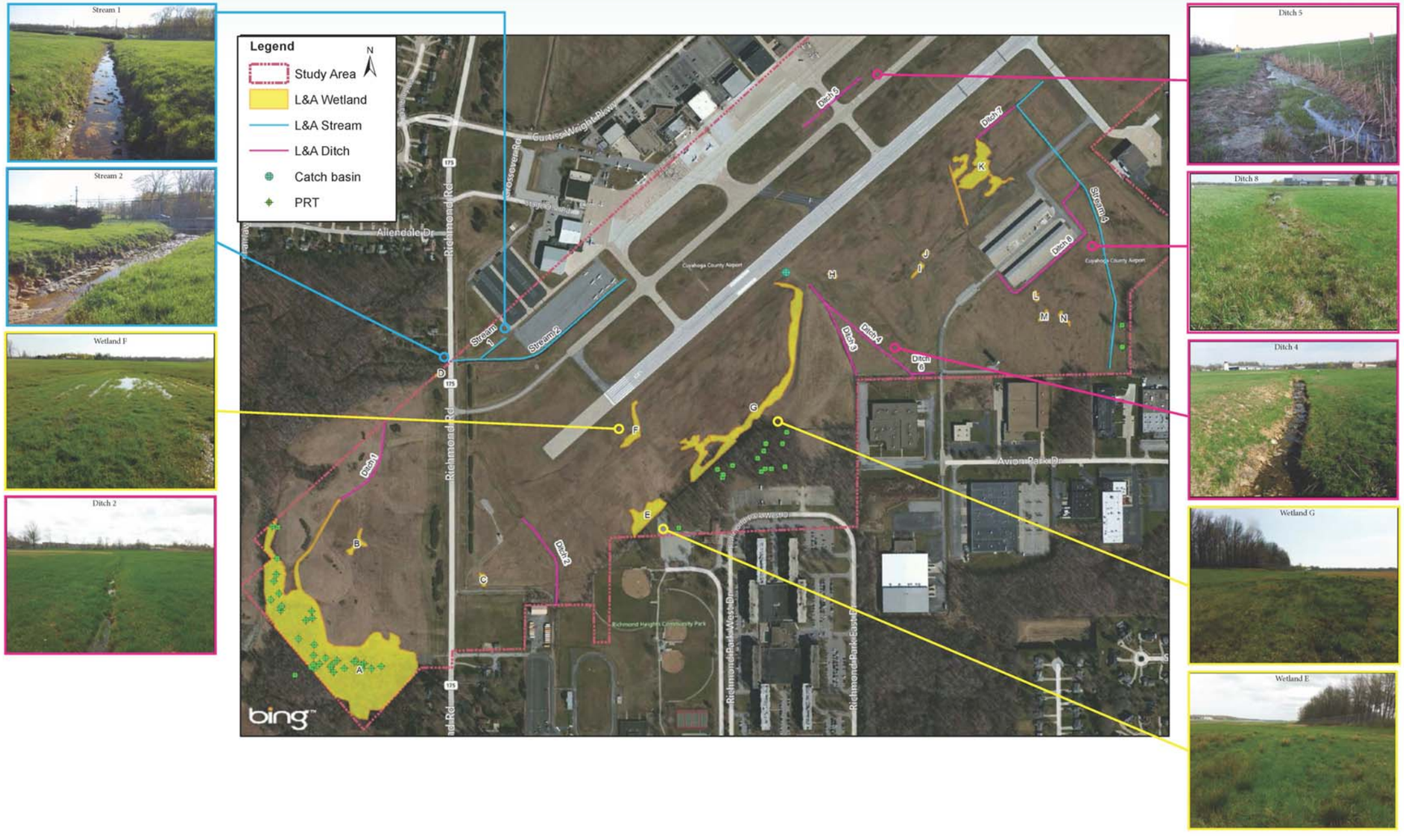


**Figure 4-5 Environmental Field Work - West**

Cuyahoga County Airport (CGF)

Environmental Assessment

# Environmental Field Work - West



Analysis and Mitigation of Water Quality Impacts: All proposed construction activities of Preferred Alternative 23 will take place on existing Airport property, which will minimize impacts to surface water resources. Based on the grading limits of Preferred Alternative 23, no impacts are expected to streams, floodplains, or other natural waters within the study area. Construction of the proposed project will result in approximately 1,937 total linear feet of impact to five ditches on Airport property (four jurisdictional, one non-jurisdictional).

The proposed construction of Preferred Alternative 23 will increase impervious surface areas and most likely increase storm water runoff. New impervious surfaces are estimated to be 3.44 acres. The expected runoff will generally sheet flow into existing storm water structures and existing channelized ditches and streams. Storm water BMPs will be implemented and green infrastructure techniques will be implemented to promote natural water remediation and reduce erosion and runoff potential. It should be noted that the majority of construction of Preferred Alternative 23 is resurfacing existing pavement. Specific details of the required storm water system will be determined during final design of Preferred Alternative 23.

Impacts to jurisdictional ditches (as determined by the USACE) due to construction of the Preferred Alternative 23 will require permits from the USACE and OEPA (Federal 404 and State 401 Permits) and may be subject to OPEA Antidegradation Rules as well. Ditches impacted by the construction of Preferred Alternative 23 will be relocated and recreated with similar function and value using natural vegetation for stabilization in accordance with guidance and consultation with the regulatory agencies. A ratio of 1:1 is expected for ditch mitigation (one linear foot relocated and recreated for every one linear foot of impact) is expected based on similar past projects. Any pre-permit application coordination will be done during the permitting phase of the project.

The relocated ditches may be enclosed where appropriate instead of open standing water which could become a wildlife attractant. If an enclosed culvert storm water management system is chosen, open-bottom culverts should be incorporated where possible to promote natural habitat formation.

Proposed mitigation consists of an in-lieu fee option as described in the February 9, 2015, USACE letter (found in **Appendix N Comments on the Draft EA)** due to no certified mitigation banks being available in the watershed. Also see **Appendix F Ecological Report** for USACE contact information regarding in-lieu fee mitigation. In addition, the Cuyahoga Soil & Water Conservation District has requested an advisory role in any proposed mitigation.

Mitigation will be finalized during the permitting process. Although in-lieu fee mitigation has been directed by the USACE, **Appendix F Ecological Report** provides a listing of potential mitigation banks offering stream credits in the local watershed. (**Appendix F Ecological Report** contains an abbreviated version of the ecological report; the full version is enclosed as a separate technical document.)

All delineated streams, drainage features (ditches) and other waters 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 as described in **Section 4.7 Construction Impacts**.

According to OEPA Division of Drinking Water and Ground Waters, there are no public wells in the vicinity of the Airport and no Source Water Assessment and Protection Program (SWAP) impacts are

expected. See **Appendix E Agency Coordination** for more information on water resources in the project area.

An increase in post construction pollutants is not expected. Construction runoff from exposed soils have the potential to occur, but will be addressed with use of construction BMPs.

Preferred Alternative 23 and the No-Build Alternative are not expected to have any adverse water quality impacts that cannot be easily mitigated.

## 4.21 Wetlands

The USEPA's Clean Water Act defines wetlands as: *"[t]hose areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."* The objective of the Clean Water Act is to maintain and restore chemical, physical and biological integrity of Waters of the United States, including wetlands.

Presidential Executive Order 11990, commonly known as the "No Net Loss" 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 build alternative will require mitigation.

Analysis and Mitigation of Wetland Impacts: To evaluate the wetland impacts of Preferred Alternative 23, a USACE and OEPA compliant wetland delineation was conducted by a qualified biologist within the study area at the Airport. The survey was intended 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. Final determination of the limits and jurisdictional status falls under the authority of the USACE and OEPA and will be determined during the permitting phase of final design. Any references to jurisdictional status is the opinion of the project team at this time. See **Appendix F Ecological Report** for additional information on the study area and details of the wetland delineation, including information about wetland inventory analyses including maps and data sheets for each wetland found. (**Appendix F** contains an abbreviated version of the ecological report; the full version is enclosed as a separate document.) See **Appendix E Agency Coordination** and **Appendix F Comments on the Draft EA** for more information on wetland resources in the project area.

During a field investigation in late April 2013 through early May 2013, the site was inspected and evaluated for vegetation, soils and hydrology. Nineteen potential wetland areas were delineated. Thirteen of the wetlands were classified as Palustrine Emergent, four as Palustrine Forested and two as Palustrine Forested/Palustrine Scrub Shrub. Seven of the identified wetlands were observed to be hydrologically connected to the East Branch of Euclid Creek. Seven of these wetlands are regulated by USACE while the others are protected by Presidential Executive Order 11990. See **Figure 4-4 Environmental Field Work – East** and **Figure 4-5 Environmental Field Work – West** for pictures and locations of delineated wetlands.

Of the 19 wetland areas delineated, 11 complexes are within the proposed grading limits of Preferred Alternative 23 as listed in **Table 4-1 Wetland Impacts** and shown on **Figure 4-6 Wetland Impacts**.

The construction of Preferred Alternative 23 would contribute to cumulative wetland losses by adding 3.918 acres of wetland impacts to all of the past, present and future wetland impacts in the area. All of these wetlands are impacted in whole and are considered total takes with the exception of Wetland R which will have minor partial impacts, but is expected to remain a functional and viable wetland complex. Seven of the impacted wetlands are classified as isolated from the area's hydrologic system (2.709 acres) while the remaining four are connected to other wetlands and water features (1.209 acres).

Impacts to wetlands due to the construction of Preferred Alternative 23 will require permits from the USACE and OEPA (Federal 404 and State 401 Permits) and mitigation for 3.918 acres of wetland impacts. As with water quality impacts, proposed mitigation consists of an in-lieu fee option as described in the February 9, 2015, USACE letter (found in **Appendix N Comments on the Draft EA).** This is due to no certified mitigation banks being available in the watershed. Also see **Appendix F Ecological Report** for USACE contact information regarding in-lieu fee mitigation. In addition, the Cuyahoga Soil & Water Conservation District has requested an advisory role in any proposed mitigation.

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 as described in Section 4.7 Construction Impacts.

Preferred Alternative 23 and the No-Build Alternative are not expected to have any adverse wetland impacts that cannot be easily mitigated.

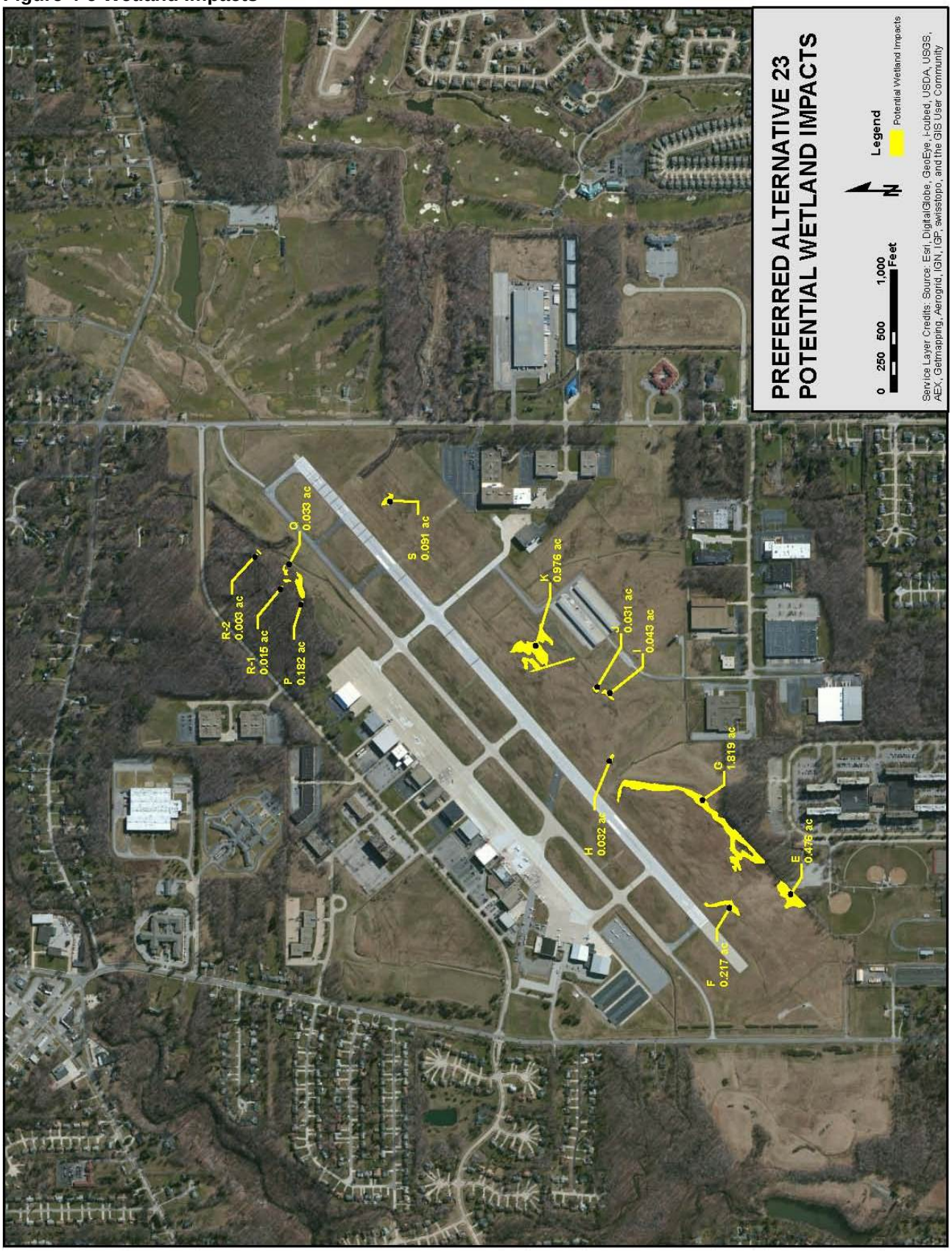
## 4.22 Wild and Scenic Rivers

The *Wild and Scenic Rivers Act of 1968* provides protection for certain free-flowing rivers, which have "outstanding or remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values".

Analysis and Mitigation of Wild and Scenic Rivers Impacts: The Chagrin River is the only Scenic River identified within five miles of the study area. The closest headwater to the Chagrin River is approximately 2.21 miles southeast of the Airport and the closest segment of the mainstream channel of the Chagrin River is approximately 2.73 miles east of the study area. Since the nearest Scenic River is greater than 1,000 feet from the Airport, there will be no impacts to this resource as a result of the proposed project and further agency coordination is not expected to be required. Neither Preferred Alternative 23 nor the No-Build Alternative will have adverse wild or scenic river or Natural River impacts.

| Table 4-1<br>Wetland Impacts | | | | | |
|---|---|---|---|---|---|
| **Wetland ID** | **Size (acres)** | **Hydrologic Connection** | **Impact (acres)** | **Mitigation Ratio** | **Mitigation (acres)** |
| E | 0.476 | Isolated | 0.476 | 2:1 | 0.952 |
| F | 0.217 | Isolated | 0.217 | 2:1 | 0.434 |
| G | 1.819 | Isolated | 1.819 | 2:1 | 3.638 |
| H | 0.032 | Isolated | 0.032 | 2:1 | 0.064 |
| I | 0.043 | Isolated | 0.043 | 2:1 | 0.086 |
| J | 0.031 | Isolated | 0.031 | 2:1 | 0.062 |
| K | 0.976 | Connected (Category 1) | 0.976 | 1.5:1 | 1.464 |
| P | 0.182 | Connected | 0.182 | 2.5:1 | 0.455 |
| Q | 0.033 | Connected | 0.033 | 2.5:1 | 0.083 |
| R | 0.889 | Connected | 0.018 | 2.5:1 | 0.045 |
| S | 0.091 | Isolated | 0.091 | 2:1 | 0.182 |
| | | **Total Impact** | **3.918** | **Total Mitigation** | **7.465** |
| Source: 2013 Field Delineation by Lawhon and Associates | | | | | |

**Figure 4-6 Wetland Impacts**



## 4.23 Environmental Consequences – Other 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 times, 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 polices, 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. An analysis of Preferred Alternative 23 does not indicate any conflict with local, county, or regional planning efforts.

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. 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. A summary of approvals, permits, and mitigation required to implement the Preferred Alternative is included in **Table 4.2 Environmental Summary of Preferred Alternative 23**.

Public and Agency Involvement: For details on public involvement efforts including public meetings, the Public Hearing, and public comments received to date, see **Appendix B Public Involvement Prior to the Draft EA** and **Appendix N Comments on the Draft EA**.

| Table 4-2<br>Environmental Summary of Preferred Alternative 23 | | |
|---|---|---|
| **Environmental Factor** | **Impact?** | **Mitigation Requirements/Permits** |
| Air Quality | No | None Required |
| Biotic Resources & Migratory Birds | No | • Vegetation clearing beyond turf grass is not allowed during the nesting season (March 31st – September 1st).<br>• A permit from the USFWS may be required if abandoned nests become inhabited by eagles. |
| Coastal Barriers | No | None Required |
| Coastal Zone Management | No | None Required |
| Compatible Land Use | No | Comply with Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended for any property acquisitions. |
| Construction | Short-term | • Comply with *FAA Advisory Circular 150/5370-10, Standards for Specifying Construction of Airports* and *FAA AC 150/5320-5C Surface Drainage Design NOI*<br>• Consider USEPA short-term mitigation measures during construction as described in Section 4.7.<br>• A General National Pollutant Discharge Elimination System (NPDES) permit for construction activities is required.<br>• Update Storm Water Pollution Prevention Plan (SWP3) is required upon completion of construction. |
| Endangered and Threatened Species | No | Tree removals are not allowed from March 31st to October 1st |
| Energy Supplies, Natural Resources, and Sustainable Design | No | None Required |
| Environmental Justice | No | None Required |
| Farmlands | No | None Required |
| Floodplains | No | None Required |
| Hazardous Materials | No | • Waste encountered or generated must be properly handled or disposed of in compliance with Ohio Administrative Code (OAC) 3745-52-11 and subsequent regulations.<br>• Contact the National Response Center at 1-800-424-8802. |
| Historic and Archaeological | No | • Coordinate with OHPO to identify previously undisturbed areas associated with obstruction removals prior to any ground disturbing activities and determine |

| Table 4-2<br>Environmental Summary of Preferred Alternative 23 | | |
|---|---|---|
| **Environmental Factor** | **Impact?** | **Mitigation Requirements/Permits** |
| | | appropriate mitigation. |
| Induced Socioeconomic | No | None Required |
| Light Emissions and Visual Effects | No | None Required |
| Noise | Short-term | None Required |
| Section 4(f) | No | None Required |
| Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks | No | • Possible avigation easement / compensation or a one-time vegetation replacement for obstruction removals.<br>• Comply with Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended for any property acquisitions. |
| Solid Waste | No | • Include in project plans that all waste material or construction debris be recycled and reused on-site where possible. |
| Water Quality | No | • Federal 404 and State 401 permits prior to construction.<br>• Comply with OPEA Antidegradation Rules<br>• Use open bottom ditches when possible.<br>• Purchase of ditch mitigation credits as described in Section 4.20 Water Quality. |
| Wetlands | No | • In-lieu fee option for 7.465 acres of mitigation for 3.918 acres of wetland impacts.<br>• Include the Cuyahoga Soil & Water Conservation District during the permitting process.<br>• Obtain Federal 404 and State 401 permits. |
| Wild and Scenic Rivers | No | None Required |
| Cumulative Impacts | No | None Required |

# Section 5.0 Cumulative Impacts

## 5.1. Introduction

The Council on Environmental Quality (CEQ) regulations (40 CFR §§ 1500 -1508) define the impacts and effects that must be addressed and considered by federal agencies in satisfying the requirements of the National Environmental Policy Act (NEPA) process. There are three types or categories of effect (or impact) that must be considered: direct, indirect and cumulative.

Direct impacts are caused by the action and occur at the same time and place. Direct impacts have a broad focus and are based on the project footprint.

Indirect impacts are caused by the action and are realized later in time or are farther removed in distance but are in the chain of cause-and-effect relationship. Indirect impacts may include land development occurring after a project is constructed.

Cumulative impacts are the summation of impacts on a resource resulting from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes those actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. The geographic focus of cumulative impacts is narrow and based only on resources where incremental impact exists.

## 5.2. Project Related Direct Impacts

The first step in performing a cumulative impact analysis is to identify which resources to consider in the analysis. If a project will not cause a direct or indirect impact on a resource, it will not contribute to a cumulative impact on the resource. The analysis will focus on the resources that could be substantially affected by the project in combination with other past, present and reasonably foreseeable actions. Direct impacts associated with the Preferred Alternative 23 are all ecological in nature and are summarized as follows:

- Impact on wetlands – 3.918 acres of low quality wetland
- Impact on jurisdictional ditches – 1,937 linear feet of drainage ditch
- Impacts on tree impacts associated with obstruction removals
- Impacts on property within the Runway Protection Zone
- Impacts on Indiana Bat and Northern Long-Eared Bat roosting trees

The context of the proposed action's impacts is localized to the existing Cuyahoga County Airport (Airport or CGF) property. The wetlands, streams, ditches, floodplain and soils of the project area have all been severely modified since the original construction of the Airport. The wetlands are all of low quality, the streams have been modified, channelized, and in some places enclosed in

culverts and the ditches were constructed and maintained to drain the runway and taxiways. Even though the Airport is situated on what was once considered prime farmland soil, it has not been actively farmed in decades and no new, active farmland will be lost as a result of the project. The severity of the proposed action's impacts on the environment is expected to be minimal.

## 5.3. Resource Study Area

Cumulative effects are considered within geographic and temporal boundaries. Project related impacts, as identified in the impact section of the Environmental Assessment (EA), are all ecological in nature consisting primarily of wetlands, ditches and water quality. The study area for the cumulative impact evaluation is focused on the drainage basin (Euclid Creek Watershed) where any direct and indirect impact would occur.

The Euclid Creek watershed is a tributary to Lake Erie and drains an area of 23 square miles from 12 communities in Cuyahoga and Lake Counties, including the entire project area. The Euclid Creek Watershed is home to an estimated 60,000 people and has subsequently been impacted by urbanization due to the effects of urban runoff. Overall, the existing environmental conditions and land use patterns in the project area have been, and are expected to continue to be shaped by commercial and residential development.

Euclid Creek Watershed: The current "health" or status of a resource must be understood before the effects of the proposed action can be assessed. The water quality of Euclid Creek is not in attainment with Ohio EPA's water quality standards of a fishable, swimmable water body. Water quality in Euclid Creek and its tributaries is impaired in terms of its ability to sustain aquatic life, primarily due to overload of nutrients and organic matter (such as lawn fertilizers washing off the surface); siltation caused by high velocity flows causing and carrying eroded soils; and changes in habitat, especially along riparian zones (dams), that would otherwise mitigate such problems. Major issues impacting Euclid Creek are:

- Nutrients, such as phosphorous, caused by polluted urban runoff and land management practices;
- Low fish populations due to loss of habitat and barriers;
- Flash flows that increase erosion of stream banks; and,
- Presence of remaining illicit discharges from private septic systems and public combined sewer overflows.

Historically, Euclid Creek and its tributaries are located within areas of industrial, commercial and residential development where dams (nine in total), culverts and concrete streambeds have impaired the health and diversity of aquatic life. A large percentage of the drainage area consists of structures, roads, parking lots and other impervious surfaces resulting in increased storm water volumes. Early development attempted to direct storm water runoff as quickly as possible to the Creek and its tributaries to prevent localized flooding. This only added to stream bank erosion, downstream flooding and overall stream degradation.

Potential Project Related Indirect Impacts: Indirect impacts are often related to changes in land use. While land use changes are the direct result of local planning decisions, there may be indirect impacts associated with projects that affect the rate and pattern of development. In general, projects in a new location or projects in which there is a dramatic change in travel patterns are more likely to contribute to indirect impacts than projects in areas which are already developed, or involve a smaller increase in development.

The Airport is a well-established facility having been owned and operated by Cuyahoga County since 1946. The proposed improvements to the runway are unlikely to spur landside development as would a new airport at a new location. The intended purpose of the project is to enhance safety, not to promote economic development or increase operations, however, the proposed improvements may facilitate some natural growth at the Airport.

A facility requirements analysis in the 2010 Master Plan Update identified a need for up to 34,000 square feet of additional corporate hangar space. The Airport Master Plan Update proposes an area for new hangers extending further along the flight line to the northeast. It is expected that general aviation-related development may consist of new and improved availability of T-hangers and new corporate hanger space.

In addition to aviation-related development, two areas on Airport property and bordering on Richmond Road are designated for specific uses. One is the site at the southeast corner of Richmond Road and Curtiss Wright Parkway that is reserved for development of a mutual aid fire/rescue facility. North of this site along Curtis Wright Parkway, is an area reserved for expansion of landside commercial development. For the foreseeable future, development is located on Airport property and has been planned for eventual Airport development since the original Airport Layout Plan (ALP) developed in the early 1970's.

The Airport does not currently meet the most current Federal Aviation Administration (FAA) design standards for the Runway Safety Areas (RSAs). RSAs are buffer areas around the runway that need to be kept clear for safety in case of an aircraft undershoot or overshoot of the runway. The FAA requires that RSAs be brought into compliance to the extent practicable as part any runway improvement project. The project being evaluated in this EA is first and foremost a safety enhancement project to rehabilitate the runway and improve the safety areas to the extent practicable. The project is not intended to expand existing or future operations and growth of the Airport. Any future indirect impacts as a result of Airport improvements are not expected to have an adverse cumulative effect on wetlands, streams, water quality, floodplains, or agricultural lands that cannot be appropriately mitigated. However, environmental resources (i.e. wetlands and water resources) are present on and in the vicinity of the Airport and future development projects will be required to avoid, minimize and mitigate any potential environmental impacts and will be subject to all applicable state and federal permitting requirements.

## 5.4. Other Reasonably Foreseeable Actions

According to the Airport Master Plan Update and future ALP, the airport's intermediate-range projects (five years) include construction of two 10-bay T-hangars, design and construction of an

apron for based aircraft and demolition of County T-hangars. The Airport's long range projects (ten years) include design and construction of corporate hangars, expansion of a corporate apron and the design and construction of an aircraft run-up enclosure.

Web pages from the local communities including Richmond Heights, Highland Heights, South Euclid, Lyndhurst and Willoughby Hills were reviewed to identify other current or proposed projects in the study area that could contribute to a cumulative impact. Other sources including: Cuyahoga County Department of Development, Cuyahoga County Engineer's Office, Lake County Engineer's Office, the Northeast Ohio Areawide Coordinating Agency (NOACA) Transportation Improvement Program (TIP) and the Ohio Transportation Review Advisory Council list of Major New Projects 2008-2013 were also reviewed to identify other current or proposed projects in the study area that could contribute to a cumulative impact. Proposed future projects in the study area include:

- A 3.2 million dollar project to repair Highland Road from Euclid Avenue to Richmond Road (1.1 miles southwest of the Airport) in the summer of 2014.
- Renewed residential construction activity at Trebisky Woods subdivision (1.4 miles southwest of the Airport) and Highland Woods (1.9 miles southwest of the Airport) subdivision.
- Continued residential development at Legends at Aberdeen(1.4 miles east of Airport)
- A 4 million dollar roadway improvements to Minor Road (1.5 miles east of Airport)
- Jackson Street resurfacing Project in Lake county (11 miles NE of Airport)
- Oakwood Commons in South Euclid (4 miles southwest of Airport) is a new, large retail development center constructed on the site of a former golf course.

The study area is highly developed with residential and commercial land use. There are no new roadway projects planned. Most major projects are confined to existing arterial roadway repaving and rehabilitation. Projects are not expected to result in new impact on wetlands and streams. With the improving economy, there are several ongoing and new residential developments adding new residential homes and other impervious surfaces to the watershed. However, the new developments have requirements for storm water retention/detention basins on site to mitigate the flow of additional storm water runoff. According to local development reports, most new commercial/retail development is taking place by remodeling existing vacant space.

One new retail development site is the 40-acre Oakwood Commons, anchored by Wal-Mart Supercenter located on the former site of Oakwood Country Club. The construction of a large retail center on former green space would be expected to have a large impact on the watershed. However, the new facility is being constructed with sustainable design elements. Major elements include several acres of permeable pavement, restoration of the existing on-site stream, and six acres of created storm water wetlands/water quality ponds. The wetlands are designed to store 50% more volume than is necessary for a 100-year storm. The developer has also donated 21 acres of land to the City of South Euclid for a passive recreational park.

This is not the only improvement to the Euclid Creek watershed that has taken place in the last 10 years. The overall health of the watershed has been improving in recent years. The Euclid Creek Watershed Council and Friends of Euclid Creek have implemented the Watershed Action Plan for the Euclid Creek, established in 2005, to promote inter-jurisdictional cooperation in addressing watershed issues. Highlights of recent activity include:

- Richmond Heights awarded $187,000 for Rain Garden/Bioretention/Porous Pavement parking area;
- South Euclid awarded $166,000 OEPA grant for City Hall porous parking lot project;
- Highland Heights Bishop Road conservation site with 12 acres of high quality wetlands and stream;
- Acacia Country Club Land Preservation of 155 acre parcel at headwaters of West Branch of Euclid Creek;
- East Branch Dam Removal and Stream Restoration Project
- Mayfair Lake Dam Removal Project

## 5.5. Cumulative Impacts

The trend of the local community's' actions in the Euclid Creek watershed has changed from degradation and loss of ecological resources towards preservation of existing ecological resources, improving the health of existing ecological resources, and requiring mitigation where resources are impacted by new development. Recent and foreseeable future efforts in the Euclid Creek watershed are towards increasing wetland areas and improving streams and the associated water quality. The effects of recent trends listed above along with public and student programs for rain barrel workshops, stream monitoring, organized stream cleanups, riparian planting programs, and bioretention programs indicate that there is an ongoing initiative to improve the health of the Euclid Creek watershed.

Although a minor amount of residential, commercial and industrial development could be expected to occur as a result of the project, most of the assumed development is expected to be infill by nature, consisting of redevelopment of existing built-up areas, including brownfields, rather than the development and disturbance of outlying areas of limited woodlands, green space, parkland or other natural areas. Impacts on existing natural features and further habitat fragmentation are not expected to occur as a result of Preferred Alternative 23 project.

Future Airport improvements as part of this project will primarily occur within the existing Airport footprint and will utilize and improve the existing access points. This type of development will minimize potential secondary development and minimize creation of new impervious surfaces and the associated adverse indirect environmental impacts on surface water quality. No significant contributions to cumulative impacts will result from the construction of Preferred Alternative 23.

These past, present and reasonably foreseeable future projects are unlikely to result in significant environmental impacts individually or when taken together (cumulatively). Any environmental

impact from these projects would be minimized and mitigated through the regulatory process to the extent practicable.

# Section 6.0 List of Preparers

The section lists the names and qualifications of the principal Mead & Hunt participants and subconsultants that assisted in the preparation of the Environmental Assessment.

## Mead & Hunt:

**Stephanie Ward, AICP, Project Principal / Quality Control** - Has more than 20 years of experience in preparing airport master plans, ALPs, environmental overviews, airport site selection studies, airport feasibility studies, and developing community support and understanding of airports and their importance to a community. Has prepared more than 60 planning studies for air carrier and general aviation facilities.

**William Ballard, AICP, Project Manager** - More than 18 years of experience evaluating environmental impacts associated with transportation projects and preparing NEPA documents. Has served as project manager for various environmental assessments and environmental impact statements.

**Lynn Wilson, AICP, Public Involvement** - Nearly 20 years of experience in community planning and development. Extensive professional experience includes both comprehensive planning and technical land regulation experience. Skilled in public input and participation techniques, grant strategies, research and professional writing.

**Morgan Turner, Environmental Planner -** Serves as an airport planner for Mead & Hunt and is responsible for developing planning and environmental documents. Has assisted with several environmental assessments and has a strong understanding of the National Environmental Policy Act (NEPA), environmental management systems, solid waste and recycling regulations and sustainability practices.

**Regan Schnug, AICP, Community Planner - H**as blended traditional urban planning techniques with aviation planning experience for the past seven years as a member of the Mead & Hunt aviation planning team. Currently responsible for the development of airport master plans, airport layout plans, state aviation system plans, airport zoning and airport land use compatibility guidebooks.

**Ryk Dunkelberg, Noise Lead -** Educated in planning and law, serves as a project principal for the firm's master planning, noise and land use compatibility studies, and environmental planning projects. Is involved in and responsible for sustainability studies, airport master planning studies, site evaluation and selection studies, FAR Part 150 studies, environmental assessments and impact statements, and airport resource planning and analysis.

**Ryan Hayes, Noise Analyst -** Serves as an Airport Planner and Project Manager for Mead & Hunt. Has responsibility for the management and development of airport master plans, feasibility and site selection studies, development programs, environmental documentation and noise compatibility studies

## Subconsultants:

**Lawhon & Associates (Environmental Technical Studies):**

**Susan Daniels, AICP,** - 19 years of experience in transportation planning and preliminary engineering, specializing in the National Environmental Policy Act (NEPA) and related regulations. Leads L&A's NEPA/Planning practice. Diverse experience includes Environmental Impact Statements and Environmental Assessments.

**Thomas Powell, CPG,** - Over 30 years of experience in geologic and environmental consulting. His experience includes Categorical Exclusion (CE) documents and Environmental Assessments, along with ESA Screenings, Phase I and Phase II ESA's for hundreds of properties. He also oversees L&A's staff responsible for monitoring environmental issues for demolition and construction activities.

**AeroMetric (Photogrammetric Mapping):**

**Robert Vander Meer -** Project manager for airport projects. Responsible for all internal project management activities, including overseeing that the airport ground surveys and collection of aerial imagery of the survey area are performed in accordance with the appropriate Federal Aviation Administration (FAA) guidance. Currently the project manager for more than 25 Midwestern airports under FAA 150/5300-16A, 17-B, and 18B guidelines.

**Economic Development Research Group (Economic Analysis):**

**Steve Landau -** Over 15 years of experience in economic development research, planning and practice. Work experience includes studies of freight, economic development and airport development issues, analysis of state airport systems, feasibility of Joint Use Commercial Airport, Economic Development Strategy and evaluation of Public Capital Investments.

**Parsons Brinkerhoff (Air Quality):**

**Alicia Lovegrave -** Extensive experience in environmental engineering emphasizing global climate change, energy analysis and mobile source air quality modeling for both operational and construction phases of a project. Detailed knowledge of the requirements set in the Environmental Protection Agency's (EPA) New Clean Air Act Amendments and Final Conformity Ruling. Work includes conducting environmental analyses and resolving conformity issues for bridges, rail (light, heavy and high speed) and highways across the United States.