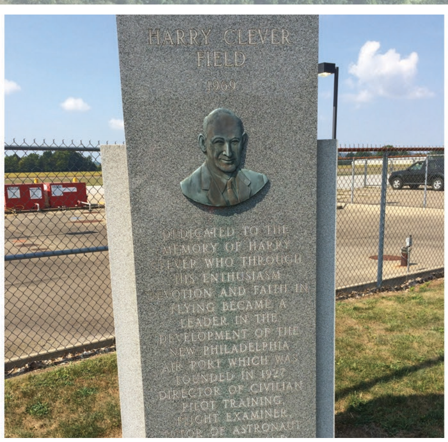
HARRY CLEVER FIELD AIRPORT (PHD) MASTER PLAN UPDATE

FINAL REPORT - MARCH 2018

Prepared for: City of New Philadelphia, Ohio



Prepared by: Michael Baker International, Inc.

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1.0 Inventory of Existing Conditions

1.1 Master Plan Overview

The City of New Philadelphia, Ohio contracted with Michael Baker International, Inc. in 2015 to develop a Master Plan Update for the Harry Clever Field Airport (PHD). Since the previous Master Plan Update was completed in 2004, several changes in Federal Aviation Administration (FAA) design standards and policies occurred and it was necessary to reassess the airport's immediate and long-term compliance, maintenance, and development needs. The FAA periodically requires airports to conduct updated planning efforts and to maintain an updated Airport Layout Plan (ALP) that depicts the airport's proposed development program. The FAA requires airport sponsors to agree to assurances or obligations in order to be eligible to receive federal grants from the Airport Improvement Program (AIP), one of which is to keep an up to date ALP at all times. The intent of this document is to provide the detailed justifications, methodologies, and reasoning for the proposed developments shown within the ALP drawing set for PHD. Various planning efforts have been conducted in recent years to try to determine what types of aircraft the airfield at PHD should be designed to accommodate. At the time of this writing, it was important for the City of New Philadelphia to conduct a Master Plan Update in order to be provided with all relevant information and guidance so that decisions could be made that would allow projects to be implemented in a timely manner and with a clear and unified direction.

The primary objective of this Master Plan Update was to produce a 20-year development program that would maintain a safe, efficient, economical, and environmentally acceptable aviation facility for the City of New Philadelphia. The key elements of the planning process are shown in **Figure 1-1**. It is important to point out that a Technical Advisory Committee (TAC) was formed to provide input on the Master Plan Update and the public was also invited to participate throughout the process. The TAC provided an integral role in the planning effort and consisted of representatives from governmental agencies, airport users, airport businesses, and the public. Several meetings were held throughout the study to present information to the TAC, public, and New Philadelphia Airport Commission (Airport Commission). The goal was to keep all stakeholders informed about all study issues and recommendations.

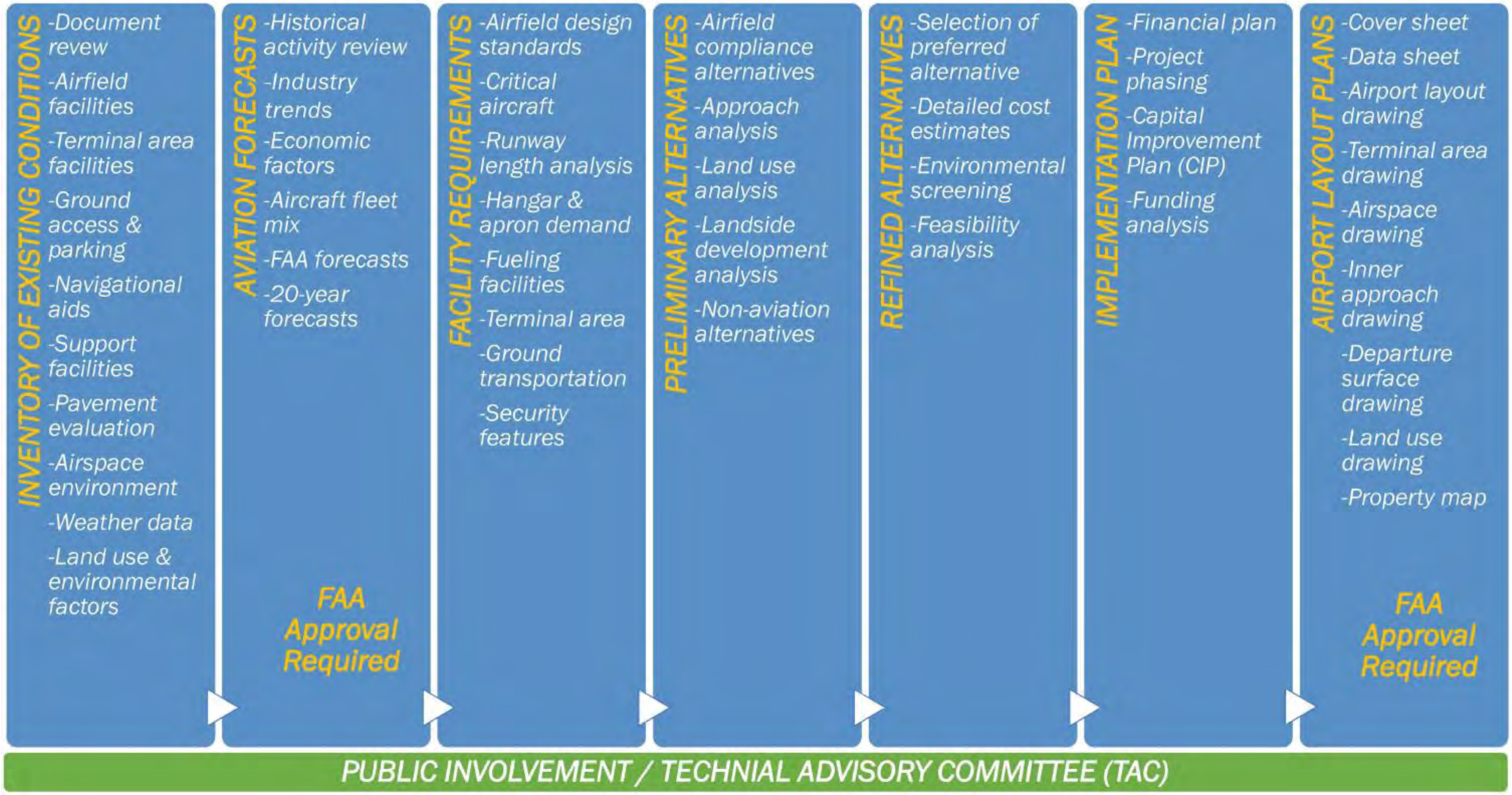
1.2 Key Issues

Specific issues that were evaluated as part of the planning process are delineated below, and specific tasks were incorporated into the study in an effort to address these considerations. This is not intended to be an exhaustive listing of items that require consideration within the study, but rather identifies major concerns or issues that should be addressed in support of the City of New Philadelphia's long-term goals for PHD.

- Assess the operational efficiency, effectiveness, and safety of the airport.
- Evaluate the airport facility layout for conformance with FAA guidance and regulations. This includes some of the non-compliant features such as the Runway Safety Areas (RSAs) and Runway Protection Zones (RPZs).
- Evaluate and incorporate the aviation needs of both the community and users.
- Assess the needs of current tenants and requirements identify what may be necessary to attract new tenants and/or to expand facilities. For example, a medical flight organization recently left PHD. The Master Plan Update evaluates the needs of such organizations in terms of services and facilities that are offered at the airport.
- Assist the airport in supporting aviation demand within the region. PHD is located in an area where natural gas exploration and mining is growing and many airports are experiencing operational growth from the businesses that support that activity. Those types of trends are considered as part of the planning effort.
- Identify existing and alternative funding sources for airport development.
- Identify areas of environmental concern and provide mitigation options for future development. Because the airport is surrounded by historic sites, cemeteries, residential development, and roads, it will be necessary to fully understand the impacts associated with development proposals.
- Evaluate long-term development options for general aviation and airport support facilities.
- Review the airport's existing and ultimate runway length requirements to identify any improvements necessary to meet demand and/or to entice additional traffic to the airport in the future.
- Identify vertical obstructions and investigate the associated impacts and/or mitigation options. Furthermore, determine if local land use controls need to be implemented or revised to protect the airspace around PHD.
- Focus on building a consensus regarding the future development of PHD so that critical projects can move forward in a timely manner.

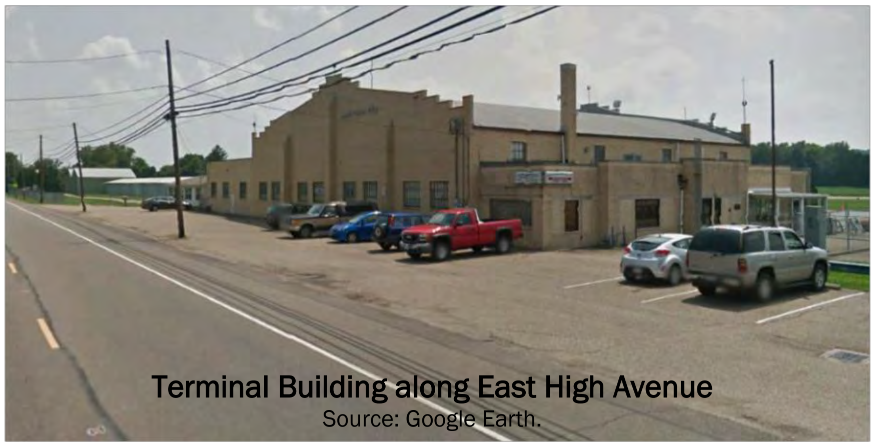
The remaining sections of this chapter present the inventory of existing conditions for PHD.

Figure 1-1
Key Elements of Airport Master Plan



1.3 Airport Location, Ground Access, and Parking

The airport is located in and owned by the City of New Philadelphia, Ohio. As shown in **Figure 1-2**, PHD is located to the southeast of downtown New Philadelphia along East High Avenue. Many of the airport's landside facilities (e.g., hangars) have paved automobile parking areas that are adjacent to East High Avenue. Some airport tenants also park their automobiles at their respective hangar facility (e.g., at the T-hangars located off of Delaware Drive Southeast and the southernmost hangars located along East High Avenue). U.S. Interstate 77 is less than four miles to the west of PHD, which runs from Columbia, South Carolina to the south to Cleveland, Ohio to the north. From U.S. Interstate 77, PHD can either be accessed by travelling through city streets (West High Avenue to East High Avenue) or by taking U.S. Route 250 which primarily runs to the south of the Tuscarawas River. By car, PHD is located approximately 1.5 hours south of Cleveland and less than one hour south of Akron. The airport is also less than a two hour drive from both Columbus and Pittsburgh. New Philadelphia is the county seat for Tuscarawas County. Within the county, PHD is the only public use airport and the only airport with a paved runway (refer to **Figure 1-3**).

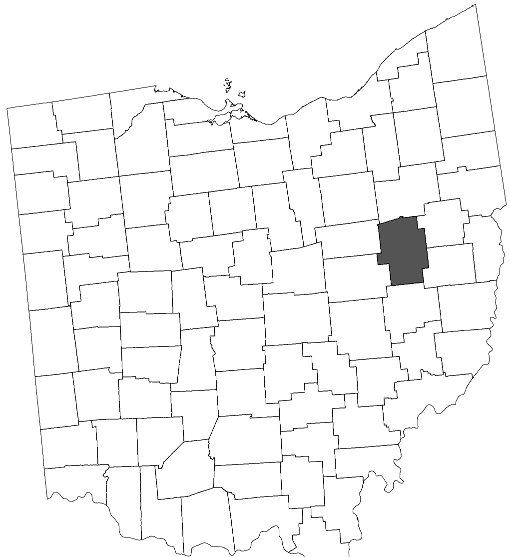


Terminal Building along East High Avenue
Source: Google Earth.

1.4 Airport Management Structure

As the airport owner/sponsor, it is the City of New Philadelphia's responsibility to determine the ultimate recommendations and long-term development objectives for PHD. Therefore, city council has the ultimate approval authority for the airport. The New Philadelphia Airport Commission (Commission) consists of appointed members, meets the second Tuesday of each month, and serves in an advisory capacity to city council (i.e., many of the Commission's recommendations must be approved by city council). At the time of this writing, the designated airport manager worked for the privately-owned Fixed Base Operator (FBO) at PHD. The airport manager reports to city staff and handles the day-to-day operations at the airport. Maintenance of the airport property and facilities is provided by city staff and authorized contractors.

N
Not to Scale



Tuscarawas County, Ohio

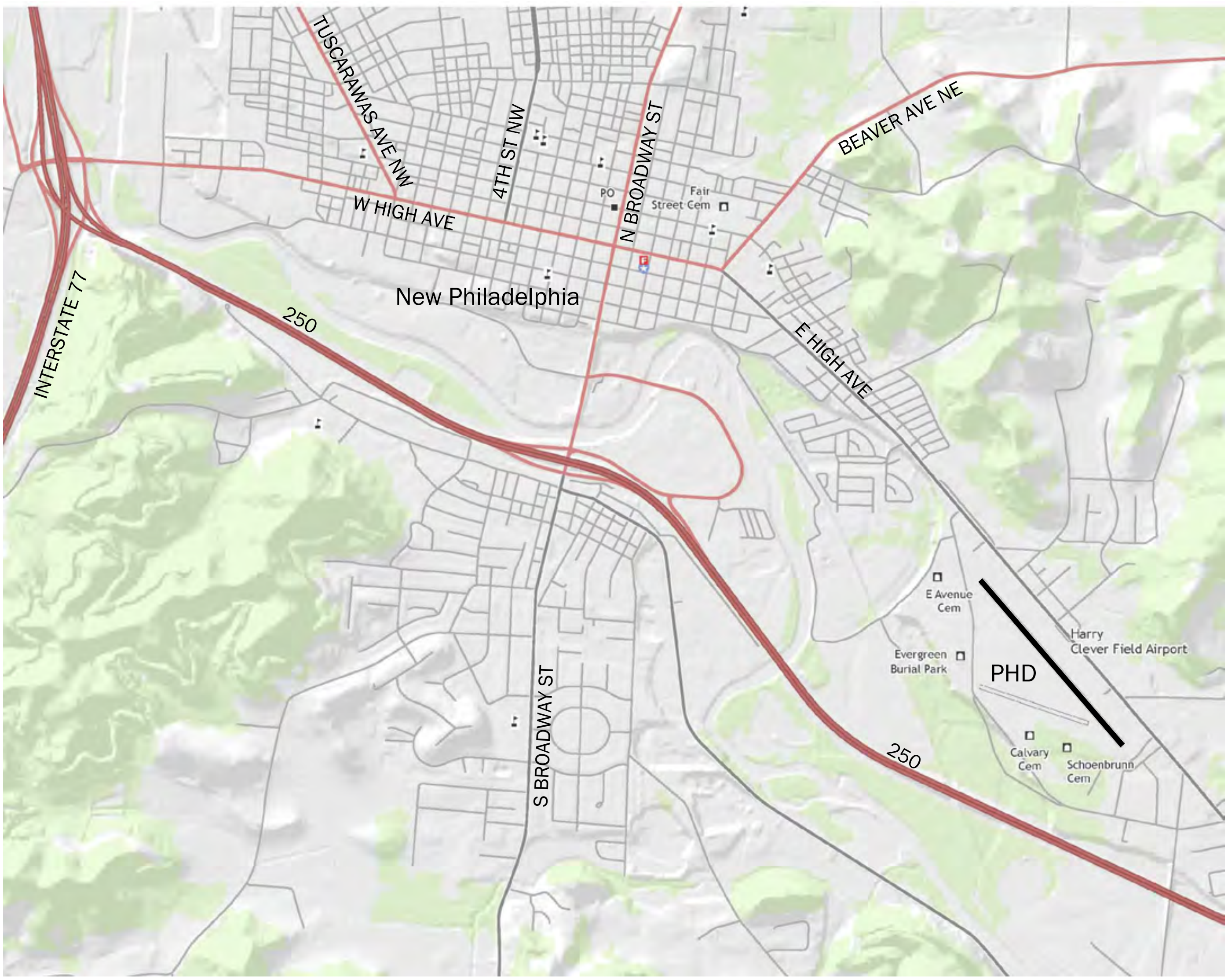
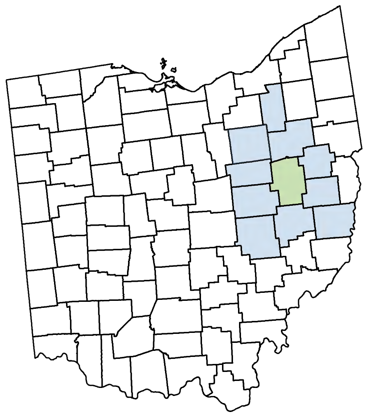
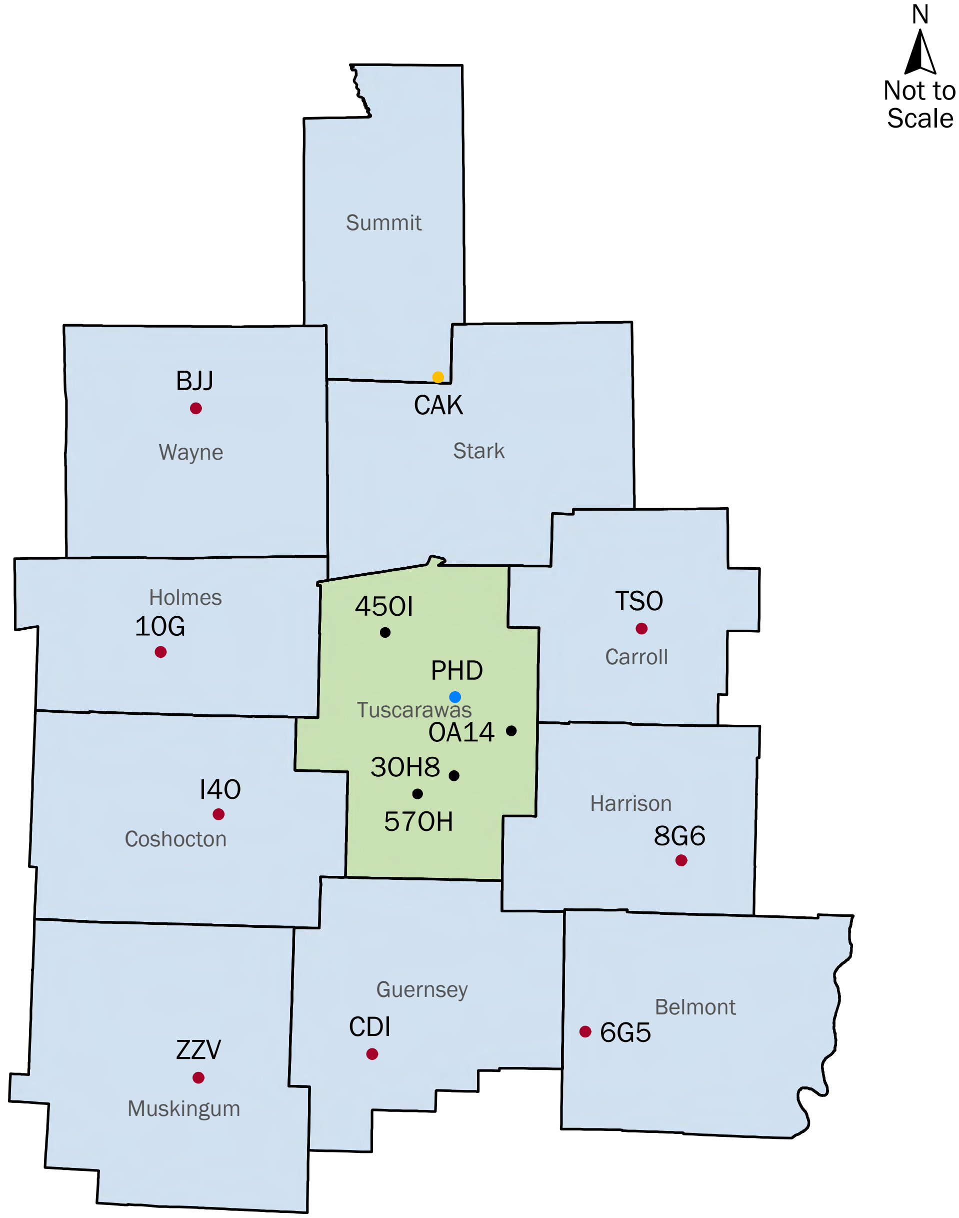


Figure 1-2 Location / Vicinity Map



Ohio Key Map



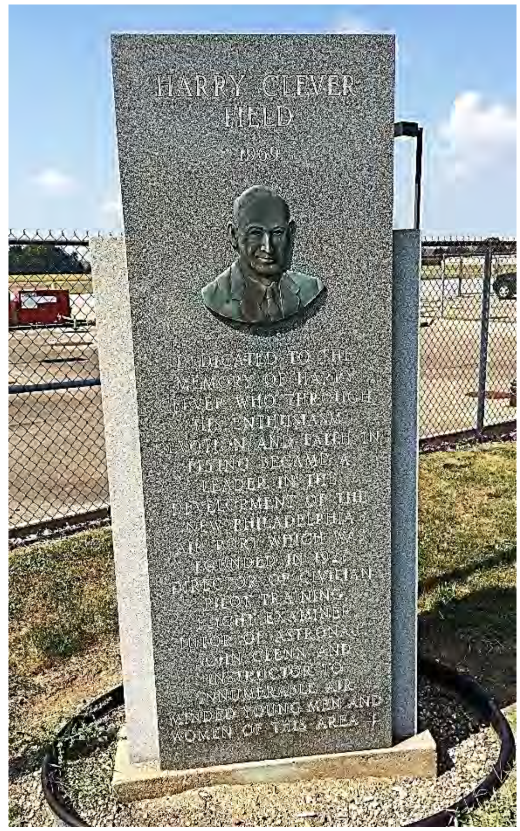
Legend
- Tuscarawas County
- Surrounding Counties
- PHD
- Public Airport
- Private Airport
- Commercial Airport

Airport Code	Airport Name	Longest Runway	Surface Type	Use	Drive Time From PHD	NM Distance From PHD
PHD	Harry Clever Field	3,951'	Asphalt	Public	N/A	N/A
OA14	Roxford	2,300'	Turf	Private	15 Minutes	5.5 SE
3OH8	Gnadenhutten	2,300'	Turf	Private	18 Minutes	6.6 S
57OH	Fillmans Farms Field	2,300'	Turf	Private	25 Minutes	8.7 S
45OI	Plane Country	2,100'	Turf	Private	26 Minutes	7.9 NW
TSO	Carroll County-Tolson	4,300'	Asphalt	Public	44 Minutes	16.5 E
I40	Richard Downing	5,001'	Asphalt	Public	46 Minutes	22.0 SW
CAK	Akron-Canton Regional	8,204'	Asphalt	Public	53 Minutes	26.7 N
8G6	Harrison County	4,154'	Asphalt	Public	57 Minutes	23.2 SE
10G	Holmes County	4,400'	Asphalt	Public	61 Minutes	24.8 W
BJJ	Wayne County	5,189'	Asphalt	Public	69 Minutes	32.3 NW
CDI	Cambridge Municipal	4,298'	Asphalt	Public	74 Minutes	30.6 S
6G5	Barnesville-Bradfield	4,004'	Asphalt	Public	74 Minutes	29.9 S
ZZV	Zanesville Municipal	5,000'	Asphalt	Public	79 Minutes	38.2 SW

Figure 1-3 Surrounding Airports

1.5 Airport History

Although initial discussions about an airport in New Philadelphia began in 1927 to fulfill the need for airmail service between New York, Cleveland, and Chicago, construction was completed in 1929 in a hayfield near the Historic Schoenbrunn Village. The list below identifies various historical events pertaining to PHD as determined from the 2004 Master Plan Update, newspaper articles, and information provided by the City of New Philadelphia:



- In 1929, a flying club leased farmland to begin construction of the airport (referred to as Schoenbrunn Field at the time).
- The airport was originally constructed with two turf runways: a 2,200 foot long east-west runway and a 1,600 foot long north-south runway.
- Also in 1929, Harry Clever was named the field superintendent and mail delivery began.
- Passenger service also began in 1929.
- In the 1930s, the airport held an airshow for the local community.
- In 1934, the City of New Philadelphia took over the airport lease and constructed a maintenance hangar.
- During World War II, the airport established a civilian pilot training program to meet the growing demands for new pilots. One of the students to enroll in the program was John Glenn (the first American to orbit the Earth).
- After World War II, the city constructed a 3,950 foot long paved runway with lights.
- In 1953, Lake Central Airlines began service and continued for eight years.
- In 1969, the airport was renamed Harry Clever Field.
- In 1972, the New Philadelphia Airport Commission was created.
- Today, the airport serves the general aviation needs of New Philadelphia and Tuscarawas County with a two-runway airfield configuration.

1.6 Previous Studies for PHD

A diverse history of planning efforts have been conducted to evaluate the long-term development objectives for PHD. Some studies have recommended an airfield configuration that would primarily accommodate small piston-powered aircraft and others have recommended a configuration that would be more capable of accommodating small corporate aircraft. The 2004 Master Plan Update recommended a complete realignment and extension of the runway to a length of 4,400 feet in order to better accommodate larger corporate aircraft traffic and to comply with FAA airfield design standards. That project would necessitate the acquisition of several properties around the airport, road relocations, and potential grave relocations. Since the 2004 Master Plan Update was completed, additional planning efforts have been completed that suggest that the airport should remain in its current alignment. Today, several paved surfaces at PHD are in need of maintenance. A key purpose of this Master Plan Update was to develop a detailed capital improvement program that would allow critical projects to be conducted in a timely manner, thereby improving the safety, efficiency, and appeal of the airport for existing and potential users.

1.7 Airport Role/User Profile

PHD is included in the FAA's National Plan of Integrated Airport Systems (NPIAS) and is therefore eligible to receive AIP funding for specific improvement projects. The NPIAS includes 3,331 existing and 14 proposed airports that are considered to be important to national air transportation, 99 of which are located in Ohio (refer to **Figure 1-4**). The NPIAS categorizes airports based on the service levels shown in **Table 1-1**. PHD is classified a General Aviation airport, which are airports that typically have at least 10 based aircraft and are located at least 20 miles from the nearest NPIAS airport. According to the NPIAS report, "they are the closest source of air transportation for about 19 percent of the population and are particularly important to rural areas. These airports also support a number of critical functions ranging from flight training, emergency preparedness, and law enforcement."

In 2012, the FAA further defined the roles of General Aviation airports in General Aviation Airports: A National Asset (ASSET 1). This comprehensive 18-month study developed the following categories of General Aviation airports: National, Regional, Local, Basic, and Unclassified. **Table 1-2** presents these categories and their description. PHD is classified as a Local airport which serves "regional markets with moderate levels of activity with some multi-engine propeller aircraft. Local airports average about 33 based propeller driven aircraft and no jets." The purpose of the categorization is to highlight the contributions of general aviation airports and to evaluate whether all airports should be held to the same regulatory, project investment and justification, and grant assurances in the future.

Table 1-1
FAA NPIAS Service Level

Category	Criteria
Commercial Service – Primary	Public use commercial airports enplaning more than 10,000 passengers annually.
Commercial Service – Non-primary	Public use commercial airports enplaning between 2,500 and 10,000 passengers annually.
General Aviation – Reliever	General aviation airport having the function of relieving congestion at a commercial service airport and providing general aviation access to its community. Must have at least 100 based aircraft or 25,000 annual itinerant operations.
General Aviation	All other NPIAS airports.

Source: FAA Order 5090.3C, Field Formulation of the National Plan of Integrated Airport Systems, December, 2000.

Table 1-2 FAA ASSET 1 Categories	
Category	**Criteria**
National	Serves national – global markets with very high levels of activity with many jets and multi-engine propeller aircraft. National airports average about 200 total based aircraft, including 30 jets.
Regional	Serves regional – national markets with high levels of activity with some jets and multi-engine propeller aircraft. Regional airports average about 90 total based aircraft, including 3 jets.
Local	Serves local – regional markets with moderate levels of activity with some multi-engine propeller aircraft. Local airports average about 33 based propeller driven aircraft and no jets.
Basic	Often serves critical aeronautical functions within local and regional markets with moderate to low levels of activity. Basic airports average about 10 propeller-driven aircraft and no jets.
Unclassified	Airports that do not fit into any other category.
Source: General Aviation Airports: A National Asset, May, 2012.	

As shown in **Table 1-3**, the 2014 Ohio Airports Focus Study (OH Focus Study) also assigns specific classifications to the airports in the state and has a goal of *Optimizing Investment in a Diverse Airport System*. PHD is classified as a General Aviation Level 2 airport that "meets the needs of smaller corporate aircraft." The OH Focus Study identifies specific facility requirements for each of the airport categories and also describes services that should be available at the airports, which are evaluated later in this Master Plan Update as part of the facility requirements. This discussion has revealed that the FAA and state each categorize PHD in different ways that may suggest different facility design requirements, which has also been identified through previous planning efforts. This Master Plan Update was conducted to reassess the role of PHD and to provide a clear direction moving forward. For comparative purposes, Figure 1-3 summarizes the characteristics of airports located in the counties adjacent to Tuscarawas County.

Table 1-3 Ohio Airports Focus Study Classifications	
Category	**Criteria**
Air Carrier	Support commercial airline activities.
Level 1	Meet the needs of nearly all GA corporate jet traffic.
Level 2	Meet the needs of smaller corporate aircraft.
Level 3	Serves light SEP and MEP for business, recreation, and training.
Level 4	Serves small GA pistons and requires basic support facilities and services.
Source: 2014 Ohio Airports Focus Study.	

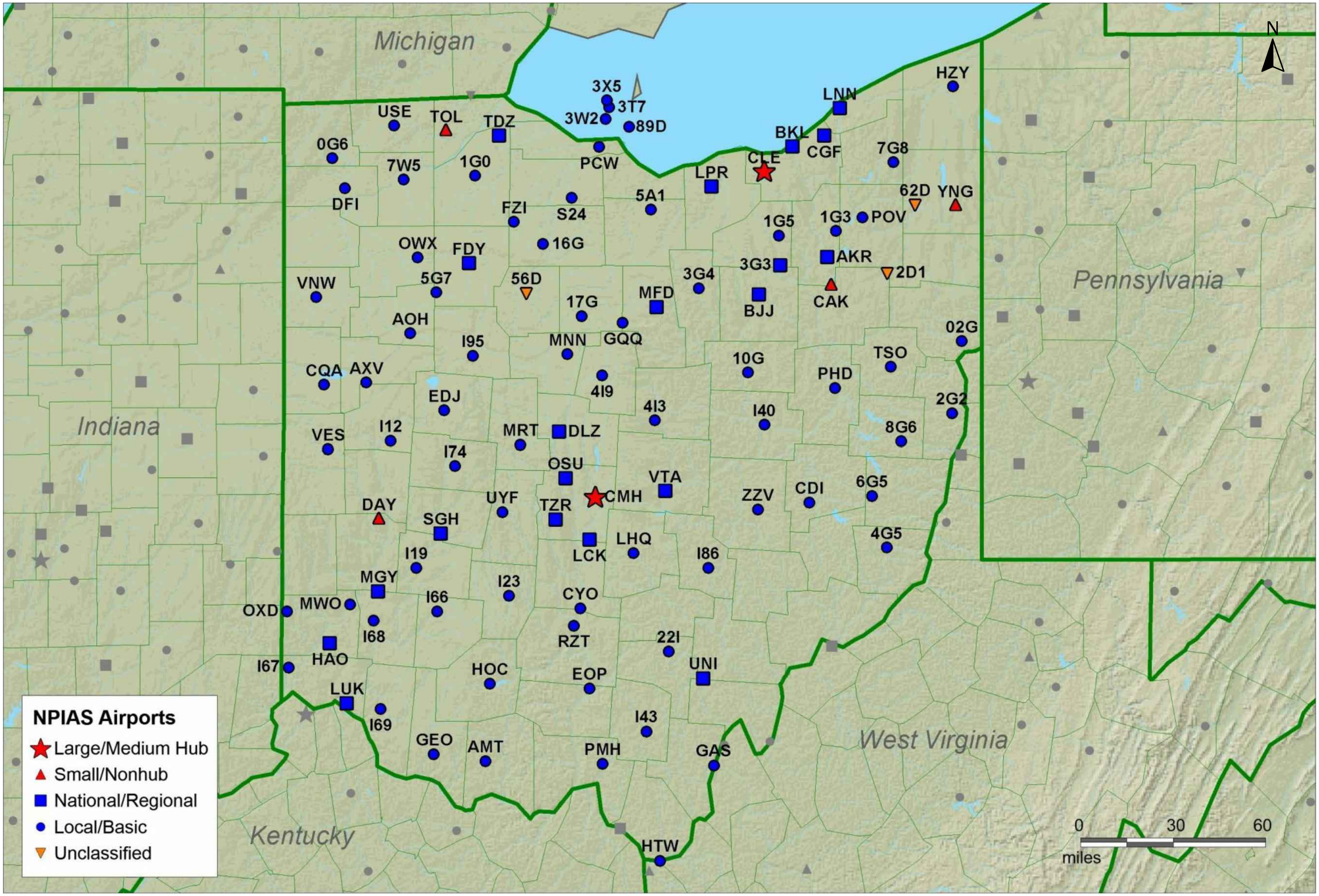


Figure 1-4 NPIAS (2015-2019)

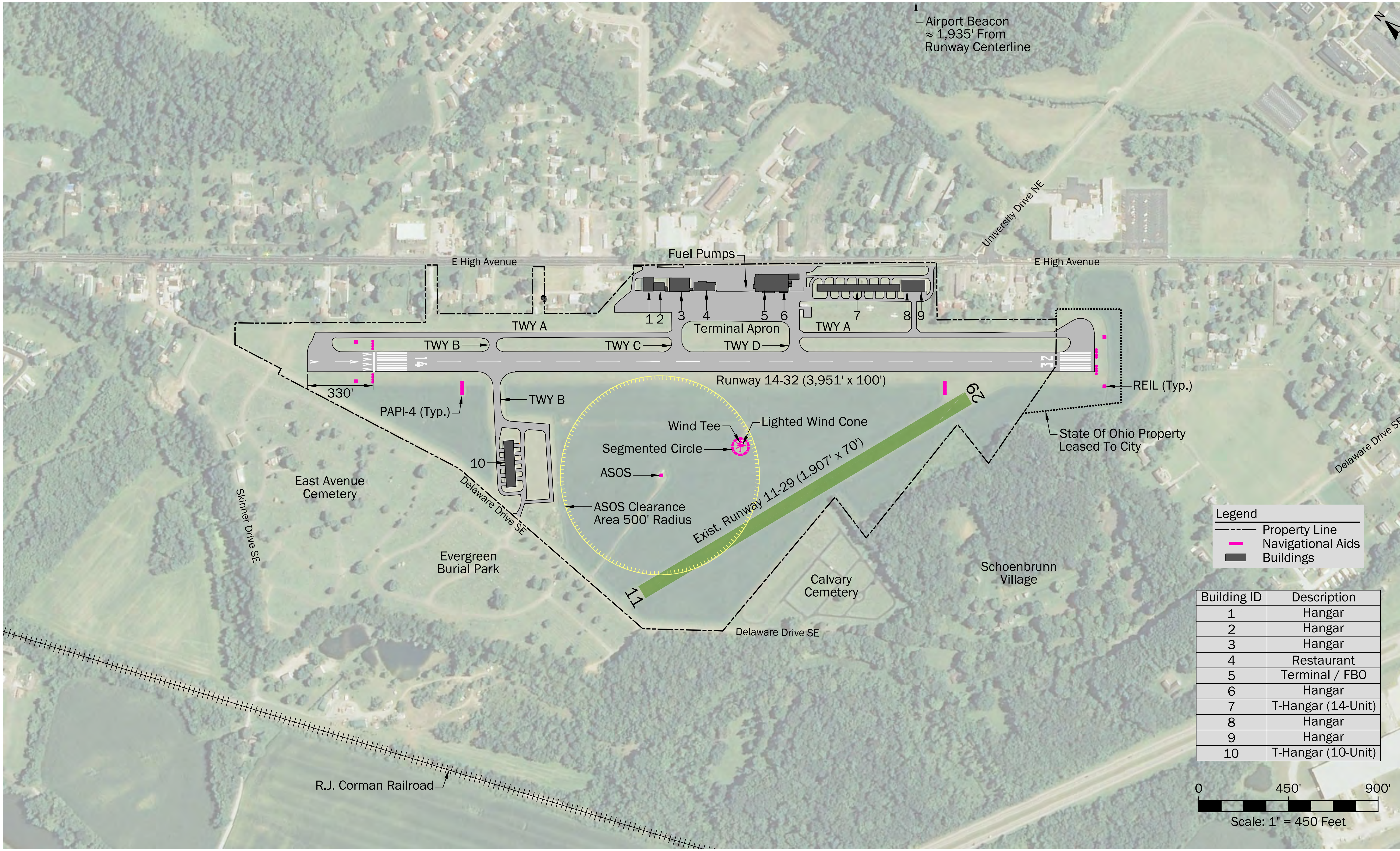
1.8 Airfield Overview

At PHD, the airfield consists of the two runways, taxiways, and their associated markings and lighting features. As illustrated in **Figure 1-5**, Runway 14-32 is the primary runway at PHD and consists of a paved asphalt surface measuring 3,951 feet in length and 100 feet in width. There is a 330 foot long displaced threshold on the west end of the runway which is unusable for landings on Runway 14. Both ends of Runway 14-32 have non-precision markings and there are Medium Intensity Runway Lights (MIRLs) along the edges of the runway. Parallel Taxiway A runs along the north side of Runway 14-32 and provides access to the terminal apron and most of the aircraft hangars at PHD. Taxiway B branches directly off of Runway 14-32 and provides access to the T-hangars on the south side of the airport. Runway 11-29 is the turf runway at PHD and measures 1,907 feet in length and 70 feet in width. **Figure 1-6** documents the approximate conditions of the paved surfaces at PHD along with the date of the last project that was conducted for each surface, all of which will be reevaluated as part of this planning effort. **Figure 1-7** provides some of the detailed information pertaining to the airport and runways such as coordinates, elevations, pavement strengths, and wind coverage percentages. The rotating beacon is located approximately 1,935 north of the runway centerline.

Note: During the development of this Master Plan Update, the need to renumber the runways to Runways 15-33 and 12-30 was identified due to changes in the magnetic headings over the years. As a result, the runways were renumbered near the end of the planning process. That change is reflected as an existing condition within the ALP drawing set, but no changes to the study text and graphics were conducted because they were developed prior to the implementation of the renumbering project.

1.9 Landside Overview

The landside facilities at PHD are illustrated in **Figure 1-8** along with a description of their use and a square footage calculation. There are nine buildings located on the north side of the airport that include a mix of larger storage hangars, the terminal and FBO facility, T-hangars, and a restaurant. The terminal apron was recently rehabilitated and expanded to the west, which allowed for the construction of Building 1. Paved tie-down parking is available on the terminal apron and grass tie-downs are provided in the area between Taxiway A and the T-hangars. The airport's FBO, ProAv Aviation Services, operates out of Buildings 5 and 6, which include the terminal and aircraft maintenance hangar. The FBO provides aircraft maintenance, flight training, avionics, and aircraft rentals. Self-service fuel pumps are located between Buildings 4 and 5 for both Jet-A and 100LL and are available 24 hours a day by credit card. The fuel tanks are located underground and include a 15,000 gallon Jet-A tank and two 10,000 gallon 100LL tanks that were installed in 2000. On the south side of the airport, there is a 10-bay T-hangar building that is accessible from Delaware Drive Southeast. There are a total of 24 T-hangar bays at PHD and the city is interested in constructing an additional facility on the south side of the airport to accommodate additional based aircraft (and existing based aircraft tenants that would like T-hangar storage). The city continually maintains both the airfield and landside facilities and has conducted several projects in recent years to the hangars, restaurant, and pavements.



Building ID	Description
1	Hangar
2	Hangar
3	Hangar
4	Restaurant
5	Terminal / FBO
6	Hangar
7	T-Hangar (14-Unit)
8	Hangar
9	Hangar
10	T-Hangar (10-Unit)

Figure 1-5 Existing Facilities

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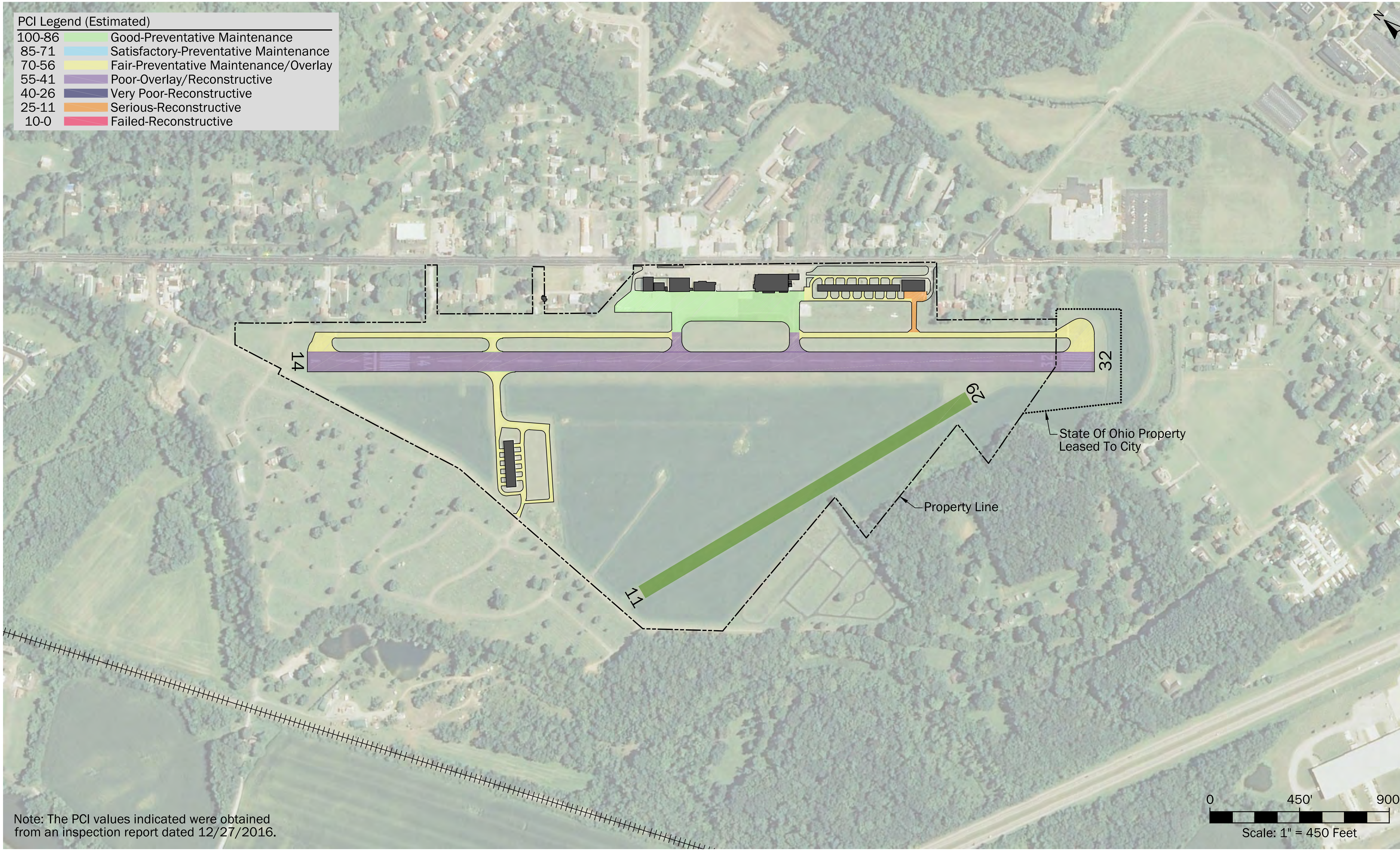

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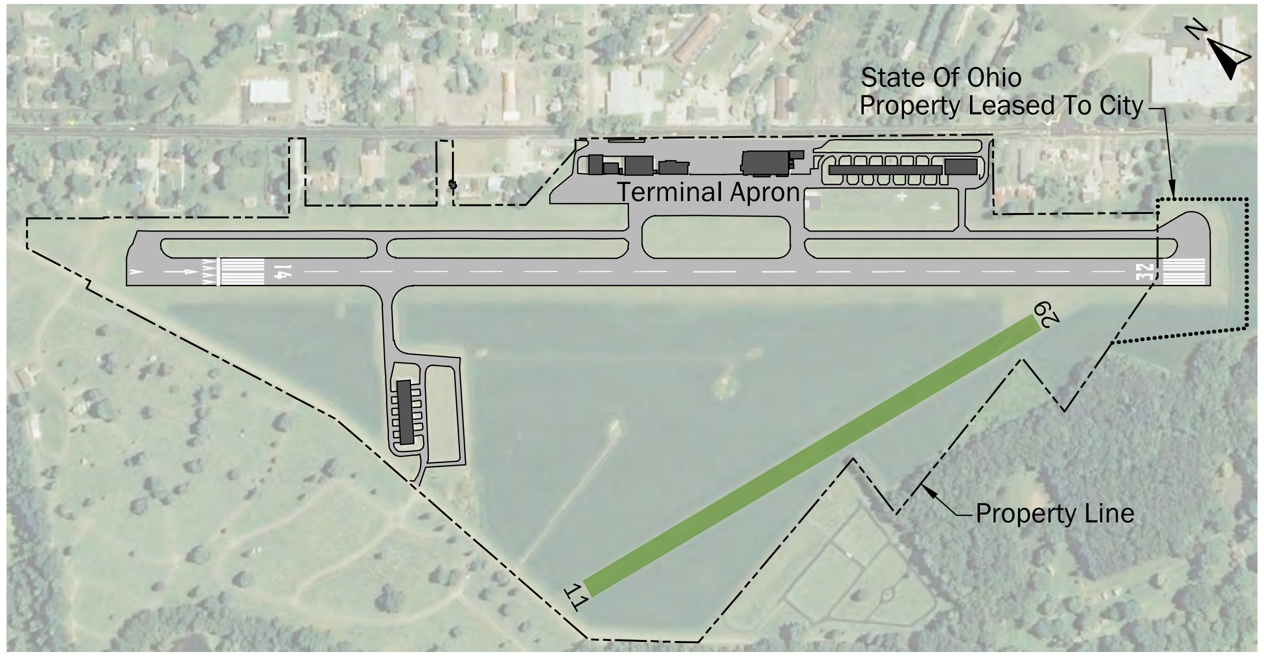
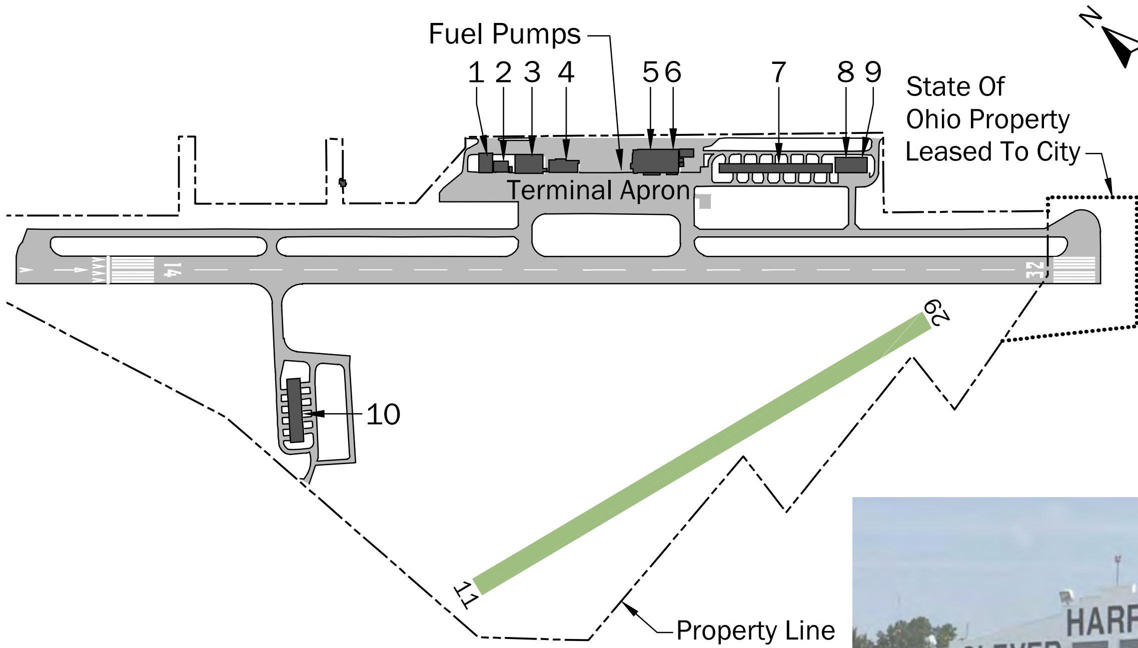
Figure 1-6 Pavement Conditions Index (PCI)



Key Map

AIRPORT DATA TABLE		
DESCRIPTION	EXISTING	FUTURE
SERVICE LEVEL (NPIAS)	GENERAL AVIATION	SAME
STATE EQUIVALENT SERVICE ROLE	LEVEL 2 GENERAL AVIATION	SAME
AIRPORT REFERENCE CODE (ARC)	B-I (SMALL AIRCRAFT)	SAME
CRITICAL AIRCRAFT	BEECHCRAFT BARON 58	SAME
AIRPORT ELEVATION (AMSL) (NAVD88)	894.6'	SAME
MEAN MAX. TEMP. (HOTTEST MONTH)	83.4° (JULY)	SAME
AIRPORT REFERENCE POINT (NAD 83)		
LATITUDE	40°28' 11.73"	SAME
LONGITUDE	81°25' 10.83"	SAME
MAGNETIC DECLINATION	8°19' W ± 0° 22' (JUNE 2017)	0°2' W PER YEAR
AIRPORT NAVIGATIONAL AIDS	BEACON	SAME
MISCELLANEOUS FACILITIES	AIRFIELD LIGHTING, LIGHTED WIND CONE, ASOS	SAME

RUNWAY DATA TABLE				
	RUNWAY 11-29		RUNWAY 14-32	
RUNWAY LENGTH	1,907'		3,951'	
RUNWAY WIDTH	70'		100'	
RUNWAY WIND COVERAGE % (ALL WEATHER):				
10.5KTS / 12MPH	98.39%		98.98%	
13KTS / 15MPH	99.32%		99.54%	
16KTS / 18MPH	99.92%		99.92%	
20KTS / 23MPH	99.99%		99.99%	
RUNWAY LIGHTING	N/A		MIRL	
PAVEMENT STRENGTH:				
SINGLE WHEEL GEAR (LBS)	N/A		52.5	
DUAL WHEEL GEAR (LBS)	N/A		67.5	
DUAL TANDEM WHEEL GEAR (LBS)	N/A		140.0	
SURFACE COMPOSITION	TURF		ASPHALT	
VISIBILITY MINIMUMS	VISUAL / VISUAL		1-MILE / VISUAL	
	RUNWAY 11	RUNWAY 29	RUNWAY 14	RUNWAY 32
RUNWAY END COORDINATES:				
LATITUDE (NAD 83)	40° 28' 09.9427"	40° 28' 04.0341"	40° 28' 30.0514"	40° 28' 00.4602"
LONGITUDE (NAD 83)	81° 25' 24.7218 "	81° 25' 01.5849"	81° 25' 27.7590"	81° 24' 54.4299"
RUNWAY END ELEVATION (NAVD 88)	891.1'	886.0'	894.4'	886.1'
RUNWAY MARKINGS	N/A	N/A	NON-PRECISION	NON-PRECISION
VISUAL AND INSTRUMENT NAVAIDS	NONE	NONE	PAPI-4, REIL	PAPI-4, REIL
DISPLACED THRESHOLD ELEVATION	N/A	N/A	894.1'	N/A
DISPLACED THRESHOLD DISTANCE	N/A	N/A	330'	N/A



Key Map

Building 1 Building 2

Building 3 Building 4

Building 5 Building 6

Building 7

Building 7 Building 8 Building 9

Building 10

Building ID	Description
1	Hangar
2	Hangar
3	Hangar
4	Restaurant
5	Terminal / FBO
6	Hangar
7	T-Hangar (14-Unit)
8	Hangar
9	Hangar
10	T-Hangar (10-Unit)

1.10 Airspace Environment

As shown in **Figure 1-9**, The airport is surrounded by Class G uncontrolled airspace which extends from the surface up to but not including 1,200 feet Above Ground Level (AGL). Class E controlled airspace is located above the Class G airspace and extends up to not including 18,000 feet Above Mean Sea Level (AMSL). Within Class G airspace and Class E airspace, there are no requirements for notifying Air Traffic Control (ATC) when aircraft are flying under Visual Flight Rule (VFR) conditions. However, aircraft flying Instrument Flight Rule (IFR) approaches and departures at PHD must contact Akron-Canton Approach/Departure Control for clearance. When Akron-Canton Approach/Departure Control is closed, aircraft must receive clearance from the Cleveland Air Route Traffic Control Center (ARTCC).

1.11 Instrument Approaches and Navigational Aids

Runway 14 is the only runway end with published instrument approach procedures at PHD. There are two non-precision straight-in approaches published to Runway 14 that provide horizontal guidance to aircraft via satellite-based Global Positioning System (GPS) equipment. Those approaches can be flown when horizontal visibility minimums are as low as one mile. Both ends of Runway 14-32 are supported by four-light Precision Approach Path Indicators (PAPI-4) and Runway End Identifier Lights (REILs). The PAPIs provide visual approach slope guidance to the pilot and the REILs help identify the runway ends and are particularly beneficial during poor visibility conditions and for the circling approaches. The approach to Runway 32 as well as the approaches to both ends of turf Runway 11-29 are visual only. A summary of the approach procedures at PHD is provided in **Table 1-4**.

Table 1-4
PHD Approach Procedures

Runway	Approach Type	Horizontal Minimums	Vertical Minimums
Runway 14	LP MDA	1 Mile	1,580'
Runway 14	LNAV MDA	1 Mile	1,640'
Runway 14	Circling	1 Mile	1,640'
Runway 32	Visual	Visual	Visual
Runway 11	Visual	Visual	Visual
Runway 29	Visual	Visual	Visual
Circling	Circling VOR-A	1 ¼ Miles	1,720'
Source: U.S. Terminal Procedures Publication (TPP), effective January 7, 2016 to February 4, 2016.			

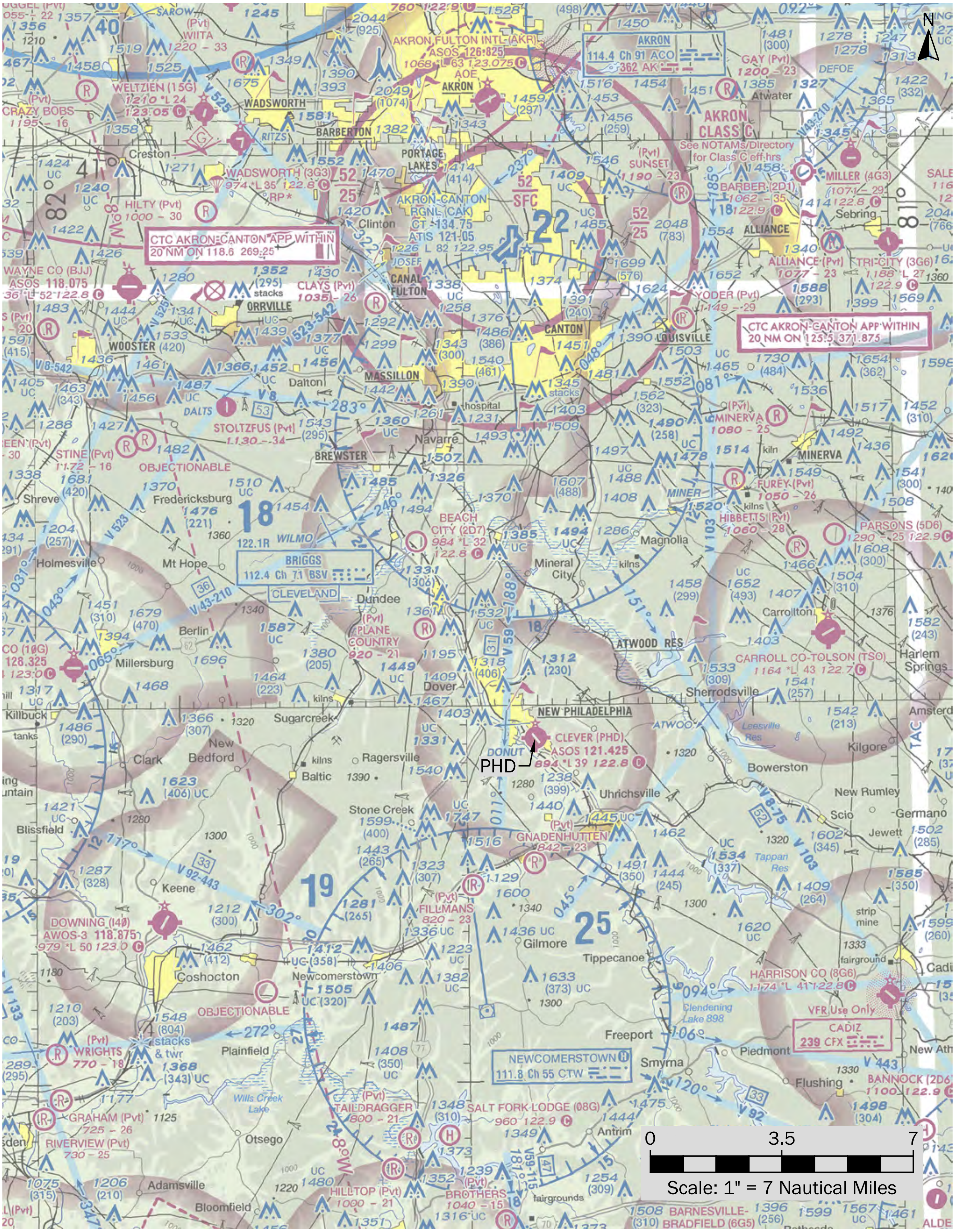


Figure 1-9 Sectional Aeronautical Chart

1.12 Historical Weather Conditions

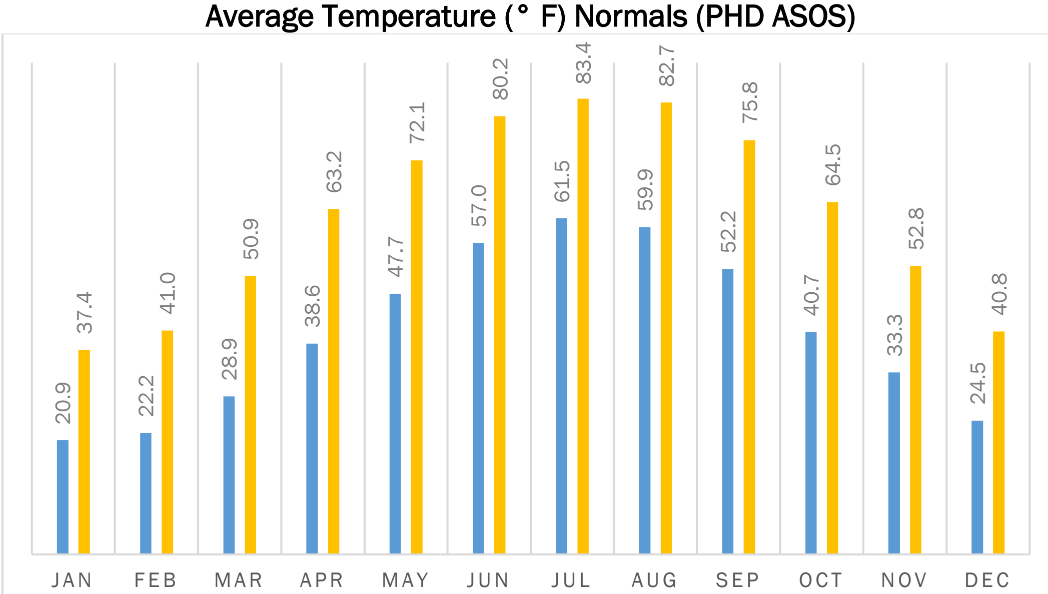
Local weather conditions have the ability to affect aircraft activity and runway utilization. Runways are ideally positioned in the direction of prevailing winds to maximize wind coverage for aircraft operations. PHD is equipped with an Automated Surface Observing System (ASOS) which monitors surface weather conditions (wind direction and speed, precipitation, visibility, etc.) and digitally relays the information to pilots. For visual reference from the air, the airport also has a lighted wind cone and a wind tee that are located within a segmented circle between the two runways. According to historical information from the National Oceanic and Atmospheric Administration (NOAA), on average in New Philadelphia, the warmest month is July with an average high of 83.4° Fahrenheit and the coolest month is January with an average low of 20.9° Fahrenheit (refer to **Table 1-5** and **Figure 1-10**). The most precipitation typically occurs during the month of May. A detailed assessment of wind patterns is presented as part of the facility requirements.

Table 1-5
Average Temperature & Precipitation Normals (PHD ASOS)

Variable	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Low Temp (° F)	20.9	22.2	28.9	38.6	47.7	57.0	61.5	59.9	52.2	40.7	33.3	24.5
High Temp (° F)	37.4	41.0	50.9	63.2	72.1	80.2	83.4	82.7	75.8	64.5	52.8	40.8
Precipitation (In.)	2.60	2.36	3.04	3.43	4.17	3.73	4.03	3.59	3.26	2.75	3.27	2.67

Source: NOAA climate normals generated from the average of PHD ASOS records from 1981 to 2010.

Figure 1-10
Average Temperature (° F) Normals (PHD ASOS)



Source: NOAA climate normal generated from the average of PHD ASOS records from 1981 to 2010.

1.13 Land Use Considerations

The following section identifies baseline information related to existing land uses in the vicinity of PHD. Tuscarawas County is vastly made up of forestland, with the exception of some residential settlements throughout the county. Land uses within and surrounding PHD's property consists of transportation-related infrastructure, commercial and industrial developments, residential, agricultural, undeveloped land, and wetlands. As shown in **Figure 1-11**, sensitive features around the airport include cemeteries to the west and south (East Avenue Cemetery, Evergreen Burial Park, and Cavalry Cemetery), a historic site to south (Shoenbrunn Village), public roads, and residential development.

The current land use policy for properties in the vicinity of PHD is defined in Codified Ordinances of the City of New Philadelphia. Height restrictions are necessary to ensure objects will not impair with flight safety and are required to protect airspace in the State of Ohio. Within the city, buildings located within residential districts are not permitted to exceed a height of 45 feet above grade and buildings within the Central Business District may not exceed 60 feet. However, the city ordinance does not have specific height restrictions related to the airport. Therefore, a key recommendation of this Master Plan Update is for the City of New Philadelphia to adopt zoning regulations to protect the airspace surrounding PHD in accordance with Ohio law and Federal Aviation Regulation (FAR) Part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace.

1.14 Land Holdings

As part of this Master Plan Update, an Exhibit 'A' Airport Property Inventory Map was developed in accordance with FAA Standard Operating Procedure (SOP) 3.00, SOP for FAA Review of Exhibit 'A' Airport Property Inventory Maps. The detailed Exhibit 'A' identifies all past, current, and proposed land holdings associated with the airport. As shown in Figure 1-11, the airport facilities are located on a combination of land owned by the City of New Philadelphia (95.4 acres) and leased property owned by the State of Ohio (4.1 acres). Future property acquisition may be needed to bring the airport into compliance with FAA design standards and to improve the airport's compatibility with surrounding land uses.

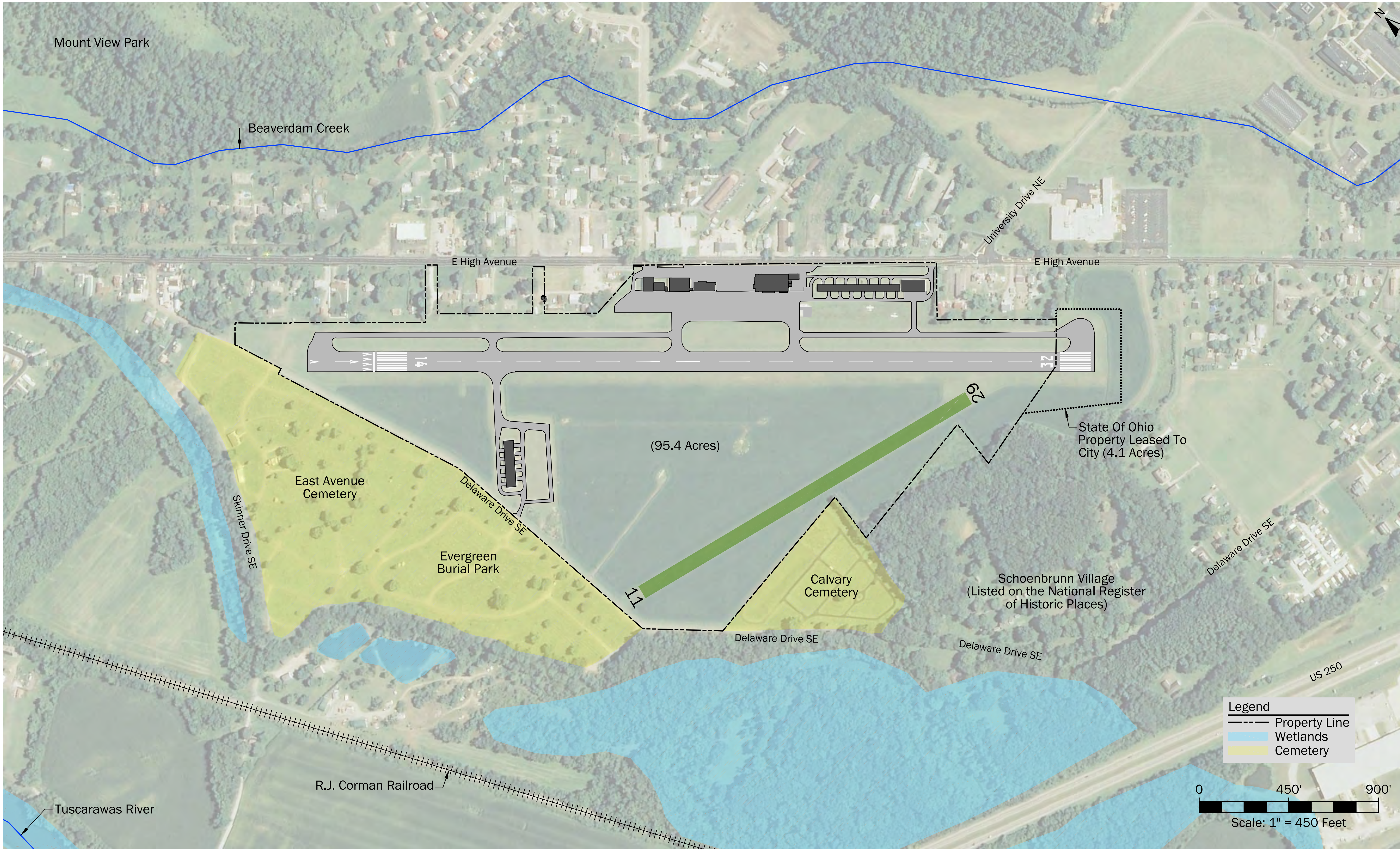


Figure 1-11 Surrounding Land Uses

2.0 Aviation Activity Forecasts

This aviation forecasting effort was conducted in 2015 as a component of the Master Plan Update for the Harry Clever Field Airport (PHD). The forecasts were developed based on the most recent information available at the time and are utilized in later sections of this study to determine immediate and long-term facility requirements and to identify the justification for various development alternatives and recommendations. The forecasts are presented over a 20-year planning period that extends from 2015 through 2035. This is the first detailed forecasting effort that has been conducted for PHD since the previous Master Plan Update was completed in 2004. At that time, there was a jet based at the airport, and as discussed in this chapter, the aviation climate throughout the country had not yet been impacted by events such as Hurricane Katrina in 2005 and the economic recession of the late 2000s. Those types of events and other local factors have the potential to affect the activity that is experienced at airports over time and are explored as part of this forecasting effort to illustrate how they can both negatively and positively influence aviation activity.

- Forecasting Limitations
- Historical and Current Aviation Activity
- Factors and Opportunities Affecting Activity Levels
- Based Aircraft Forecasts
- Operations Forecast
- Instrument Operations Forecast
- Peak Activity Forecasts
- Identification of Critical Aircraft
- Forecast Summary

2.1 Forecasting Limitations

Forecasting aviation activity is a complex process that considers a multitude of factors, both controllable and beyond an airport's control. Forecasts are not to be construed with predictions of the future, but rather an educated guess of future activity based on a variety of predictors, calculations, assumptions, and subjective judgment. The accuracy of the estimates decline as the planning term is extended, potentially as a result of unforeseen local or geo-political events, natural disasters, and/or climatological events.

The FAA's forecast approval process typically constitutes an approval for planning purposes only, which allows the airport sponsor to depict projects that are consistent with the long-term growth expectations on the Airport Layout Plan (ALP). In most cases, prior to issuing a grant, the FAA will require updated information demonstrating that a proposed project is justified by activity at the time, or by activity that would directly result from the implementation of the proposed project. This policy helps to ensure that funding is directed towards critical projects throughout the U.S.

2.2 Historical and Current Aviation Activity

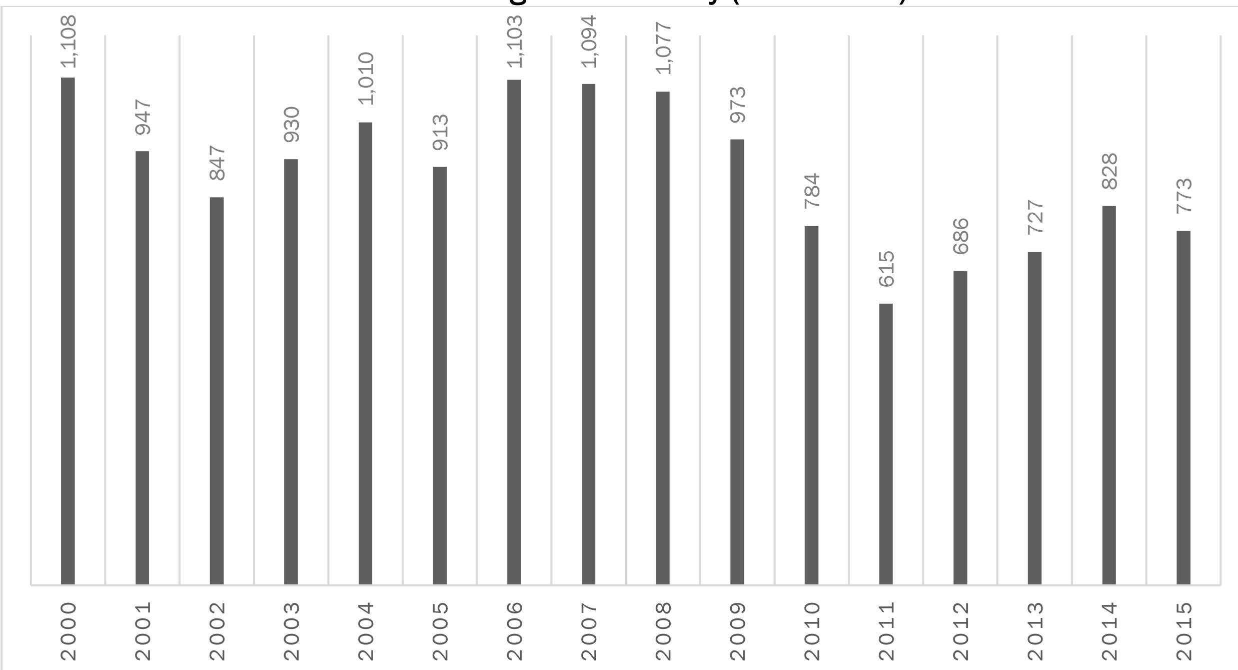
Many elements compose the broad definition of general aviation activity. In simplest terms, general aviation includes all segments of the aviation industry except those conducted by scheduled air carriers and the U.S. military. General aviation activities may include pilot training, sightseeing, aerial photography, law enforcement, and medical flights, as well as business, corporate, and personal travel. General aviation operations are divided into the categories of local or itinerant. Local operations are arrivals or departures performed by aircraft that remain within the airport traffic pattern, or those that occur within sight of the airport. Local operations are most often associated with training activity and flight instruction (e.g., touch-and-goes). Itinerant operations are arrivals or departures that do not remain within the airport traffic pattern and/or that originate from another airport. The FAA defines an operation as either a single aircraft landing or takeoff. Under this definition, touch-and-goes are considered two operations (one takeoff plus one landing) and are deemed local operations. Itinerant operations are typically comprised of private, business/corporate, and air taxi flight activity, but may also include law enforcement and medical flights. A summary of the historical flight plan activity data, or data that is filed with the FAA when an aircraft intends to fly within Instrument Flight Rules (IFR) controlled airspace, is summarized in **Table 2-1** and **Figure 2-1**. Flight plan activity data only represents a small percentage of the total activity that occurs at PHD, but it captures nearly every jet and turboprop operation because those aircraft typically fly within IFR controlled airspace. Of the years shown, PHD experienced the lowest number of jet operations in 2015 and the second lowest number of turboprop operations. The decline in turboprop operations in recent years was associated with a local company (Lauren Manufacturing) no longer having a based aircraft at PHD.

Table 2-1
Historical Flight Plan Activity (2000-2015)

Year	Total	Jet	Turboprop	Piston
2000	1,108	148	504	456
2001	947	128	335	484
2002	847	93	349	405
2003	930	91	375	464
2004	1,010	98	306	606
2005	913	95	281	537
2006	1,103	109	172	822
2007	1,094	74	342	678
2008	1,077	81	225	771
2009	973	74	138	761
2010	784	52	116	616
2011	615	38	108	469
2012	686	42	114	530
2013	727	36	103	588
2014	828	35	61	732
2015	773	22	77	674
2000-2015	-2.37%	-11.93%	-11.77%	2.64%

Sources: FAA Traffic Flow Management System Counts and Michael Baker International, Inc., 2015.

Figure 2-1
Historical Flight Plan Activity (2000-2015)



Sources: FAA Traffic Flow Management System Counts and Michael Baker International, Inc., 2015.

The baseline 2015 operations and based aircraft information for PHD is presented in **Table 2-2** along with a comparison of the activity from the 2004 Master Plan Update. Because PHD is a non-towered airport, the number of total operations must be estimated. The 2014 Ohio Airports Focus Study (OH Focus Study) contains the most recent estimate of total operations for PHD, which is 16,650 annual operations. That was considered the baseline 2015 operations number for this planning effort. The number of based aircraft was determined through coordination with the City of New Philadelphia and includes 44 single-engine pistons.

Table 2-2
Baseline Operations and Based Aircraft Comparison

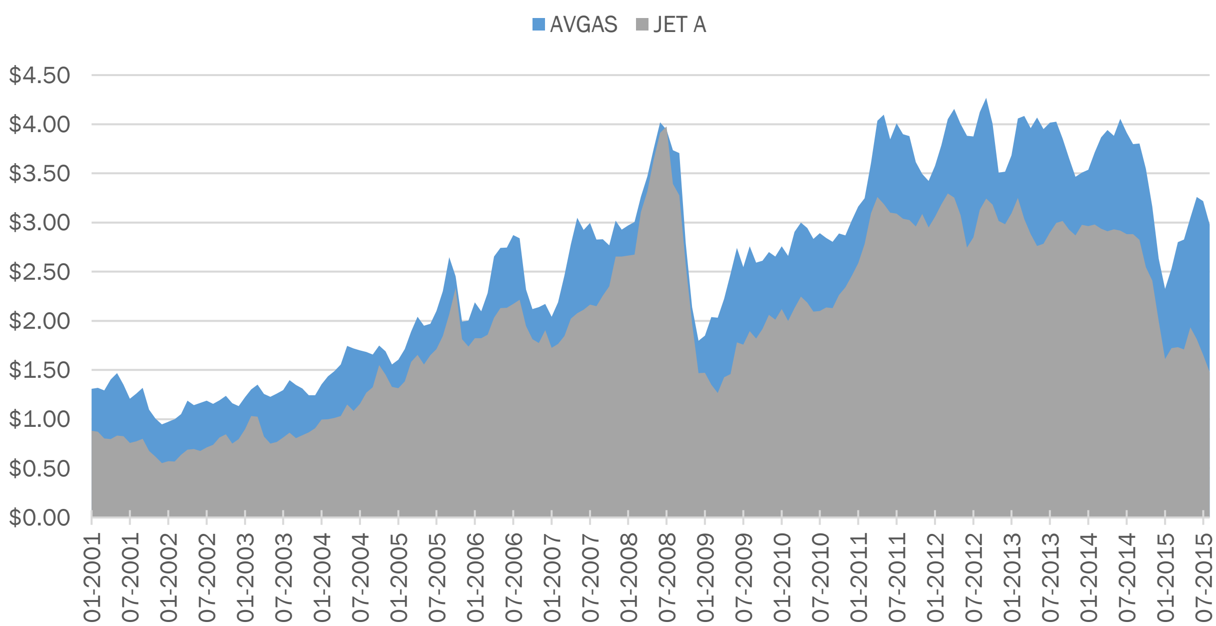
Year	Total	SEP	MEP	Turboprop	Jet	Helicopter
Operations						
2003 (2004 Master Plan)	20,000	18,300	434	375	91	800
2015	16,650	15,238	1,147	77	22	167
Based Aircraft						
2003 (2004 Master Plan)	51	46	2	0	1	2
2015	44	44	0	0	0	0
Other Baseline 2015 Factors						
Itinerant Operations / %	2,650 / 15.92% of Total Operations					
Local Operations / %	14,000 / 84.08% of Total Operations					
Instrument Operations / %	773 / 4.64% of Total Operations					
OPBA	378 Operations Per Based Aircraft (OPBA)					

Source: Michael Baker International, Inc., 2015.
Note: Numbers may not add correctly due to rounding.

2.3 Factors and Opportunities Affecting Activity Levels

This section describes past and present trends that may influence PHD's operations and based aircraft levels. As part of any forecasting effort, the FAA recommends the identification of historical factors that represented turning points for the U.S. aviation industry such as the terrorist attacks on September 11, 2001, sharp fuel price increases after Hurricane Katrina damaged Gulf Coast refineries in August 2005 (refer to **Figure 2-2**), and the economic recession of the late 2000s. Although some of those events were impossible to predict, their resulting consequences had considerable impacts on aviation activity throughout the U.S. Local trends are also important because they provide airport-specific information that can be used to support the selection of preferred forecasts. Trends evaluated include economic conditions, airport-specific factors, and the FAA Next Generation Air Transportation System (NextGen).

Figure 2-2
U.S. Aviation Gasoline Wholesale/Resale by Refiners (2001-2015)



Sources: U.S. Energy Information Administration and Michael Baker International, Inc., 2015.

2.3.1 Economic Conditions

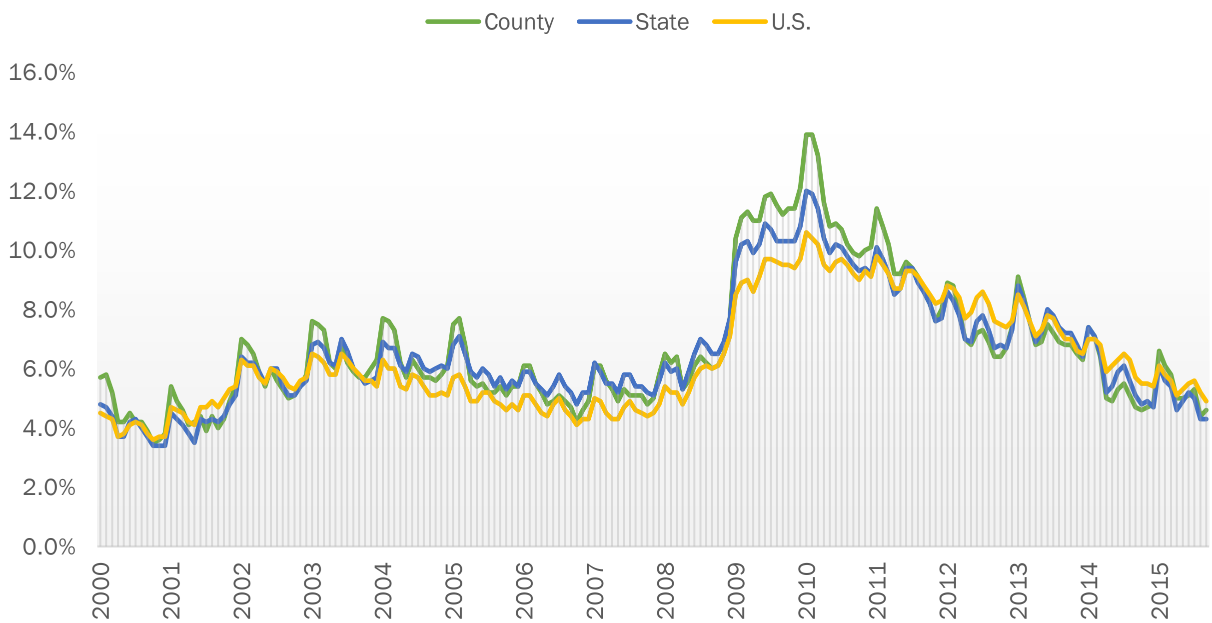
The economic conditions surrounding an airport have the potential to influence activity levels. For example, the growth or decline in a local population may correlate to the growth or decline in operations and based aircraft levels at an airport. **Table 2-3** summarizes historical and forecast population, households, median age, and per capita income statistics for the U.S., Ohio, Tuscarawas County, and the City of New Philadelphia. As shown, the population and income characteristics for the local area are lower than those for the state and nation. The local area also has a higher median age than the state and nation. It is important to highlight such factors because they are important considerations when conducting a forecasting effort that must be based on realistic and substantiated growth assumptions.

Table 2-3 Socioeconomic Comparison (Local, State, & National)				
Variable	New Philadelphia	Tuscarawas	Ohio	Entire US
Population				
2000	17,236	90,915	11,353,249	281,422,025
2010	17,272	92,582	11,536,504	308,745,538
2015	17,119	92,643	11,599,932	319,507,044
2020	17,113	93,825	11,815,827	332,559,851
AAGR 2000-2010	0.02%	0.18%	0.16%	0.93%
AAGR 2010-2015	-0.18%	0.01%	0.11%	0.69%
AAGR 2015-2020	-0.01%	0.25%	0.37%	0.80%
Median Age				
2000	39.4	37.8	36.3	35.5
2010	40.9	40.9	38.7	37.1
2015	41.3	41.6	39.3	37.5
2020	41.6	42.4	39.8	38.2
AAGR 2000-2010	0.37%	0.80%	0.64%	0.44%
AAGR 2010-2015	0.19%	0.34%	0.28%	0.22%
AAGR 2015-2020	0.16%	0.35%	0.26%	0.35%
Average Household Income				
2000	$41,592	$43,545	$52,846	$56,675
2010	$52,038	$52,724	$63,908	$73,387
2015	$56,435	$56,784	$67,386	$76,502
2020	$65,604	$65,480	$77,942	$87,705
AAGR 2000-2010	2.27%	1.93%	1.92%	2.62%
AAGR 2010-2015	1.64%	1.49%	1.07%	0.83%
AAGR 2015-2020	3.06%	2.89%	2.95%	2.77%
Median Household Income				
2000	$32,594	$35,509	$41,066	$42,257
2010	$40,001	$41,930	$46,454	$51,362
2015	$43,433	$46,276	$49,573	$53,423
2020	$52,310	$53,991	$58,247	$62,096
AAGR 2000-2010	2.07%	1.68%	1.24%	1.97%
AAGR 2010-2015	1.66%	1.99%	1.31%	0.79%
AAGR 2015-2020	3.79%	3.13%	3.28%	3.05%
Per Capita Income				
2000	$17,755	$17,077	$20,694	$21,242
2010	$22,104	$21,217	$25,819	$28,088
2015	$23,918	$22,790	$27,192	$29,272
2020	$27,839	$26,420	$31,570	$33,657
AAGR 2000-2010	2.22%	2.19%	2.24%	2.83%
AAGR 2010-2015	1.59%	1.44%	1.04%	0.83%
AAGR 2015-2020	3.08%	3.00%	3.03%	2.83%
Source: Alteryx, Inc.				

According to the Economic Development & Finance Alliance of Tuscarawas County, leading employers in the county include those listed below. Figure 2-3 presents a graph depicting the historical unemployment rates for the county, state, and nation. During the economic recession of the late 2000s, the county experienced high unemployment levels, but has since recovered to an unemployment rate that is similar to that of the state and nation. This information not only illustrates the ability of individuals to afford aviation services, but also the business growth that has occurred in recent years in Tuscarawas County and the important role an airport can play in encouraging that growth.

- Alamo Group / Gradall Industries (manufacturing)
- Allied Machine & Engineering (manufacturing)
- Arizona Chemical (manufacturing)
- Dover Chemical (manufacturing)
- Dover City Schools (government / education)
- Lauren International (manufacturing / research and development)
- Marlite, Inc. (manufacturing)
- New Philadelphia City Schools (government / education)
- Schlumberger North America (energy)
- Union Hospital (health services)
- Walmart (retail)
- Zimmer Orthopedic (manufacturing)

Figure 2-3
Historical Unemployment Rates (2000-2015)



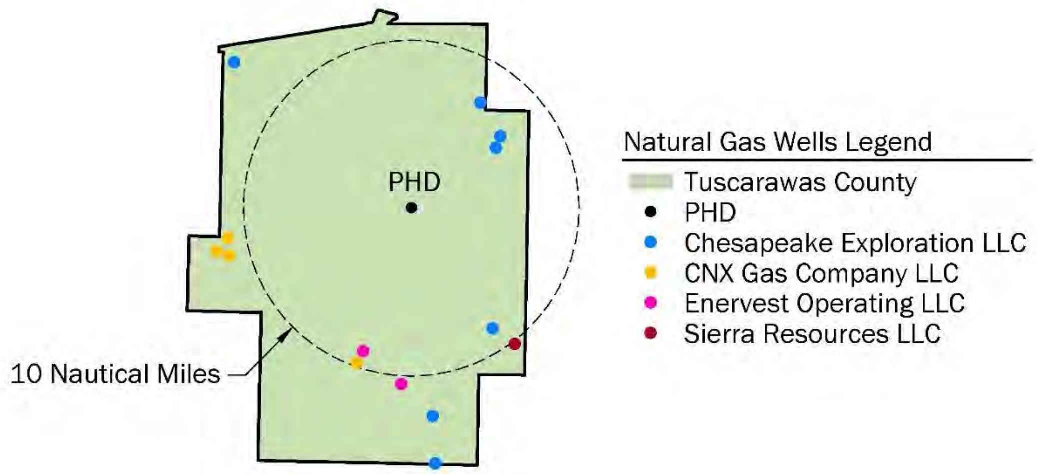
Sources: U.S. Bureau of Labor Statistics and Michael Baker International, Inc., 2015.

2.3.2 Other Local Factors

According to the U.S. Energy Information Administration Annual Outlook 2015 with Projections to 2040, Lower 48 shale natural gas production is projected to grow from 11.3 trillion cubic feet (Tcf) in 2013 to 19.6 Tcf by 2040, which represents an average annual increase of 2.06 percent over the course of the 27-year period. As shown in **Figure 2-4**, several Utica Shale permits have been issued in Tuscarawas County to different companies. This type of activity often generates aviation activity for both personnel transport and reconnaissance, particularly at airports in states like Ohio, Pennsylvania, West Virginia, and New York where natural gas reserves are located. Not only is there a noticeable increase in the mining of natural gas in these areas, but additional jobs are often created by businesses that support that activity.

Although Tuscarawas County has not experienced a large amount of growth from this activity, there may be a potential for the area to benefit from it during the forecast period.

Figure 2-4
Utica Shale Permits in Tuscarawas County (as of December 2015)



Sources: Ohio Department of Natural Resources and Michael Baker International, Inc., 2015.

2.3.3 FAA Next Generation Air Transportation System (NextGen)

NextGen includes a series of improvements to the national aviation system that are intended to make air travel more safe, convenient, and dependable. By investing in new technologies and replacing aging systems, NextGen initiatives are focused on improving schedule predictability, reducing environmental impacts, flying more direct routes, limiting ground holding, better circumventing poor weather, providing better approaches and access to airports, and improving safety for accident avoidance. The FAA's investment in NextGen initiatives should help to improve access and approach capability for airports around the U.S. At many general aviation airports, the benefits of NextGen technologies are becoming more and more apparent with the rollout of Localizer Performance with Vertical Guidance (LPV) approaches that provide horizontal and vertical course guidance to aircraft via Global Positioning System (GPS). Through the recommendations of this study and the FAA's ongoing NextGen initiatives, it is anticipated that PHD will continue to become more accessible for instrument flight operations.

2.4 Based Aircraft Forecasts

The total based aircraft forecast was developed by reviewing growth rates from various sources and applying them to the 2015 baseline number of 44 based aircraft at PHD. As shown in **Table 2-4** and **Figure 2-5**, five separate growth rates were reviewed for PHD that were obtained from the following local, state, and national trend data:

- **BA-1** – The growth rate for Based Aircraft Forecast 1 (BA-1) was obtained from the FAA's 2014 Terminal Area Forecast (TAF) for PHD. Each year, the FAA develops a TAF for airports that is used to determine long-term budgeting and staffing needs for the national aviation system.

- **BA-2** – This growth rate was obtained from the OH Focus Study and was based on population growth forecast.
- **BA-3 –** Based on the previously identified growth rate for natural gas production.
- **BA-4** – Assumes that PHD will have as many based aircraft as it did in 2003 by 2035 (51 based aircraft).
- **BA-5 –** Based on the projected population growth rate for Tuscarawas County between 2015 and 2020.

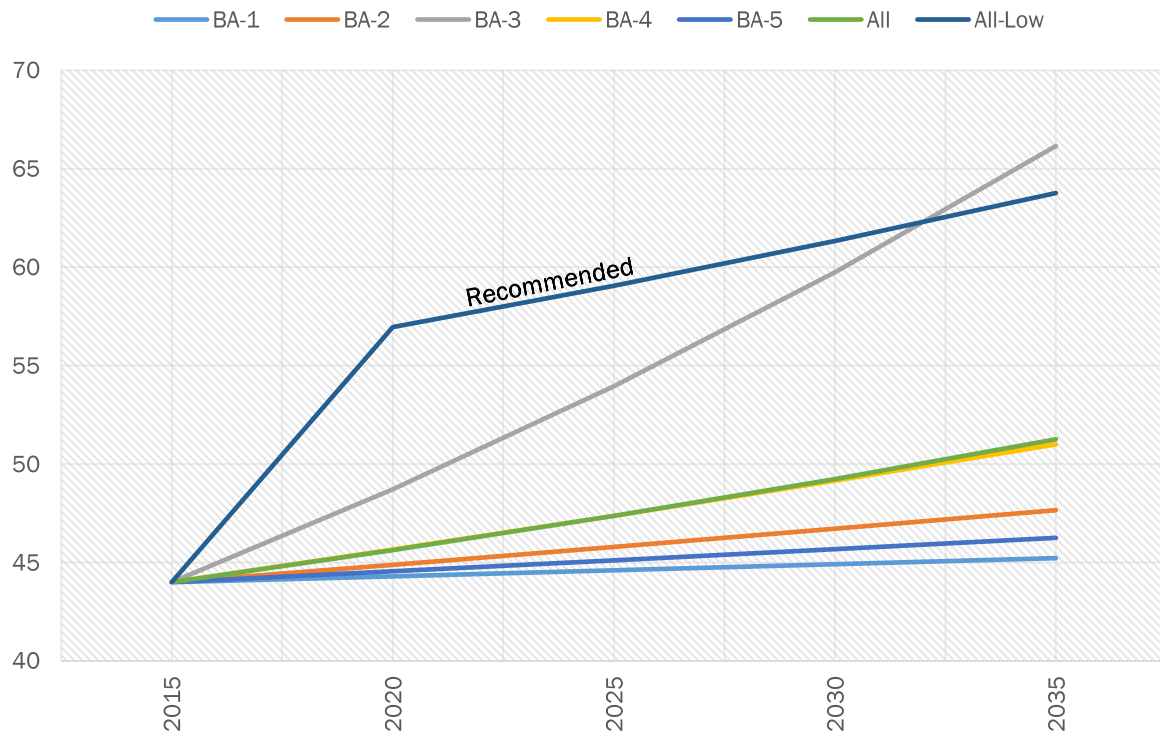
An average of all five based aircraft forecasts was calculated as well as an average without the lowest overall forecast (BA-1). Because the forecasts apply various local, state, and national growth trends, it was determined that an average forecast would portray a realistic growth scenario for PHD that was inclusive of multiple trends. However, because BA-1 only accounted for one additional based aircraft over the 20-year period, the recommended forecast for this planning effort was selected as the average of all forecasts except for BA-1. However, during the course of the planning process, it was determined that a new medical flight organization was planning to relocate to PHD in 2016 with one based helicopter and there was also a potential for 10 additional aircraft to base at PHD after a 10-unit T-hangar is constructed in 2017. The airport has a waiting list with at least 10 aircraft owners looking for space, and therefore, it was assumed that such a new T-hangar could be filled immediately following construction. Consequently, the recommended forecast was adjusted to reflect those anticipated increases and results in based aircraft increasing from 44 in 2015 to 64 by 2035. This adjustment was only applied to the recommended forecast and not to the other forecasts. The based aircraft forecast by aircraft type is presented in **Table 2-5**. For an airport such as PHD, it is difficult to determine the future based aircraft mix without known demands. Therefore, the identified future mix represents a cross section of what an airport such as PHD would likely accommodate based on its design, location, available facilities, and capabilities.

Table 2-4
Based Aircraft Forecasts (2015-2035)

Year	BA-1	BA-2	BA-3	BA-4	BA-5	Average (All)	Average (Without BA-1)
2015	44	44	44	44	44	44	44
2020	44	45	49	46	45	46	57
2025	45	46	54	47	45	47	59
2030	45	47	60	49	46	49	61
2035	45	48	66	51	46	51	64
AAGR 2015-2035	0.14%	0.40%	2.06%	0.74%	0.25%	0.77%	1.87%
Recommended	**No**	**No**	**No**	**No**	**No**	**No**	**Yes**

Source: Michael Baker International Inc., 2015.
Note: The Average (Without BA-1) forecast was adjusted to account for the based aircraft growth that is expected immediately following the construction of a new T-hangar. This adjustment was not applied to the other forecasts.

Figure 2-5
Based Aircraft Forecasts (2015-2035)



Source: Michael Baker International Inc., 2015.
Note: The Average (Without BA-1) forecast was adjusted to account for the based aircraft growth that is expected immediately following the construction of a new T-hangar. This adjustment was not applied to the other forecasts.

Table 2-5
Based Aircraft by Type Forecast (2015-2035)

Year	Total	SEP	MEP	Turboprop	Jet	Helicopter
2015	44	44	0	0	0	0
2020	57	54	1	1	0	1
2025	59	54	2	1	0	2
2030	61	56	2	1	0	2
2035	64	59	2	1	0	2
2015-2035	1.87%	1.46%	N/A	N/A	N/A	N/A

Source: Michael Baker International, Inc., 2015.
Note: Numbers may not add correctly due to rounding.

2.5 Operations Forecasts

Similar to the based aircraft forecasts, the operations forecast was developed by reviewing growth rates from various sources and applying them to the 2015 baseline number of 16,650 operations at PHD. As shown in **Table 2-6** and **Figure 2-6**, five separate growth rates were reviewed for PHD that were obtained from the following local, state, and national trend data:

- **OP-1** – The growth rate for Operations Forecast 1 (OP-1) was obtained from the OH Focus Study and was based on an Operations Per Based Aircraft (OPBA) ratio.

- **OP-2** – This growth rate was obtained from the OH Focus Study and was based on an FAA forecast for general aviation hours flown.
- **OP-3 –** Based on the projected population growth rate for Tuscarawas County between 2015 and 2020.
- **OP-4** – Obtained from the 2014 TAF for PHD.
- **OP-5 –** Assumes that PHD will have as many operations as it did in 2003 by 2035 (20,000 operations).
- **OP-6 –** Based on the previously identified growth rate for natural gas production.

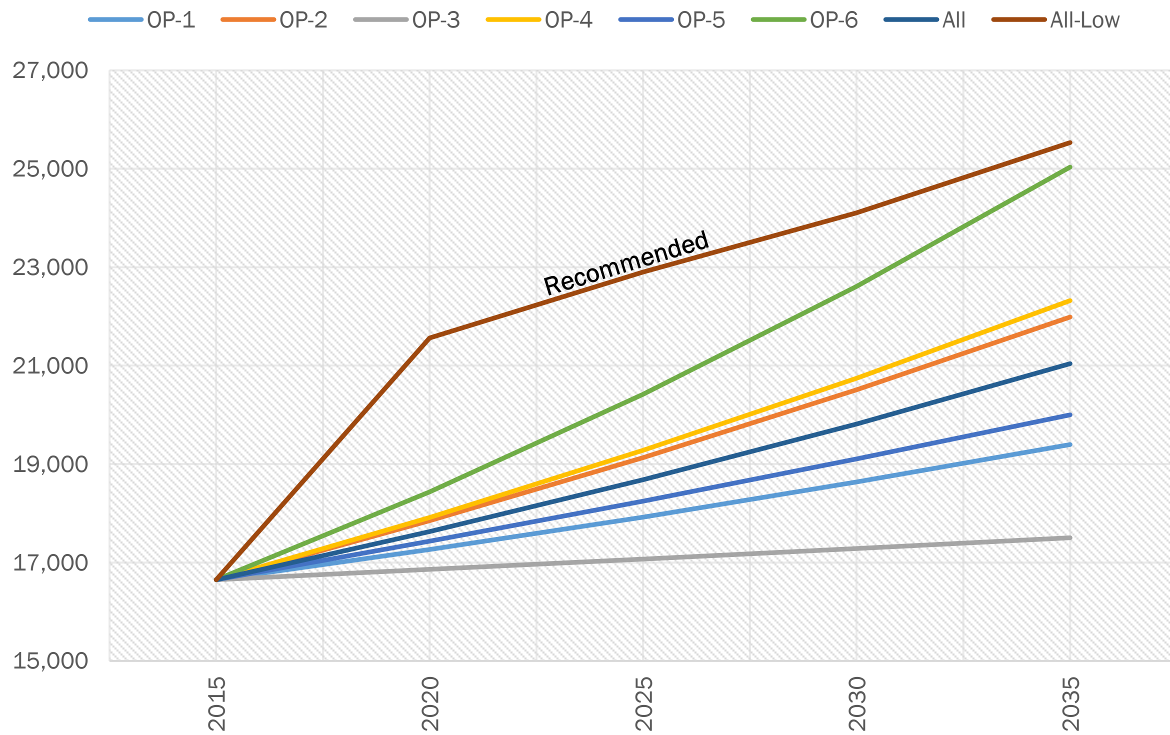
An average of all five operations forecasts was calculated as well as an average without the lowest overall forecast (OP-3). Because the forecasts apply various local, state, and national growth trends, it was determined that an average forecast would portray a realistic growth scenario that was inclusive of multiple trends. However, because OP-3 only accounted for limited growth (i.e., an annual growth rate of 0.25 percent), the recommended forecast for this planning effort was selected as the average of all forecasts except for OP-3. This was considered an outlier because it produced significantly lower growth than the other forecasts and was therefore excluded from the average. In order to account for the additional operations associated with the new based aircraft in 2016 and 2017 (i.e., one medical flight helicopter and 10 new T-hangar tenants), adjustments were made to the recommended operations forecasts in those years using typical OPBA ratios. This resulted in operations increasing from 16,650 in 2015 to 25,532 by 2035. The operations forecast by aircraft type is presented in **Table 2-7**. The forecast in operations for turboprops, jets, and helicopters was calculated using projected growth rates from the FAA Aerospace Forecast Fiscal Years 2015-2035 for general aviation hours flown, whereas the forecast for piston-powered operations was calculated based on their current share of total annual operations. **Table 2-8** includes the forecast of itinerant and local operations. The share of itinerant operations was increased at the anticipated growth for IFR general aviation aircraft handled at en route traffic control centers from the FAA Aerospace Forecast, which increases the itinerant share from 15.92 percent of operations in 2015 to 18.67 percent by 2035.

Table 2-6
Annual Operations Forecasts (2015-2035)

Year	OP-1	OP-2	OP-3	OP-4	OP-5	OP-6	Average (All)	Average (Without OP-3)
2015	16,650	16,650	16,650	16,650	16,650	16,650	16,650	16,650
2020	17,264	17,849	16,859	17,916	17,431	18,437	17,626	21,563
2025	17,924	19,133	17,071	19,278	18,248	20,416	18,678	22,904
2030	18,633	20,511	17,285	20,744	19,104	22,607	19,814	24,104
2035	19,396	21,987	17,503	22,321	20,000	25,034	21,040	25,532
AAGR 2015-2035	0.77%	1.40%	0.25%	1.48%	0.92%	2.06%	1.18%	2.16%
Recommended	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**Yes**

Source: Michael Baker International, Inc., 2015.
Note: The Average (Without OP-3) forecast was adjusted to account for the operational growth that is expected immediately following the construction of a new T-hangar. This adjustment was not applied to the other forecasts.

Figure 2-6
Annual Operations Forecasts (2015-2035)



Source: Michael Baker International Inc., 2015.
Note: The Average (Without OP-3) forecast was adjusted to account for the operational growth that is expected immediately following the construction of a new T-hangar. This adjustment was not applied to the other forecasts.

Table 2-7
Operations by Aircraft Type Forecast (2015-2035)

Year	Total	SEP	MEP	Turboprop	Jet	Helicopter
2015	16,650	15,238	1,147	77	22	167
2020	21,563	19,535	1,470	204	26	328
2025	22,904	20,600	1,551	222	31	500
2030	24,104	21,618	1,627	241	37	580
2035	25,532	22,834	1,719	262	45	672
2015-2035	2.16%	2.04%	2.04%	6.32%	3.60%	7.23%

Source: Michael Baker International, Inc., 2015.
Note: Numbers may not add correctly due to rounding.

Table 2-8 Itinerant & Local Operations Forecast					
Year	Total	Itinerant	% Itinerant	Local	% Local
2015	16,650	2,650	15.92%	14,000	84.08%
2020	21,563	3,572	16.56%	17,992	83.44%
2025	22,904	3,948	17.24%	18,956	82.76%
2030	24,104	4,323	17.94%	19,781	82.06%
2035	25,532	4,766	18.67%	20,766	81.33%
2015-2035	2.16%	2.98%	0.80%	1.99%	-0.17%
Source: Michael Baker International, Inc., 2015. Note: Numbers may not add correctly due to rounding.					

2.6 Instrument Operations Forecast

According to the FAA report, Forecasting Aviation Activity by Airport, instrument operations consist of "arrivals, departures, and overflights conducted by an FAA approach control facility for aircraft with an Instrument Flight Rule (IFR) flight plan or special Visual Flight Rule (VFR) procedures." At PHD, IFR operations generally consist of approaches and departures by aircraft filing flight plans with the FAA, which included a total of 773 operations in 2015 or 4.64 percent of all operations (refer to **Table 2-9**). For this forecasting effort, it was assumed that the percentage of instrument operations would increase at an average annual growth rate of 0.80 percent per year in accordance with the FAA's forecast of IFR general aviation aircraft at en route traffic control centers from the FAA Aerospace Forecast. As shown in Table 2-9, this forecast results in instrument operations increasing from 773 operations in 2015 to 1,390 operations by 2035. It is anticipated that this forecast is consistent with the FAA's ongoing NextGen improvements that are being conducted to improve access to airports and efficiency within the nation's airspace system.

Table 2-9 Instrument Operations Forecast (2015-2035)			
Year	Total	Instrument	% Instrument
2015	16,650	773	4.64%
2020	21,563	1,042	4.83%
2025	22,904	1,152	5.03%
2030	24,104	1,261	5.23%
2035	25,532	1,390	5.44%
2015-2035	2.16%	2.98%	0.80%
Source: Michael Baker International, Inc., 2015. Note: Numbers may not add correctly due to rounding.			

2.7 Peak Activity Forecasts

Peak activity was calculated for various factors at PHD by reviewing historical flight plan activity records. Peaking forecasts are conducted so that airports can plan for times when the highest concentration of activity occurs. **Table 2-10** presents the peak activity forecasts for PHD and the methodology for each component is detailed below.

- **Average Peak Month (APM)** – Through a review of historical flight plan data from 2010 to 2014, the APM was calculated at 12.13 percent of annual flight plan activity.
- **Average Day Peak Month (ADPM)** – An average month contains 30.42 days (365 ÷ 12). The ADMP was calculated by dividing the APM by 30.42.
- **Average Day Peak Hour (ADPH)** – The ADPH at PHD can include a combination of touch-and-go training operations and itinerant activity and was estimated at 17.50 percent of the ADPM. The itinerant and local peak hours were calculated based on the percentages shown in Table 2-8.
- **Average Peak Hour Passengers** – This was calculated by multiplying the number of itinerant peak hour operations by four passengers. Because the local peak hour operations are mostly training and maintenance flights, they were not included in the passenger calculations.

Table 2-10
Peak Activity Forecasts (2015-2035)

Year	Total	Average Peak			Average Peak Hour		
		Month	Day	Hour	Itinerant	Local	Passengers
2015	16,650	2,020	66	12	2	10	7
2020	21,563	2,616	86	15	2	13	10
2025	22,904	2,778	91	16	3	13	11
2030	24,104	2,924	96	17	3	14	12
2035	25,532	3,097	102	18	3	14	13
2015-2035	2.16%	2.16%	2.16%	2.16%	2.98%	1.99%	2.98%

Source: Michael Baker International, Inc., 2015.
Note: Numbers may not add correctly due to rounding.

2.8 Identification of Critical Aircraft

FAA Advisory Circular (AC) 150/5000-17, Critical Aircraft and Regular Use Determination, "provides guidance on the use of critical aircraft in the conduct of facility planning studies for federally obligated airports" and also defines the term regular use. The AC defines the critical aircraft as "the most demanding aircraft type, or grouping of aircraft with similar characteristics, that make regular use of the airport. Regular use is 500 operations, excluding touch-and-go operations. An operation is either a takeoff or landing." The existing critical aircraft must be identified based on documented aeronautical activity, typically for the most recent 12-month period that is available. The future critical aircraft is based on an FAA-approved forecast and any change to the existing critical aircraft must be supported by a credible forecast. Following the review of this forecasting effort, the existing and future critical aircraft were determined in conjunction with the Technical Advisory Committee (TAC) and the City of New Philadelphia and are identified as part of the facility requirements.

2.9 Forecast Summary

Table 2-11 presents a summary of the forecasts for PHD. According to the FAA's June 2008 Review and Approval of Aviation Forecasts guidance, total operations and based aircraft forecasts are considered consistent with the TAF if they differ by less than 10 percent in the five-year forecast period and 15 percent in the 10-year forecast period. At the time, the numbers in the TAF did not accurately reflect the actual number of operations and based aircraft at PHD (which were identified as part of this Master Plan Update). Therefore, the forecasts herein were considered acceptable for long-term planning purposes and the comparisons to the TAF (as shown in red in the table) were provided for FAA evaluation purposes only. Overall, the forecasts were developed in order to allow the airport to plan for facility improvements that are typical of an airport such as PHD, if and when they may be needed in the future.

Table 2-11
Forecast Summary

Harry Clever Field Airport, New Philadelphia, Ohio
Base Year: 2015

							Average Annual Compound Growth Rates				
	Base Yr. Level	Base Yr. + 1Yr.	Base Yr. + 5Yrs.	Base Yr. + 10Yrs.	Base Yr. + 15Yrs.	Base Yr. + 20Yrs.	Base Yr. to +1	Base Yr. to +5	Base Yr. to +10	Base Yr. to +15	Base Yr. to +20
	2015	2016	2020	2025	2030	2035	2016	2020	2025	2030	2035
Itinerant and Local Operations											
Itinerant Operations	2,650	2,726	3,572	3,948	4,323	4,766	2.85%	6.15%	4.07%	3.32%	2.98%
Itinerant %	15.92%	16.04%	16.56%	17.24%	17.94%	18.67%	0.80%	0.80%	0.80%	0.80%	0.80%
Local Operations	14,000	14,263	17,992	18,956	19,781	20,766	1.88%	5.15%	3.08%	2.33%	1.99%
Local %	84.08%	83.96%	83.44%	82.76%	82.06%	81.33%	-0.15%	-0.15%	-0.16%	-0.16%	-0.17%
Total Operations	**16,650**	**16,989**	**21,563**	**22,904**	**24,104**	**25,532**	**2.04%**	**5.31%**	**3.24%**	**2.50%**	**2.16%**
2014 TAF Operations	**56,674**	**57,571**	**61,169**	**65,744**	**70,665**	**75,978**	**1.58%**	**1.54%**	**1.50%**	**1.48%**	**1.48%**
Difference from TAF	-70.62%	-70.49%	-64.75%	-65.16%	-65.89%	-66.40%					
Operations by Aircraft Type and Critical Aircraft											
Single-Engine Piston	15,238	15,435	19,535	20,600	21,618	22,834	1.29%	5.09%	3.06%	2.36%	2.04%
Multi-Engine Piston	1,147	1,162	1,470	1,551	1,627	1,719	1.29%	5.09%	3.06%	2.36%	2.04%
Turboprop	77	78	204	222	241	262	1.70%	21.49%	11.15%	7.91%	6.32%
Jet	22	23	26	31	37	45	3.60%	3.60%	3.60%	3.60%	3.60%
Rotorcraft	167	291	328	500	580	672	75.07%	14.53%	11.63%	8.68%	7.23%
IFR Operations											
IFR Operations	773	795	1,042	1,152	1,261	1,390	2.85%	6.15%	4.07%	3.32%	2.98%
IFR %	4.64%	4.68%	4.83%	5.03%	5.23%	5.44%	0.80%	0.80%	0.80%	0.80%	0.80%
Peak Operations											
Average Peak Month (APM)	2,020	2,061	2,616	2,778	2,924	3,097	2.04%	5.31%	3.24%	2.50%	2.16%
Average Day Peak Month (ADPM)	66	68	86	91	96	102	2.04%	5.31%	3.24%	2.50%	2.16%
Itinerant Peak Hour	2	2	2	3	3	3	2.85%	6.15%	4.07%	3.32%	2.98%
Local Peak Hour	10	10	13	13	14	14	1.88%	5.15%	3.08%	2.33%	1.99%
Based Aircraft											
Single-Engine Piston	44	44	54	54	56	59	0.86%	4.16%	2.08%	1.66%	1.46%
Multi-Engine Piston	0	0	1	2	2	2	N/A	N/A	N/A	N/A	N/A
Turboprop	0	0	1	1	1	1	N/A	N/A	N/A	N/A	N/A
Jet	0	0	0	0	0	0	N/A	N/A	N/A	N/A	N/A
Rotorcraft	0	1	1	2	2	2	N/A	N/A	N/A	N/A	N/A
Total Based Aircraft	**44**	**45**	**57**	**59**	**61**	**64**	**3.14%**	**5.30%**	**2.99%**	**2.24%**	**1.87%**
2014 TAF Based Aircraft	**36**	**36**	**37**	**37**	**37**	**37**	**0.00%**	**0.55%**	**0.27%**	**0.18%**	**0.14%**
Difference from TAF / 2012 Baseline	22.22%	26.05%	53.93%	59.61%	65.74%	72.34%					
Operational Factors											
Total Ops Per Based Aircraft	378	374	379	388	393	400	-1.07%	0.01%	0.25%	0.25%	0.28%
Local Ops Per Based Aircraft	318	314	316	321	323	326	-1.22%	-0.14%	0.09%	0.09%	0.12%

Source: Michael Baker International, Inc., 2015.
Note: Numbers may not add correctly due to rounding.

3.0 Facility Requirements

The facility requirements include an assessment of both the aviation and non-aviation components of the Harry Clever Field Airport (PHD) including the runways and taxiways, aircraft storage facilities, and supporting infrastructure (e.g., roadways and parking). The airport provides various opportunities for general aviation activity, is part of the Federal Aviation Administration's (FAA's) National Plan of Integrated Airport Systems (NPIAS), and must therefore comply with FAA design standards. The facilities that would be needed to meet the FAA-approved forecasts of aviation demand are also identified in this chapter. The goal was to identify improvements that would be needed over the course of the 20-year planning period that extends from 2015 to 2035. An analysis of the following airport components is presented herein:

- Technical Advisory Committee (TAC) Meeting 1
- Identification of Critical Aircraft
- Runway Justification Requirements
- Airfield Capacity
- Wind Analysis
- 2014 Ohio Airports Focus Study
- Runway Length Analysis
- Runway Strength Analysis
- Airfield Design Standards Analysis
- Other Airfield Considerations
- Airfield Lighting, Markings, Signage, and Navigational Aids
- Transient Apron and Based Aircraft Storage
- Airport Support Facilities
- Land Acquisition Requirements
- Airport Security Analysis
- Summary

3.1 Technical Advisory Committee (TAC) Meeting 1

During the first TAC meeting on January 21, 2016, a Strengths, Weaknesses, Opportunities, and Threats (SWOT) exercise was conducted to obtain the TAC's perspectives on what the short-term and long-term potential is for PHD and what types of unique opportunities should be explored as part of the Master Plan Update. The TAC members were split into two groups to produce a list of items that should be considered for PHD. When the groups returned, the following discussion occurred:

- Weaknesses include the short runway length, the loss of two major tenants (Schwab Industries and Lauren International), the loss of MedFlight, lack of rental cars and adequate public transportation (bus, taxi, etc.), the airport location, use of the frontage property along East High Avenue, the surrounding cemeteries, and that a portion of the paved runway is on property leased from the state. The TAC felt that a business plan should be conducted to determine methods and policies to retain tenants and to further plan for the future growth of PHD.

- Strengths include the strong city support for the airport and its importance as a site for continued economic development opportunities, the potential to build a relationship with Kent State University (particularly with the university's expanding Tuscarawas Campus and Aeronautics Program), the strong Fixed Base Operator (FBO), the land that may be available for future development and/or redevelopment, the Experimental Aircraft Association (EAA), and the restaurant.
- Businesses that may benefit from PHD include The Timken Company, Gradall Industries, Freeport Press, Kimble Manufacturing Company, Lauren International, Menards, and Chevron.
- Local events/attractions that bring visitors to New Philadelphia include the Christian Music Festival, Historic Schoenbrunn Village, the Performing Arts Center at Kent State University at Tuscarawas, and the Pro Football Hall of Fame in Canton.
- Major projects at the Pro Football Hall of Fame, Kent State University at Tuscarawas, and for Menards will create additional jobs, population, etc. within the local area and may induce growth in activity, based aircraft, and development at PHD.
- Threats include the loss of previous corporate tenants, declining oil prices, ability to obtain public consensus for the Master Plan Update, and the potential for changes in state and FAA funding levels.
- Some 'niche' opportunities were discussed for PHD such as the potential to be a site for drones if acceptable to the public, city, state, and FAA. The possibility for a 'fly and bike' concept was also discussed, whereby bike rentals would be available for visiting nearby trails and attractions.

This chapter builds upon the discussions that occurred during the first TAC meeting and identifies what is required to meet the short-term and long-term aviation demands for PHD. There were also discussions about the cemeteries surrounding the airport (East Avenue Cemetery, Evergreen Burial Park, and Cavalry Cemetery) and the potential to utilize a portion of the airport property for future burial plots. The cemeteries are nearing capacity and there is a demand to provide future burial plots due to the historic nature of the area. The potential to utilize a portion of the airport property for that purpose is addressed within this chapter.

3.2 Identification of Critical Aircraft

As mentioned in the forecast chapter, AC 150/5000-17, Critical Aircraft and Regular Use Determination, "defines the critical aircraft as "the most demanding aircraft type, or grouping of aircraft with similar characteristics, that make regular use of the airport. Regular use is 500 operations, excluding touch-and-go operations. An operation is either a takeoff or landing." The existing critical aircraft must be identified based on documented aeronautical activity, typically for the most recent 12-month period that is available. The future critical aircraft is based on an FAA-approved forecast and any change to the existing critical aircraft must be supported by a credible forecast.

During the first TAC meeting, the forecasts of aviation demand were presented which indicated that total operations will increase from 16,650 in 2015 to 25,532 by 2035. The most demanding aircraft type that currently and is forecast to conduct 500 or more operations is a multi-engine piston such as the Beechcraft Baron 58. Multi-engine piston operations are forecast to increase from 1,147 in 2015 to 1,719 by 2035. FAA airfield design criteria (e.g., required separations and safety area dimensions) is determined based on the approach speed and wingspan of the identified critical aircraft. As shown in **Table 3-1**, each runway is assigned a Runway Design Code (RDC) that is a function of the critical aircraft's Aircraft Approach Category (AAC) or approach speed in knots and Airplane Design Group (ADG) or wingspan in feet. The Beechcraft Baron 58 has an RDC of B-I and is a small aircraft because it has a Maximum Takeoff Weight (MTOW) that 12,500 pounds or less. Therefore, RDC B-I (small aircraft) design standards were reviewed for both runways at PHD.

It is noted that the 2004 Master Plan Update for PHD identified an RDC of B-II for Runway 14-32 and recommendations that included changing the orientation of the runway, conducting property acquisition around the airport, and removing grave sites. Today, the existing and forecast activity at PHD no longer justifies conducting those actions and the position of the city and TAC is to maintain Runway 14-32 for small aircraft and to correct any non-standard airfield conditions associated with an RDC of B-I (small aircraft).

Table 3-1
Runway Design Code (RDC) and Critical Aircraft

Aircraft Approach Category (AAC)		Airplane Design Group (ADG)		
Category	**Approach Speed (Knots)**	**Group**	**Tail Height (Feet)**	**Wingspan (Feet)**
A	<91	I	<20	<49
B	91 to <121	II	20 to <30	49 to <79
C	121 to <141	III	30 to <45	79 to <118
D	141 to <166	IV	45 to <60	118 to <171
E	>166	V	60 to <66	171 to <214
		VI	66 to <80	214 to <262

Critical Aircraft	Beechcraft Baron 58
Aircraft Type	Twin-Engine Piston
Aircraft Approach Category/Approach Speed	B / 96 Knots
Airplane Design Group/Wingspan	I / 37 Feet 10 Inches
Runway Design Code (RDC)	RDC B-I (Small Aircraft)
Tail Height	9.9 Feet
Taxiway Design Group (TDG)	TDG-1A
Max Takeoff Weight (MTOW)	5,500 Pounds
Max Landing Weight (MLW)	5,400 Pounds
Max Passengers	6

Sources: FAA AC 150/5300-13A, Airport Design, Aircraft Performance Manual, and Michael Baker International, Inc., 2016.

3.3 Runway Justification Requirements

The need for additional runways is primarily based on two factors--airfield capacity and wind coverage. FAA Order 5100.38D, Airport Improvement Program (AIP) Handbook, identifies what types of projects are eligible for AIP funding and contains the policy below for the justification of runways. As explained in this chapter, because Runway 14-32 alone provides sufficient wind coverage and airfield capacity for the aircraft operating at PHD, the FAA would fund any improvements to the turf runway (Runway 11-29). Turf runways require occasional maintenance to correct bumps, ruts, and other issues. Both the 2004 Master Plan Update and the 2013 Airport Layout Plan (ALP) Update illustrated the closure of the turf runway in the future. However, during the TAC meeting on May 4, 2016, several members of the TAC indicated that the turf runway is popular, attracts niche flyers, is in good condition, and requires minimal maintenance. Therefore, unlike previous studies, this Master Plan Update is showing preservation of the turf runway throughout the duration of the planning period.

FAA Policy on Secondary, Crosswind, and Additional Runways (FAA Order 5100.38D)

Per FAA policy, the ADO [FAA Airports District Office) can only fund a single runway at an airport unless the ADO has made a specific determination that an additional runway is justified. The requirements, justification and eligibility for runways are listed in Table 3-7 [see below].

Before planning a project on a runway, the ADO must determine the type of runway (primary, secondary, or additional).

A runway that is not a primary runway, a secondary runway, or a crosswind runway is considered to be an additional runway. It is not unusual for a two-runway airport to have a primary runway and an additional runway, and no secondary or crosswind runway. That is because the ADO can only designate a runway as a secondary or crosswind runway if it meets the specific operating and justification parameters in Table 3-7.

Additional runways are not eligible. Any development such as marking, lighting, or maintenance projects on an additional runway is also ineligible.

Table 3-7 Runway Types and Eligibility

For the following runway type…	Must meet all of the following criteria…	And is…
a. Primary Runway	**(1)** A single runway at an airport is eligible for development consistent with FAA design and engineering standards.	Eligible
b. Crosswind Runway	**(1)** The wind coverage on the primary runway is less than 95%.	Eligible if justified
c. Secondary Runway	**(1)** There is more than one runway at the airport. **(2)** The non-primary runway is not a crosswind runway. **(3)** Either of the following: **(a)** The primary runway is operating at 60% or more of its annual capacity, which is based on guidance developed by APP-400 as the threshold for considering when to plan a new runway, or **(b)** APP-400 has made a specific determination that the runway is required for operation of the airfield.	Eligible if justified.
d. Additional Runway	**(1)** There is more than one runway on the airport. **(2)** The ADO has determined that the nonprimary runway does not meet the requirements to be designated a crosswind runway. **(3)** The ADO has determined that the nonprimary runway does not meet the requirements to be designated a secondary runway.	Ineligible.

3.4 Airfield Capacity

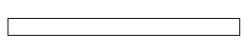
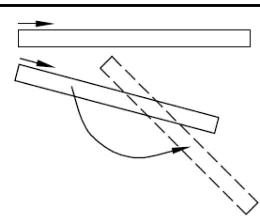
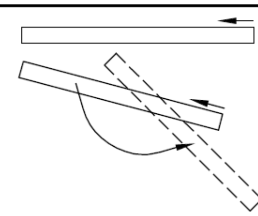
The FAA defines airfield capacity as an estimate of aircraft that can be processed through the airfield system during a specific period with acceptable levels of delay. This section evaluates whether the existing airfield configuration of PHD is capable of accommodating forecast levels of demand during the planning period. Estimates of airfield capacity were developed in accordance with the methods presented in FAA AC 150/5060-5, Airport Capacity and Delay (Capacity AC). This methodology does not account for every possible situation at an airport, but rather the most common situations observed at U.S. airports when the Capacity AC was adopted. The Capacity AC provides a methodology for determining the hourly capacity, Annual Service Volume (ASV), and aircraft delay, which are defined below. Each of these factors was calculated for existing conditions and for the last year of the planning period at PHD. The results are used for planning purposes to determine if airfield improvements are needed.

- **Hourly Airfield Capacity** – An airport's hourly airfield capacity represents the maximum number of aircraft that can be accommodated under conditions of continuous demand during a one-hour period. Using peak hour forecasts, the hourly airfield capacity is determined for both Visual Flight Rules (VFR) and Instrument Flight Rules (IFR) activity.

- **Annual Service Volume (ASV)** – The ASV estimates the annual number of operations that the airfield configuration should be capable of handling with minimal delays. The ASV accounts for peaking characteristics in its calculation of 12-month demand as well as periods of low-volume activity.
- **Delay** – The average anticipated delay is based on a ratio of forecast demand to the calculated ASV. According to the Capacity AC, "as demand approaches capacity, individual aircraft delay is increased. Successive hourly demands exceeding the hourly capacity result in unacceptable delays."

FAA Order 5090.3C, Field Formulation of the National Plan of Integrated Airport Systems, states that Chapter 2 of the Capacity AC (Capacity and Delay Calculations for Long-Range Planning) should be used for most airports. As shown in **Figure 3-1**, three airfield configurations were reviewed as it pertains to the capacity assessment for PHD. The first one is a single runway configuration, which is most applicable to how aircraft operate on a regular basis at PHD. The other two runway configurations would only apply if both runways at PHD were utilized in a similar manner. Therefore, airfield capacity was only evaluated for Runway 14-32 because of the limited and specialty use of the turf runway (Runway 11-29). Based on the information in the Capacity AC, Runway 14-32 has an ASV of 230,000 operations, a VFR hourly capacity of 98 operations, and an IFR hourly capacity of 59 operations. **Table 3-2** presents the results of the airfield capacity calculations for Runway 14-32. By 2035, the number of annual operations is expected to reach 11.10 percent of ASV, VFR peak hour operations may reach 14.29 percent of capacity, and IFR peak hour operations may reach 5.08 percent of capacity. Those percentages are too low to warrant any capacity-enhancing improvements for Runway 14-32.

Figure 3-1
Runway Use Configurations

Runway Use Configuration 9	Runway Use Configuration 14	Runway Use Configuration 15
		
VFR - 98 IFR - 59 ASV - 230,000	VFR - 150 IFR - 59 ASV - 270,000	VFR - 132 IFR - 59 ASV - 260,000

Source: FAA AC 150/5060-5, Airport Capacity and Delay.

Table 3-2
Runway 14-32 Airfield Capacity Calculations

Year	Annual		Hourly			
	Operations	% ASV (230,000)	VFR Peak Hour	% VFR Capacity (98)	IFR Peak Hour	% IFR Capacity (59)
2015	16,650	7.24%	10	10.20%	2	3.39%
2035	25,532	11.10%	14	14.29%	3	5.08%
Source: Michael Baker International, Inc., 2016.						

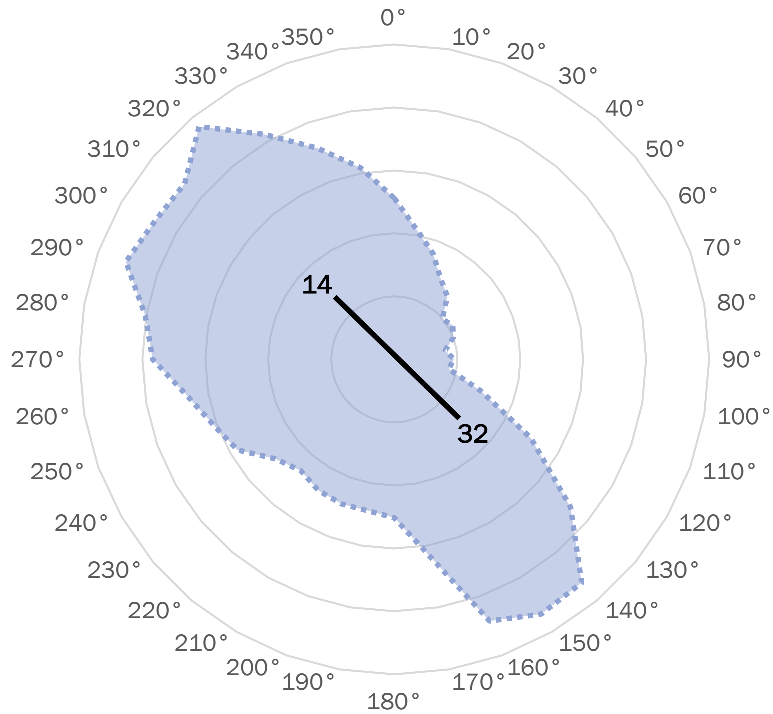
3.5 Wind Analysis

According to FAA AC 150/5300-13A, Airport Design, a crosswind runway is recommended when the primary runway orientation provides less than 95 percent wind coverage. It is important for aircraft to takeoff and land into the wind and runways should be oriented to provide the maximum wind coverage for operations. At PHD, Runway 14-32 provides greater than 95 percent wind coverage under the 10.5 knot crosswind component for an RDC of B-I (small aircraft). Therefore, no additional runways are needed to provide crosswind coverage at the airport nor would the FAA be likely to fund improvements to the turf runway (Runway 11-29). The results of the wind coverage analysis are provided in **Table 3-3**. The historical wind records were obtained from the Automated Surface Observing System (ASOS) that is located at PHD. **Figure 3-2** illustrates the percentage of time all wind observations were coming from each direction (averaged during the period from 2006 to 2015), with each circle representing a one percent interval. As shown, Runway 14-32 is ideally oriented to accommodate takeoffs and landings into the wind the majority of the time at PHD.

Table 3-3
Wind Coverage Analysis (2006-2015)

Runway (True Bearing)	All Weather (10.5 Knots)	VFR (10.5 Knots)	IFR (10.5 Knots)
14-32 (139.29 / 319.30)	98.44%	98.28%	98.98%
11-29 (108.54 / 288.54)	98.39%	98.29%	98.72%
Combined	99.28%	99.20%	99.56%
Conditions	Ceiling = All Visibility = All 116,357 Observations	Ceiling ≥ 1,000’ Visibility ≥ 3 Miles 88,883 Observations	Ceiling < 1,000’ and ≥ 200’ Visibility < 3 Miles and ≥ ½-Mile 28,335 Observations
Source: Station 725224, New Philadelphia, Ohio (2006-2015).			

Figure 3-2
All Weather Wind Direction Analysis (2006-2015)



Source: Station 725224, New Philadelphia, Ohio (2006-2015).
Note: This graph illustrates the percentage of time all wind observations were coming from each direction from 2006 to 2015. The circles are shown in 1% intervals.

3.6 2014 Ohio Airports Focus Study

As described in the inventory chapter, the 2014 Ohio Airports Focus Study classifies airports in the State of Ohio and identifies specific facility requirements that are intended to prioritize key improvements in Ohio's airport system in an effort to promote safety, efficiency, and economic growth. The study identifies PHD as a Level 2 airport "that is intended to support smaller corporate aircraft, such as small jets and turboprop aircraft, and meet many, but not necessarily all, of their needs. This classification is intended to support a variety of uses (business, pleasure, and training)." For a Level 2 airport, the study identifies a minimum runway length requirement of 4,000 feet, GPS-based approach procedures with vertical guidance (i.e., LPV), standard Runway Safety Areas (RSAs), fully-controlled Runway Protection Zones (RPZs), fencing around the airfield, as well as other features that are currently available at PHD. The requirements of the 2014 Ohio Airports Focus Study were reviewed as part of this Master Plan Update and compared to the FAA procedures for determining facility requirements; however, because this planning effort identified an existing and future critical aircraft with an RDC of B-I (small aircraft), the study recommendations may not fully achieve the requirements of the 2014 Ohio Airports Focus Study particularly when it comes to runway length. This is primarily due to three factors: 1) the FAA guidelines may not justify the same requirements, 2) there are various sensitive land uses, historic sites, and other constraints that limit the ability to implement certain recommendations, and 3) the direction of the city and TAC at this time is to maintain the airport for small aircraft activity and to satisfy the associated FAA requirements.

3.7 Runway Length Analysis

Runway length requirements were evaluated in accordance with FAA AC 150/5325-4B, Runway Length Requirements for Airport Design (Runway Length AC). The Runway Length AC presents methodologies for determining runway length requirements by aircraft type. Multiple variables affect takeoff and landing length calculations including field elevation, average maximum temperature during the hottest month, runway conditions (e.g., wet runway), takeoff weight, and differences in runway end elevations. As previously shown in Table 1-5 and Figure 1-10, the average maximum temperature during the hottest month is 83.4° Fahrenheit and occurs in July. Aircraft takeoff performance is maximized at lower elevations and colder temperatures. The field elevation of PHD is 894.4 feet Above Mean Sea Level (AMSL) and runway length requirements were only calculated for Runway 14-32 because it is the only runway that is eligible for FAA funding at PHD. The turf runway (Runway 11-29) is used at the discretion of pilots and its current length of 1,907 feet is unlikely to be extended during the planning period.

The Runway Length AC contains various methodologies for determining recommended runway lengths that are based on the type of aircraft utilizing the runway (e.g., small aircraft with less or more than 10 passenger seats, corporate aircraft weighing more than 12,500 pounds but less than 60,000 pounds, and large aircraft weighing more than 60,000 pounds and regional jets). The category that is applicable to PHD is for small aircraft with less than 10 passenger seats. The Runway Length AC identifies two different runway length requirement curves for those airports based on the characteristics of the local area and the airport activity—the '95 Percent of Fleet Curve' and the '100 Percent of Fleet Curve.'

The **'95 Percent of Fleet Curve'** "applies to airports that are primarily intended to serve medium size population communities with a diversity of usage and a greater potential for increased aviation activities. Also included in this category are those airports that are primarily intended to serve low-activity locations, small population communities, and remote recreational activities. Their inclusion recognizes that these airports in many cases develop into airports with higher levels of aviation activity. **For PHD, the '95 Percent of Fleet Curve' runway length requirement is 3,200 feet.** The **'100 Percent of Fleet Curve'** is for an airport that "is primarily intended to serve communities on the fringe of a metropolitan area or a relatively large population remote from a metropolitan area." **For PHD, the '100 Percent of Fleet Curve' runway length requirement is 3,900 feet.**

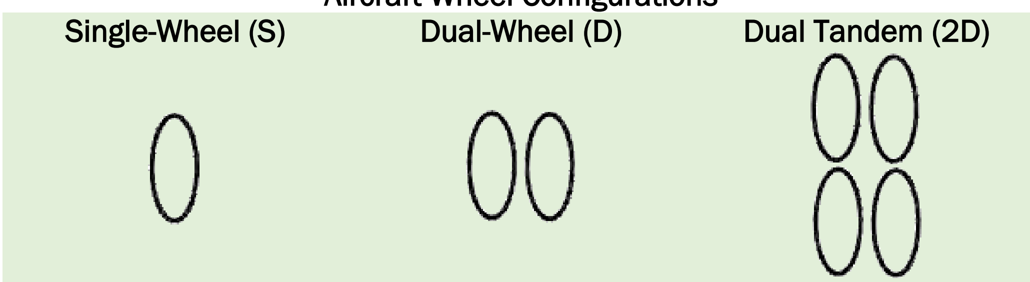
Based on the airport's classification in the 2014 Ohio Airports Focus Study, the diversity of aircraft activity, and the location in the City of New Philadelphia, the '100 Percent of Fleet Curve' and a runway length requirement of 3,900 feet are viewed as more appropriate for PHD. The 2014 Ohio Airports Focus Study conducted a comprehensive evaluation of every public airport in Ohio and determined that a similar runway length was appropriate for PHD to serve the community and statewide airport system. Therefore, a runway length of 3,900 feet is recommended for both takeoff and landing procedures at PHD, which is not currently provided for all operations in all directions on Runway 14-32 due to the 330-foot-long displaced threshold on the Runway 14 end that reduces the landing length on Runway 14 to

3,621 feet (as opposed to the full runway length of 3,951 feet). Other RSA and Runway Object Free Area (ROFA) issues need to be addressed beyond the ends of Runway 14-32, which may further reduce the available runway length if corrective projects cannot be conducted.

3.8 Runway Strength Analysis

One of the most important features of airfield pavement is its ability to withstand repeated use by the most weight-demanding aircraft operating at the airport. The current weight bearing capacity of Runway 14-32 is 52,500 pounds for aircraft with a single-wheel configuration, 67,500 pounds for aircraft with a dual-wheel configuration, and 140,000 pounds for aircraft with a dual tandem wheel configuration (refer to **Figure 3-3**). Therefore, the runway pavement strength is sufficient for the critical aircraft. The actual pavement strength requirements will be evaluated on a project-by-project basis as rehabilitation becomes necessary and is determined during the design phase through a review of recent and anticipated aircraft activity.

Figure 3-3
Aircraft Wheel Configurations



Source: FAA Order 5300.7, Standard Naming Convention for Aircraft Landing Gear Configurations.

3.9 Airfield Design Standards Analysis

The runways, taxiway and aircraft parking aprons at PHD were analyzed for compliance with FAA design standards and the ability to handle existing and forecast levels of demand. The FAA defines the requirements for airfield design standards in AC 150/5300-13A, Airport Design*.* These include numerous safety area and separation standards that must be followed to ensure that aircraft have adequate wingtip-to-wingtip clearances, overrun protection, and obstruction-free movement areas. **Tables 3-4** and **3-5** summarize the airfield design standards for existing conditions at PHD, with non-standard or non-preferential conditions identified in red. Although many of the airfield design standards are self-explanatory, important features such as the RSA, ROFA, and RPZ may require further definition. These important features are discussed below and illustrated in **Figure 3-4**.

- **Runway Safety Area (RSA)** – The RSA is a rectangular surface that is centered on the runway. The FAA dictates that RSAs shall be: “1) cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations; 2) drained by grading or storm sewers to prevent water accumulation; 3) capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and firefighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft; and 4) free of objects, except for objects that need to be located in the

RSA because of their function." As shown in Figure 3-4, the RSA beyond the west end of Runway 14-32 (Runway 14 end) extends outside the airport property over Delaware Drive Southeast and into East Avenue Cemetery. The RSA beyond the south end of Runway 11-29 (Runway 11 end) also extends over Delaware Drive Southeast and into Evergreen Burial Park. It will be necessary to provide resolutions for the non-standard RSAs at PHD in accordance with FAA Order 5200.8, Runway Safety Area Program. Alternatives may include the application of declared distances in order to publish what runway lengths are available for takeoff and landing calculations, threshold relocations, runway length reductions, and others to comply with FAA criteria. Furthermore, the RSA beyond the Runway 29 end extends over the Runway 14-32 RSA, which is often viewed as a non-preferential scenario. In such cases, the FAA may recommend that the portion of the RSA beyond the runway end be corrected so that it no longer overlaps the RSA of the other runway.

- **Runway Object Free Area (ROFA) –** The ROFA must be clear of ground objects protruding above the RSA edge elevation and is a rectangular surface that is centered on the runway. The ROFA is intended to "enhance the safety of aircraft operations by having the area free of objects, except for objects that need to be located in the ROFA for air navigation or aircraft ground maneuvering purposes." The ROFAs beyond the ends of Runways 11 and 14 are non-standard because they extend off the airport property and over roads and cemeteries. Opportunities for correcting those non-compliant ROFAs will also be explored as part of this Master Plan Update.

- **Runway Protection Zone (RPZ) –** The RPZs extend off the airport property beyond all four runway ends at PHD. "The RPZ's function is to enhance the protection of people and property on the ground. This is achieved through airport owner control over RPZs. Such control includes clearing RPZ areas (and maintaining them clear) of incompatible objects and activities. Control is preferably exercised through the acquisition of sufficient property interest in the RPZ." In 2012, the FAA issued a memorandum on Interim Guidance on Land Uses Within a Runway Protection Zone. The information in the memorandum will be used to coordinate any potential changes to the RPZs with the FAA. For the RPZs that currently extend off the airport property, some degree of control should be implemented (e.g., acquisition, easement, or zoning) in order to maintain land use compatibility within the vicinity of PHD and to allow the airport to remove obstructions beyond the runway ends. As mentioned in the inventory chapter, a key recommendation of this Master Plan Update is for the City of New Philadelphia to adopt zoning regulations to protect the airspace surrounding PHD in accordance with Ohio law and Federal Aviation Regulation (FAR) Part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace.

- **Runway Centerline to Parallel Taxiway Centerline Separation** – For RDC B-I (small aircraft) runways, the standard runway centerline to parallel taxiway centerline separation is 150 feet. The current separation between Runway 14-32 and Taxiway A is 134 feet. Because of the non-standard separation, Taxiway A is closed when aircraft are utilizing Runway 14-32. Therefore, alternatives to correct the non-standard separation are evaluated in the next chapter of this Master Plan Update.

Table 3-4
Runway 14-32 Design Standards Evaluation

Design Standard	Required Dimension	Runway 14 Evaluation	Runway 32 Evaluation
Runway Design Code (RDC)	B-I (Small Aircraft)		
Runway (RW) Approach Visibility Minimums	Varies by End	1-Mile	Visual
RW Width	60 Feet	Meets Standards	
RW Safety Area (RSA) Width	120 Feet	14 (Extends Off Airport Over Road and Cemetery) 32 (Meets Standards)	
RSA Length Beyond RW End	240 Feet		
RW Object Free Area (ROFA) Width	250 Feet	14 (Extends Off Airport Over Road and Cemetery) 32 (Meets Standards)	
ROFA Length Beyond RW End	240 Feet		
RW Obstacle Free Zone (ROFZ) Width	250 Feet	14 (Extends Off Airport Over Road and Cemetery) 32 (Meets Standards)	
ROFZ Length Beyond RW End	200 Feet		
RW Protection Zone (RPZ) Inner Width	250 Feet	14 (Extends Off Airport Over Incompatible Land Uses) 32 (Extends Off Airport Over Incompatible Land Uses)	
RPZ Outer Width	450 Feet		
RPZ Length	1,000 Feet		
RW Blast Pad Width	80 Feet	Meets Standards (Turf is Acceptable for ADG I)	
RW Blast Pad Length	60 Feet		
RW Shoulder Width	10 Feet	Meets Standards (Turf is Acceptable for ADG I)	
Taxiway (TW) Width (TDG-1A)	25 Feet	Fillet Improvements to be Evaluated	
TW Safety Area (TSA) Width	49 Feet	Meets Standards	
TW Object Free Area (TOFA) Width	89 Feet	Meets Standards	
Taxilane (TL) Object Free Area Width	79 Feet	Meets Standards	
TW Shoulder Width (TDG)	12.5 Feet	Meets Standards	
RW Centerline to Parallel TW Centerline	150 Feet	135 Feet	
RW Centerline to Holdline	125 Feet	Meets Standards	
RW Centerline to Aircraft Parking Area	125 Feet	Meets Standards	
TW Centerline to Parallel TW/TL Centerline	70 Feet	Meets Standards	
TW Centerline to Fixed or Movable Object	44.5 Feet	Meets Standards	
TL Centerline to TL Centerline	64 Feet	N/A	
TL Centerline to Fixed or Movable Object	39.5 Feet	Meets Standards	
RW Surface Gradient and Line of Sight	Maximum 2.0% Grade	Meets Standards	

Source: Michael Baker International, Inc., 2016.

Table 3-5 Runway 11-29 Design Standards Evaluation			
Design Standard	**Required Dimension**	**Runway 11 Evaluation**	**Runway 29 Evaluation**
Runway Design Code (RDC)	B-I (Small Aircraft)		
Runway (RW) Approach Visibility Minimums	Varies by End	Visual	Visual
RW Width	60 Feet	Meets Standards	
RW Safety Area (RSA) Width	120 Feet	11 (Extends Off Airport Over Road and Cemetery) 32 (Crosses Runway 14-32 RSA)	
RSA Length Beyond RW End	240 Feet		
RW Object Free Area (ROFA) Width	250 Feet	11 (Extends Off Airport Over Road and Cemetery) 32 (Crosses Runway 14-32 RSA)	
ROFA Length Beyond RW End	240 Feet		
RW Obstacle Free Zone (ROFZ) Width	250 Feet	11 (Extends Off Airport Over Road and Cemetery) 32 (Crosses Runway 14-32 RSA)	
ROFZ Length Beyond RW End	200 Feet		
RW Protection Zone (RPZ) Inner Width	250 Feet	11 (Extends Off Airport Over Incompatible Land Uses) 29 (Extends Off Airport Over Incompatible Land Uses)	
RPZ Outer Width	450 Feet		
RPZ Length	1,000 Feet		
RW Blast Pad Width	80 Feet	Meets Standards (Turf is Acceptable for ADG I)	
RW Blast Pad Length	60 Feet		
RW Shoulder Width	10 Feet	Meets Standards (Turf is Acceptable for ADG I)	
RW Surface Gradient and Line of Sight	Maximum 2.0% Grade	Meets Standards	
Source: Michael Baker International, Inc., 2016.			

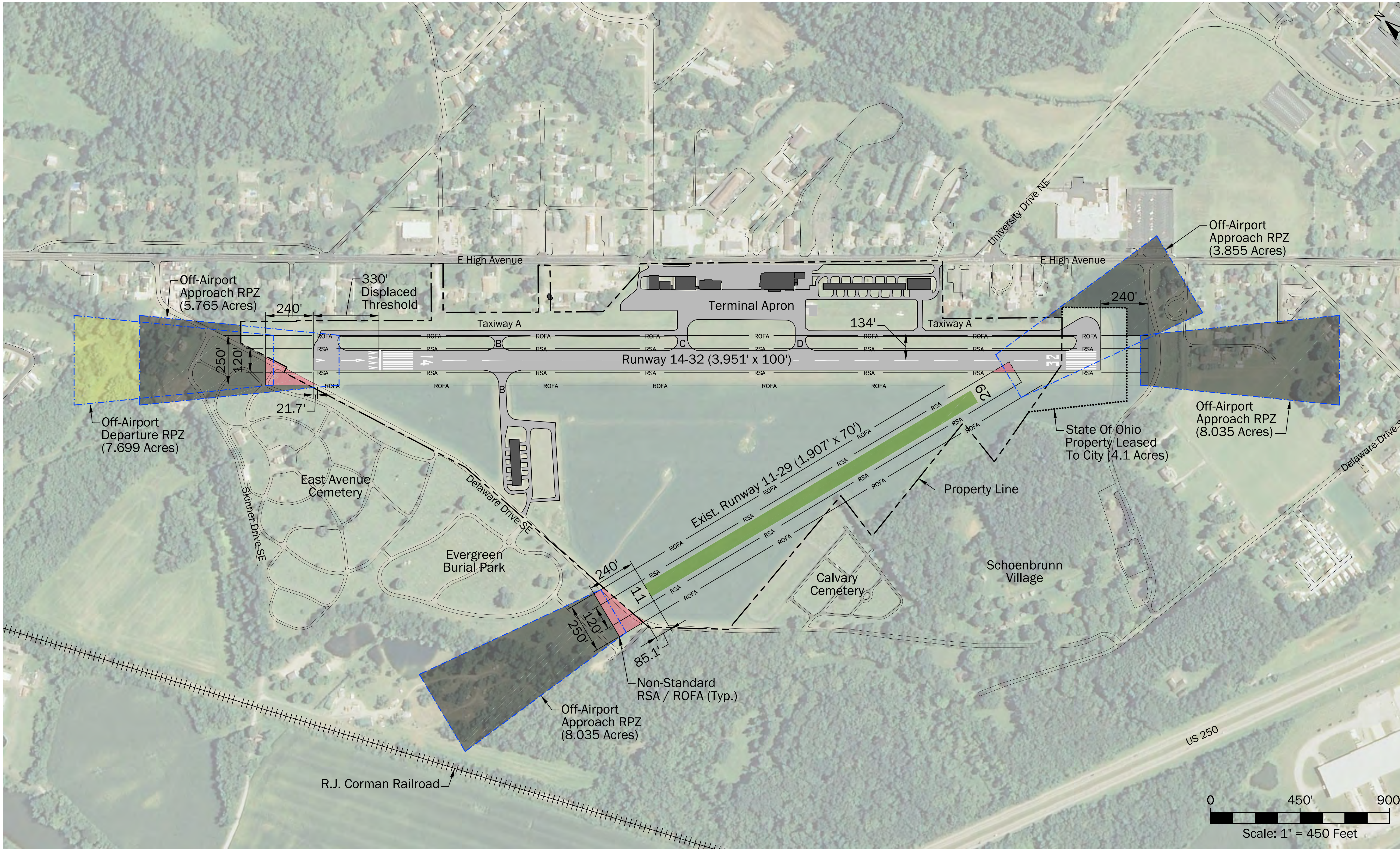


Figure 3-4 Airfield Design Standards Analysis

3.10 Other Airfield Considerations

FAA Engineering Brief 75 (EB-75), Incorporation of Runway Incursion Prevention into Taxiway and Apron Design, provides guidance on design strategies of taxiways and aprons to help prevent runway incursions (the FAA defines a runway incursion as any unauthorized intrusion onto a runway, regardless of whether or not an aircraft presents a potential conflict). According to EB-75, “these design strategies are only recommendations. They are not a set of standards that must be followed whenever possible. Airfield design is often a process that must balance safety, efficiency, capacity, and other factors. There will be cases where the strict application of these recommendations is unjustified and unwise. Instead, use the recommendations as a checklist to insure the runway incursion aspects of any design proposal are properly considered.” Many of these recommendations have also been incorporated into FAA AC 150/5300-13A, Airport Design.

- Limit the number of aircraft crossing an active runway
    - The preference is for aircraft to cross in the last third of the runway whenever possible, since within the middle third of the runway the arriving/departing aircraft is usually on the ground and traveling at a high rate of speed
- Optimize pilots’ recognition of entry to the runway (increase situational awareness) through design of taxiway layout, for example:
    - Use a right angle for taxiway-runway intersections (except for high speed exits)
    - Limit the number of taxiways intersecting in one spot
    - Avoid wide expanses of pavement at runway entry
- Insure the taxiway layouts take operational requirements and realities into account to:
    - Safely and efficiently manage departure queues
    - Avoid using runways as taxiways
    - Use taxiway strategies to reduce the number of active runway crossings
    - Correct runway incursion “hot spots”

EB-75 presents several additional design recommendations for preventing runway incursions such as avoiding taxiways that provide direct access between a runway and aircraft parking area. At PHD, Taxiways C and D provide direct access between Runway 14-32 and the terminal apron. The direct connections should be removed in order to reduce the potential for a runway incursion to occur at PHD. The wide expanses of taxiway pavement at each end of Runway 14-32 should also be corrected for the same reason.

It is also noted that FAA AC 150/5300-13A, Airport Design, contains new taxiway fillet geometry that now calls for additional pavement at taxiway turns. The taxiway fillet geometry is reviewed in conjunction with the alternatives analysis.

3.11 Airfield Lighting, Markings, Signage, and Navigational Aids

Based on the findings from the inventory of existing conditions, the following sections describe the requirements for airfield lighting, markings, signage, and navigational aids at PHD.

3.11.1 Airfield Lighting

The airfield lighting at PHD consists of Medium Intensity Runway Lights (MIRLs) along the edges of Runway 14-32, which is recommended for the non-precision approach to Runway 14, as well as Runway End Identifier Lights (REILs) beyond each runway end. The turf runway (Runway 11-29) is not equipped with runway lighting and is strictly for visual operations. Medium Intensity Taxiway Lights (MITLs) are provided along the taxiway edges.

3.11.2 Airfield Markings

Pavement markings are designed according to the FAA AC 150/5340-1L, Standards for Airport Markings (Markings AC). Both ends of Runway 14-32 have non-precision markings that conform to what is required for runways less than 4,200 feet in length. At this time, visual markings would be the standard marking for the Runway 32 end because it does not have any published instrument approach procedures. The Markings AC contains the policy identified below for runway landing designator markings, which indicates that runway ends should be numbered based on the nearest magnetic heading. The current magnetic runway heading of Runway 14-32 is 147° / 327° and the current magnetic heading of Runway 11-29 is 117° / 297°. Therefore, to comply with the Markings AC, Runway 14-32 should be renumbered as 15-33 and Runway 11-29 should be renumbered as 12-30.

FAA Policy on Runway Landing Designator Marking (FAA AC 150/5340-1L)

For single runways, dual parallel runways, and triple parallel runways, the designator number is the whole number nearest the one-tenth of the magnetic azimuth along the runway centerline when viewed from the direction of approach. For example, where the magnetic azimuth along the runway centerline is 183 degrees, the runway designator marking would be 18; for a magnetic azimuth of 87 degrees, the runway designation marking would be 9. For a magnetic azimuth ending in the number "5" such as 185 degrees, the runway designator marking may be either 18 or 19.

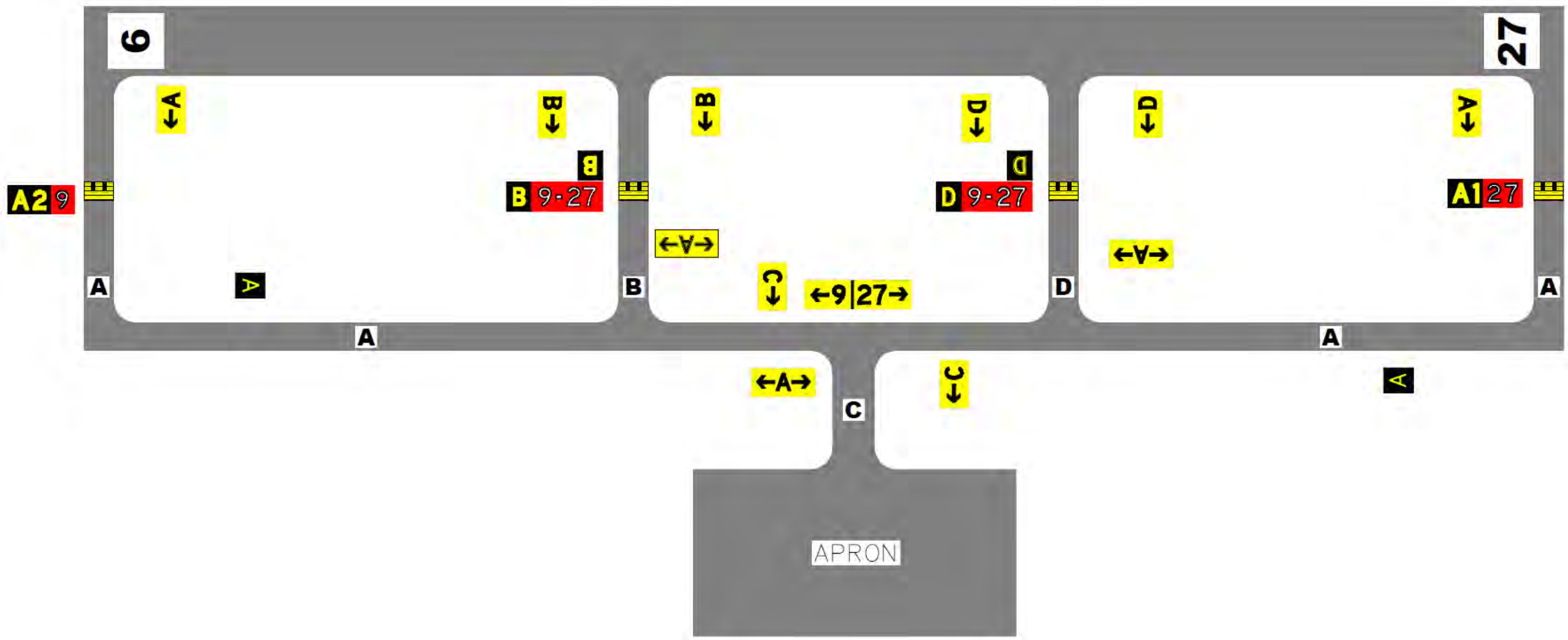
3.11.3 Airfield Signage

The guidelines for airfield signage are provided in FAA AC 150/5340-18F, Standards for Airport Sign Systems (Signage AC). Because there is currently no airfield signage at PHD, an airfield signage project should be conducted to comply with the Signage AC. A sample of airfield signage at an airport at a single runway is provided in **Figure 3-5**. Such a project would be conducted in conjunction with other airfield improvement improvements (e.g., parallel taxiway relocation).

3.11.4 Navigational Aids and Obstruction Removal

Navigational aids (NAVAIDs) are visual or electronic devices that provide information or position data to aircraft in flight. At PHD, the main NAVAID improvement is to repair the Precision Approach Path Indicator (PAPI) for Runway 14 approaches. No other NAVAID-related improvements were identified for PHD except for routine replacements of existing equipment (e.g., beacon); however, the ability to provide improved instrument approach capability to both ends of Runway 14-32 is evaluated as part of the alternatives analysis. It is noted that several tree obstructions were identified by the FAA and the city was actively trying to remove the obstructions. New obstacle survey was obtained for this Master Plan Update and a detailed obstruction analysis was conducted for the Airport Layout Plan (ALP) set.

Figure 3-5
Signing Example for an Airport with a Single Runway



Source: FAA AC 150/5340-18F, Standards for Airport Sign Systems (Figure 20).

3.12 Transient Apron and Based Aircraft Storage

Apron and hangar requirements are calculated in consideration of the airport's existing and forecast based aircraft mix, owner storage preferences, and transient aircraft parking demands. In previous years, it was assumed that a certain percentage of based aircraft, mostly single and multi-engine pistons, would desire apron tie-down parking because it is the lowest cost storage option. Today, most owners want to be able to protect their aircraft from poor weather and vandalism and therefore opt for hangar storage. The following sections describe the requirements for transient apron space and based aircraft storage during the planning period.

3.12.1 Transient Apron

The transient aircraft parking area at PHD is located on the terminal apron. The apron was expanded to the west in the early 2000s to accommodate additional based and transient aircraft parking and a new hangar development. There is additional space to provide additional paved aircraft parking positions where the turf tie-downs are located to the east of the terminal apron. Transient apron requirements are typically calculated based on a percentage of itinerant peak day operations. By 2035, the number of itinerant peak day operations is forecast to reach 19. Assuming that half of those operations will require transient aircraft parking at PHD, it would equate to 9.5 aircraft. Therefore, it may ultimately be beneficial to provide additional paved tie-down positions to be able to accommodate demands during peak periods at PHD.

3.12.2 Based Aircraft Storage

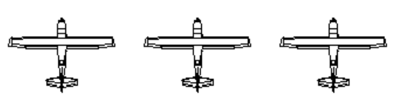
There are several different types of based aircraft storage facilities available at PHD including paved and turf tie-downs, T-hangars, corporate hangars, and smaller bulk hangars. For this analysis, it was assumed that all forms of based aircraft storage are currently full at PHD; therefore, in order to accommodate any new based aircraft, the construction of a new facility would be required. The forecast of based aircraft estimates that 20 additional based aircraft will be at PHD by 2035 including 15 additional single-engine pistons, two multi-engine pistons, one turboprop, and two helicopters. Much of that growth is expected after a new 10-unit T-hangar facility is constructed in 2017. **Table 3-6** illustrates the based aircraft storage requirements that are anticipated by 2035 at PHD including three additional paved tie-downs, 14 additional T-hangar units, and 14,000 additional square feet of conventional hangar space.

Table 3-6
2035 Based Aircraft Storage Requirements

Apron Tie-Down

2035 Requirement Calculation

Aircraft	Piston	Turboprop	Helicopter
Requirement %	20%	0%	0%
2035 Requirement	3	0	0
3 Tie-Downs Required by 2035			

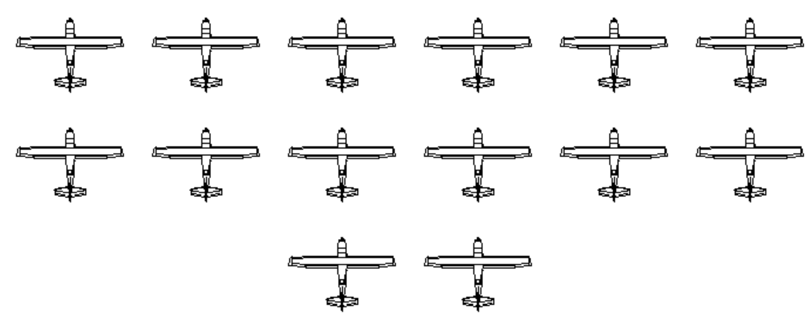


Note: The sample piston, jet, turboprop, and rotorcraft aircraft shown in this table are provided for illustration purposes only.

T-Hangar

2035 Requirement Calculation

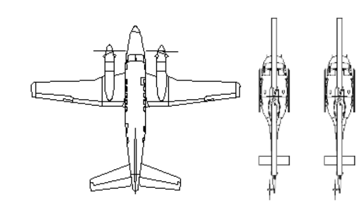
Aircraft	Piston	Turboprop	Helicopter
Requirement %	80%	0%	0%
2035 Requirement	14	0	1
14 T-Hangar Bays Required by 2035			



Conventional Hangar

2035 Requirement Calculation

Aircraft Type	Piston	Turboprop	Helicopter
Requirement %	0%	100%	100%
2035 Requirement	0	1	2
SF Requirement	2,000 SF	10,000 SF	2,000 SF
2035 Requirement	0 SF	10,000 SF	4,000 SF
14,000 SF of Conventional Hangar Space Required by 2035			



Source: Michael Baker International, Inc., 2016.

3.13 Airport Support Facilities

Support facilities are those airport features that are not necessarily specific to aircraft operations, movement, and storage, but which are vital to ensuring the efficiency, safety, and persistency of aircraft activity. For PHD, the existing support facilities consist of the FBO, airport fueling facilities, and automobile parking and access. A review of PHD's existing support facilities is presented in the following sections.

3.13.1 Fixed Base Operator (FBO)

The airport's FBO, ProAv Aviation Services, operates out of the terminal building and aircraft maintenance hangar. The FBO provides aircraft maintenance, flight training, avionics, and aircraft rentals. There are currently no rental cars available from the FBO due to insurance restrictions. During the first TAC meeting, there was a discussion about the limited transportation options that are available in New Philadelphia and how it would be beneficial for rental cars and possibly bicycles to be available for aircraft passengers. Those are often business-related decisions that need to be determined by the FBO and airport sponsor. Considering the various opportunities for growth that were identified by the TAC, the FBO and city should consider what types of services would be beneficial to attract more visitors to the airport.

3.13.2 Airport Fueling Facilities

As mentioned in the inventory chapter, the fuel tanks are located underground and include a 15,000 gallon Jet-A tank and two 10,000 gallon 100LL tanks that were installed in 2000. Jet-A fuel is used by jets, turboprops, and some helicopters and 100LL fuel is used by pistons and also some helicopters. The fuel at PHD is available 24 hours a day by credit card and is self-service. Airport fuel storage requirements are often determined based on peak times when the most flowage occurs. It is important to make sure the adequate fuel supplies are provided for tenants and airport businesses that operate seven days a week. It is also important to be able to purchase fuel in high volumes so that competitive pricing can be obtained. It is anticipated that the fuel volumes are adequate for existing and forecast activity at PHD; however, the location of the fuel tanks along the back side of the terminal apron takes up space that may be better utilized for hangar development. Furthermore, with increasing regulations on Underground Storage Tanks (USTs), there may be a need to replace the tanks with Aboveground Storage Tanks (ASTs) during the planning period. Therefore, the potential for providing ASTs in a more appropriate location should be reserved for PHD.

3.13.3 Airport Access and Parking

The roadways in the vicinity of the airport are intended to provide adequate access to and from the airport and the community. PHD is located along the main road that runs through the City of New Philadelphia (East High Avenue) and is accessible from U.S. Interstate 77. No major access or parking improvements are recommended for the airport, with the exception of providing access to future facilities.

3.13.4 Airport Maintenance Facilities

Because airport maintenance facilities do not generate revenues, they are often located in remote areas that are unlikely to be attractive to a potential business and they house the equipment necessary to maintain the airport property (lawn mowers, tractors, snow removal equipment, etc.). Although most maintenance at PHD is conducted by the city, the need for an airport-dedicated maintenance facility should be considered. If ultimately necessary, the facility should be located in an area that would not be beneficial for aviation development.

3.14 Land Acquisition Requirements

The purpose of the land area requirements is to review the airport's facilities in comparison to FAA standards in order to identify additional property that may be required for inclusion into the land property envelope. The additional properties may be necessary for land use compatibility purposes, future development needs, to correct non-standard RSAs and ROFAs, and/or to obtain control over an RPZ. For PHD, the main concern is to obtain control over the RPZs via acquisition, easement, or zoning. Also, some of the RSA and ROFA correction measures may require property acquisition in order to provide compliance with FAA standards. The need to acquire property is further evaluated in later sections of this Master Plan Update (e.g., the property that is leased from the state), as is the potential to sell/release portions of the airport property for other purposes.

3.15 Airport Security Analysis

In May 2004, the Transportation Security Administration (TSA) released Security Guidelines for General Aviation Airports. According to the TSA website, this document "constitutes a set of federally-endorsed guidelines for enhancing airport security at general aviation facilities throughout the nation. It is intended to provide general aviation airport owners, operators, and users with guidelines and recommendations that address aviation security concepts, technology, and enhancements."

To assist in defining which security methods are most appropriate for a general aviation airport, the document includes an Airport characteristics Measurement Tool (ACMT) that is used to assess the recommended security characteristics for general aviation airports. First, each airport is assigned a certain point value that is calculated considering the airport's location, number and types of based aircraft, runway length, surface characteristics, and number of and types of aircraft operations. For PHD, point value of 19 was calculated, which means the security features shown within the 15-24 point range in **Table 3-7** are recommended. The city should use this table to determine if upgraded security features and/or policies are needed for PHD.

Table 3-7 PHD Security Features					
TSA Recommended Security Feature	Point Range / Applicable Security Feature				PHD Status
	>45	25-44	15-24	0-14	
Fencing					✓
Hangars					✓
Closed Circuit Television (CCTV)					
Intrusion Detection System					
Access Controls					✓
Lighting System					✓
Personnel ID System					
Vehicle ID System					
Challenge Procedures					✓
Law Enforcement Support					✓
Security Committee					✓
Pilot Sign-In/Out Procedures					✓
Signs					✓
Documented Security Procedures					✓
Positive Passenger/Cargo ID					✓
All Aircraft Secured					✓
Community Watch Program					✓
Contact List					✓
Sources: TSA Security Guidelines for General Aviation Airports and Michael Baker International, Inc., 2016.					

3.16 Summary

The facility requirements for PHD are summarized in **Table 3-8**. The remaining sections of this report present the recommendations to satisfy these facility requirements during the 20-year planning period.

Table 3-8
Summary of Facility Requirements

Category	Requirement
Critical Aircraft	Beechcraft Baron 58
Runway Design Code (RDC)	RDC B-I (Small Aircraft)
Taxiway Design Group (TDG)	TDG-1A
Airfield Capacity	No Improvements (Runway 14-32 is Sufficient)
Wind Analysis	No Crosswind Runway is Needed (Runway 14-32 is Sufficient)
Runway Length Analysis	Runway 14-32 (3,900 Feet for All Operations in All Directions) Runway 11-29 (Use is Determined by Pilot)
Runway Strength Analysis	No Improvements
Airfield Design Standards	Various Non-Standard Issues (RSA, ROFA, ROFZ, RPZ, and Runway-Taxiway Separation)
Other Airfield Considerations	Remove Direct Taxiway Connections Between Runway and Terminal Apron and Remove Wide Expanses of Taxiway Pavement
Airfield Lighting	No Improvements
Airfield Markings	Based on Current Magnetic Headings, Runway 14-32 Should be Renumbered as Runway 15-33 and Runway 11-29 Should be Renumbered as Runway 12-30
Airfield Signage	Airfield Signage Should be Provided
Navigational Aids	Repair Runway 14 PAPI
Obstruction Removal	Continue to Monitor and Evaluate
Approaches	Publish Non-Precision Approach for Runway 32
Transient Apron	Potentially Expand to Accommodate Long-Term Peak Demands
Based Aircraft Storage	Add 3 Paved Tie-Downs, 14 T-Hangar Units, and 14,000 Square Feet of Conventional Hangar Space
Fixed Base Operator (FBO)	Consider Adding Rental Cars
Fueling	Potentially Relocate and Install Aboveground Tanks
Access and Parking	Provide Sufficient Access to Future Facilities
Airport Maintenance Facilities	As Needed, Construct an Airport-Dedicated Maintenance Facility
Land Acquisition	Evaluate in Conjunction with Alternatives
Airport Security	Review Security Features and Policies
Security	As necessary, update security procedures and features

Source: Michael Baker International, Inc., 2016.

4.0 Preliminary Alternatives

The previous chapter of this Master Plan Update presented the facility requirements for the Harry Clever Field Airport (PHD). The identified requirements include improvements to the airfield for safety and conformance with design standards, expansion of aprons and additional hangars in the landside area, and other support facility recommendations. Previous planning efforts for PHD have recommended the ultimate closure of the turf runway (Runway 11-29). During the second Technical Advisory Committee (TAC) meeting for this study that was held on May 4, 2016, the group determined that Runway 11-29 should remain open because it is frequently used during crosswind conditions and the turf surface is in good condition. Based on the existing and forecast activity presented herein, the TAC also determined that the asphalt runway (Runway 14-32) should remain in its current configuration and should be maintained for regular use by "small aircraft," which are defined by the Federal Aviation Administration (FAA) as aircraft with a maximum takeoff weight of 12,500 pounds or less. That also differs from previous planning efforts for PHD that have recommended a realignment of Runway 14-32 to provide a longer pavement length and to accommodate regular use by "large aircraft" (i.e., those aircraft with maximum takeoff weights greater than 12,500 pounds).

This chapter presents the preliminary alternatives for PHD, which are intended to illustrate potential options for satisfying the identified requirements during the 20-year planning period (2015 through 2035). The preliminary alternatives are intended for discussion purposes between the various airport stakeholders including airport tenants, the TAC, City of New Philadelphia, and the public. The individual components of each preliminary alternative were evaluated to aid in the selection of a preferred alternative that represents the desired development plan for PHD, which is presented in Chapter 5. For that reason, the preliminary alternatives should be viewed as flexible development plans that may be refined or combined to best satisfy the needs of the airport's stakeholders. They are intended to provide a clear understanding of the airport's possibilities and limitations for airfield and landside development. An evaluation of the following is presented in this chapter:

- Instrument Approaches
- Parallel Taxiway Alternatives
- Airfield Design Standards Alternative
- Land Use Analysis
- Landside Alternatives
- Support Facilities

Two separate meetings were held on September 14, 2016 to present the preliminary alternatives to the TAC and public. The input and comments from those meetings were used to determine the long-term recommended plan for PHD (i.e., the preferred alternative). It is noted that the preliminary alternatives do not present all facilities and equipment that would be needed during the 20-year planning period; rather, alternatives are shown to evaluate potential impacts, understand the desires of airport stakeholders, and to provide sample illustrations of what the airport is capable of accommodating. The preferred alternative and

Airport Layout Plan (ALP) drawing set illustrate many of the more finite facilities with locations dictated by the FAA and/or the ultimate layout of airfield and landside facilities.

4.1 Instrument Approaches

The purpose of the instrument approach evaluation was to determine what level of obstruction removal may be necessary in order to provide clear approaches to both Runways 14-32 and 11-29. The obstruction removal requirements were evaluated for the Threshold Siting Surfaces (TSS) beyond all four runway ends as well as the Precision Approach Path Indicator (PAPI) Obstacle Clearance Surfaces (OCS) beyond the ends of Runway 14-32. Additional surfaces were also evaluated within the ALP drawing set for this Master Plan Update, including the Federal Aviation Regulations (FAR) Part 77 Approach Surface that is typically used to adopt building height and land use restrictions around airports. The information presented in this section is preliminary in nature and does not constitute a formal obstruction removal/mitigation plan. The TSS and PAPI OCS are used by the FAA to evaluate whether one or more of the following actions may be necessary.

- Obstacle clearing, marking, or lighting is necessary within the TSS.
- Displacement of the runway threshold is necessary because obstacles cannot be cleared from the TSS, which results in a shorter landing distance.
- Modification of the approach glide path and/or threshold crossing height is necessary.
- Prohibition of nighttime operations may be necessary unless an approved Visual Glide Slope Indicator (VGSI) is in use. A PAPI is an approved VGSI.

Figure 4-1 depicts the TSS and PAPI OCS associated with the approaches to Runway 14-32. As shown, the TSS beyond the Runway 14 end is wider because of the non-precision GPS-based approach that is published to that end, whereas all approaches to the Runway 32 end are visual only; however, to evaluate the potential obstruction removal requirements if Runway 32 were to be equipped with a non-precision GPS-based approach in the future, a potential TSS is also shown beyond that runway end. A summary of the obstacle analysis for Runway 14-32 is provided below.

- **Runway 14** – Many TSS obstacles closest to the Runway 14 end and threshold are fence and road penetrations. As you move further north of the Runway 14 end, most TSS obstacles are larger trees primarily in residential areas and East Avenue Cemetery. Trimming or removal of the tree penetrations within the TSS is recommended, while it may be acceptable to mitigate for the close-in fence and road penetrations by installing obstruction lighting. It is noted that the current PAPI glide path angle provides mitigation for all but two TSS tree penetrations, which are considered the two most critical obstacles within the Runway 14 approach.

- **Runway 32** – The current TSS associated with the visual approach to Runway 32 contains a mix of road and tree penetrations, all of which are mitigated by the current PAPI glide path angle. Trimming or removal of the tree penetrations within the TSS is recommended, while it may be acceptable to mitigate for the close-in road penetrations by installing obstruction lighting. If Runway 32 were to be equipped with a non-precision GPS-based approach in the future, the TSS would increase in width and would contain additional road and tree penetrations, but it appears that the current PAPI glide path angle would continue to provide mitigation for all obstacles shown.

Figure 4-2 depicts the TSS associated with the approaches to Runway 11-29, which are visual only approaches. A summary of the obstacle analysis for Runway 11-29 is provided below.

- **Runway 11** – The Runway 11 TSS contains minor fence penetrations along Delaware Drive Southeast and larger tree penetrations within Evergreen Burial Park. Various options could be considered to mitigate for the penetrations such as the installation of a PAPI (would not likely be eligible for FAA funding), tree trimming or removal, relocation of the threshold, installation of obstruction lighting, or some combination thereof.

- **Runway 29** – The Runway 29 TSS contains tree penetrations in residential areas to the east and south of Runway 32. Similar mitigation options could be considered as mentioned for Runway 11.

4.2 Parallel Taxiway Alternatives

The standard separation between runway centerline and parallel taxiway centerline is 150 feet for Runway Design Code (RDC) B-I runways that are designed for regular use by "small aircraft." Table 3-1 of FAA Order 5090.3C, Field Formulation of the National Plan of Integrated Airport Systems (NPIAS), indicates that a "Full Parallel Taxiway" as a fundamental development item for a NPIAS airport. Furthermore, according to Table 3-4 of AC 150/5300-13A, Airport Design, a full-length parallel taxiway is recommended for runways with instrument approach procedures with horizontal visibility minimums greater than or equal to one mile. Because the separation between Runway 14-32 and parallel Taxiway A is currently 135 feet, it does not meet FAA design standards. In some cases, the FAA will issue a Modification of Airport Design Standards (MOS) if it can be shown that an existing non-standard condition provides a reasonable level of safety for activity and there are no practicable alternatives available to correct the configuration. At PHD, two practicable alternatives that were evaluated in the 2013 ALP Update and were reevaluated with the new airport base mapping survey that was collected for this master plan update.

Alternative 1 – Relocate Taxiway Centerline 15 Feet

As shown in **Figure 4-3**, Alternative 1 includes the relocation of the parallel taxiway centerline by 15 feet towards the terminal apron to provide the standard runway-taxiway separation of 150 feet. The main benefit of Alternative 1 is that it does not shift the runway centerline, which would require a reanalysis of various flight procedures and obstacle clearance requirements, and higher costs associated with relocating lighting and navigational aids (NAVAIDS) and re-grading the runway and surrounding surfaces. The Taxiway Object Free Area (TOFA) illustrates the required clearance that must be met for RDC B-I "small aircraft." The TOFA under Alternative 1 would not impact any existing operations on the terminal apron and would remain clear with a 15 foot shift of the parallel taxiway centerline. Furthermore, by maintaining the centerline of Runway 14-32 versus shifting the runway centerline to the west, it maximizes the amount of usable pavement available for both takeoff and landing calculations. For example, as you slide the runway centerline further to the west, it gets closer to Delaware Drive Southeast and creates greater impacts to the Runway Safety Area (RSA) and Runway Object Free Area (ROFA). Because the runway length requirement for Runway 14-32 was identified as 3,900 feet for all operations in all directions, it is critical that as much of the pavement continues to remain available for both takeoff and landing calculations as possible. The order-of-magnitude cost estimate for constructing Alternative 1 is **$986,362**.

Alternative 2 – Relocate Runway Centerline by 15 Feet

Alternative 2 includes the relocation of the runway centerline by 15 feet to the west to provide the standard runway-taxiway separation of 150 feet (also shown in Figure 4-3), which would require a reduction in the runway width to 70 feet. As mentioned in the description of Alternative 1, the runway centerline relocation would require a reanalysis of various flight procedures and obstacle clearance requirements and would have high costs associated with relocating lighting and NAVAIDS and re-grading the runway and surrounding surfaces. Additionally, Alternative 2 would slide the runway centerline closer to Delaware Drive Southeast and would reduce the usable pavement available for both takeoff and landing calculations, which would further reduce the ability of Runway 14-32 to meet the identified requirement of 3,900 feet for all operations in all directions. The order-of-magnitude cost estimate for constructing Alternative 2 is **$2,148,132**.

Preferred Parallel Taxiway Alternative

Due to the limited impacts associated with constructing Alternative 1 (no relocation of the runway centerline, maximum preservation of runway length, no impacts to existing facilities, reduced costs, etc.), the relocation of the parallel taxiway centerline by 15 feet towards the terminal apron is considered the preferred alternative for satisfying the required 150 foot runway-taxiway separation at PHD. Alternative 1 would provide a **$1,161,770** savings over Alternative 2 and could be more effectively implemented in a streamlined manner and could be phased to prevent impacts to airport operations.

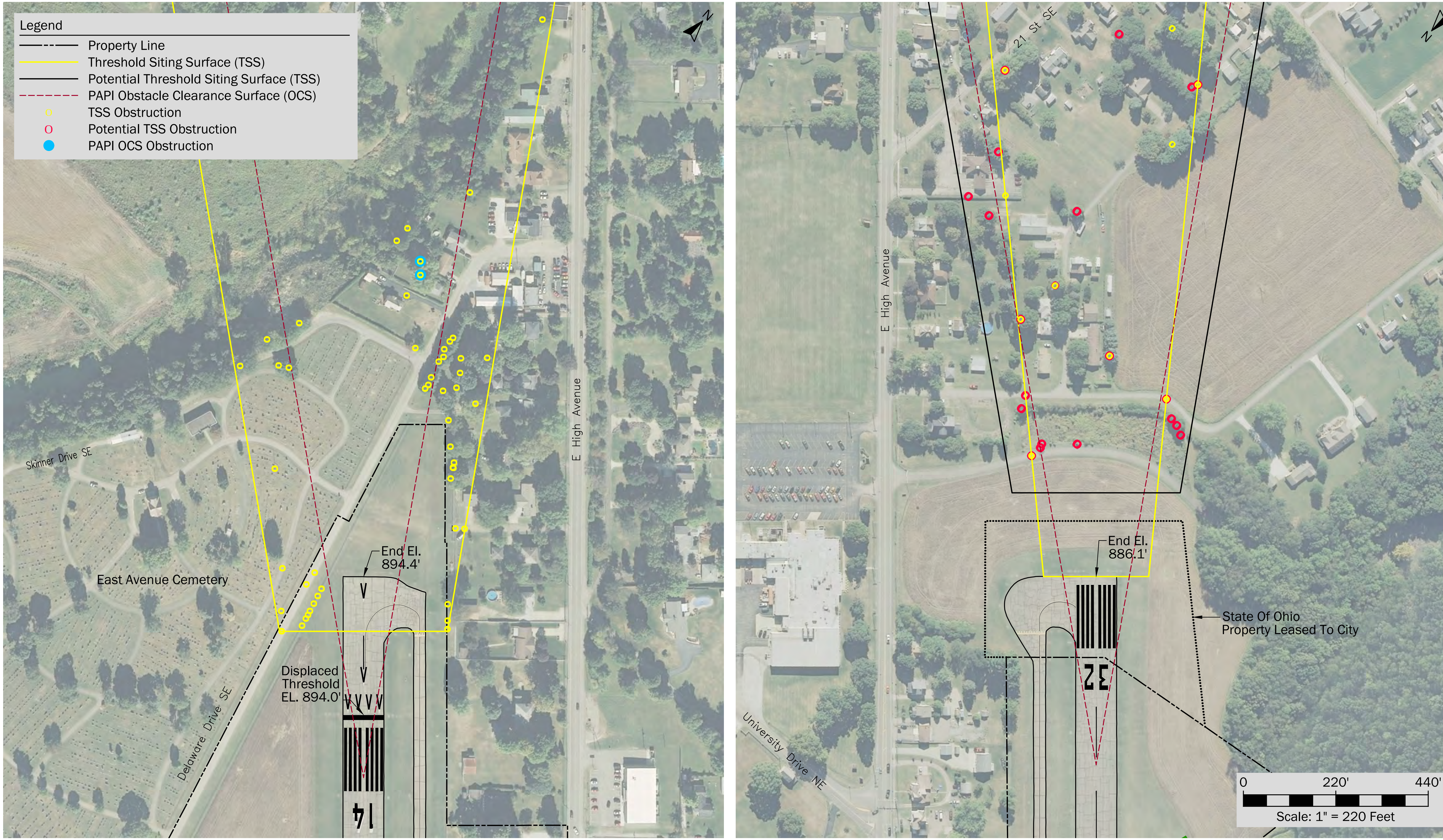
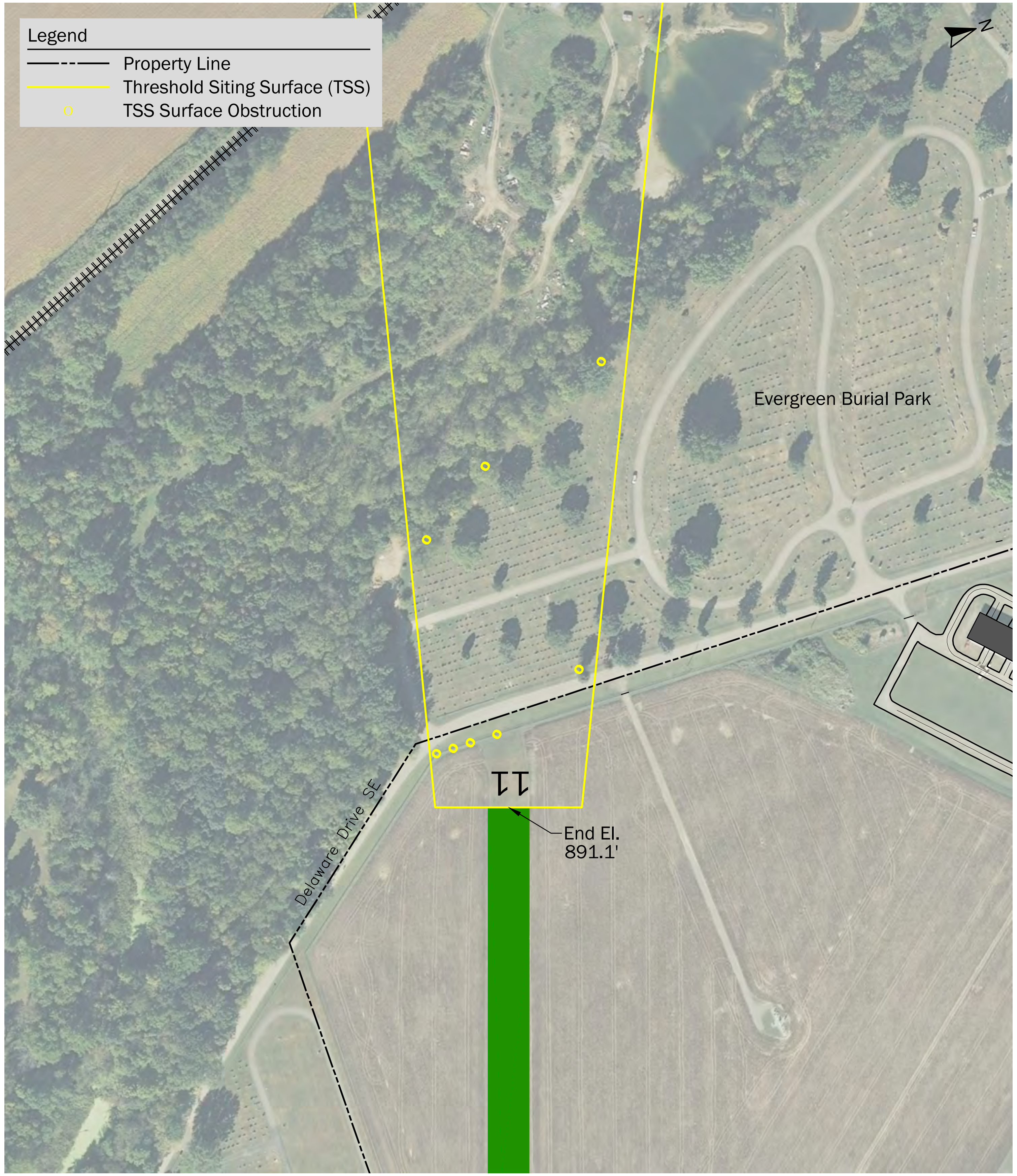
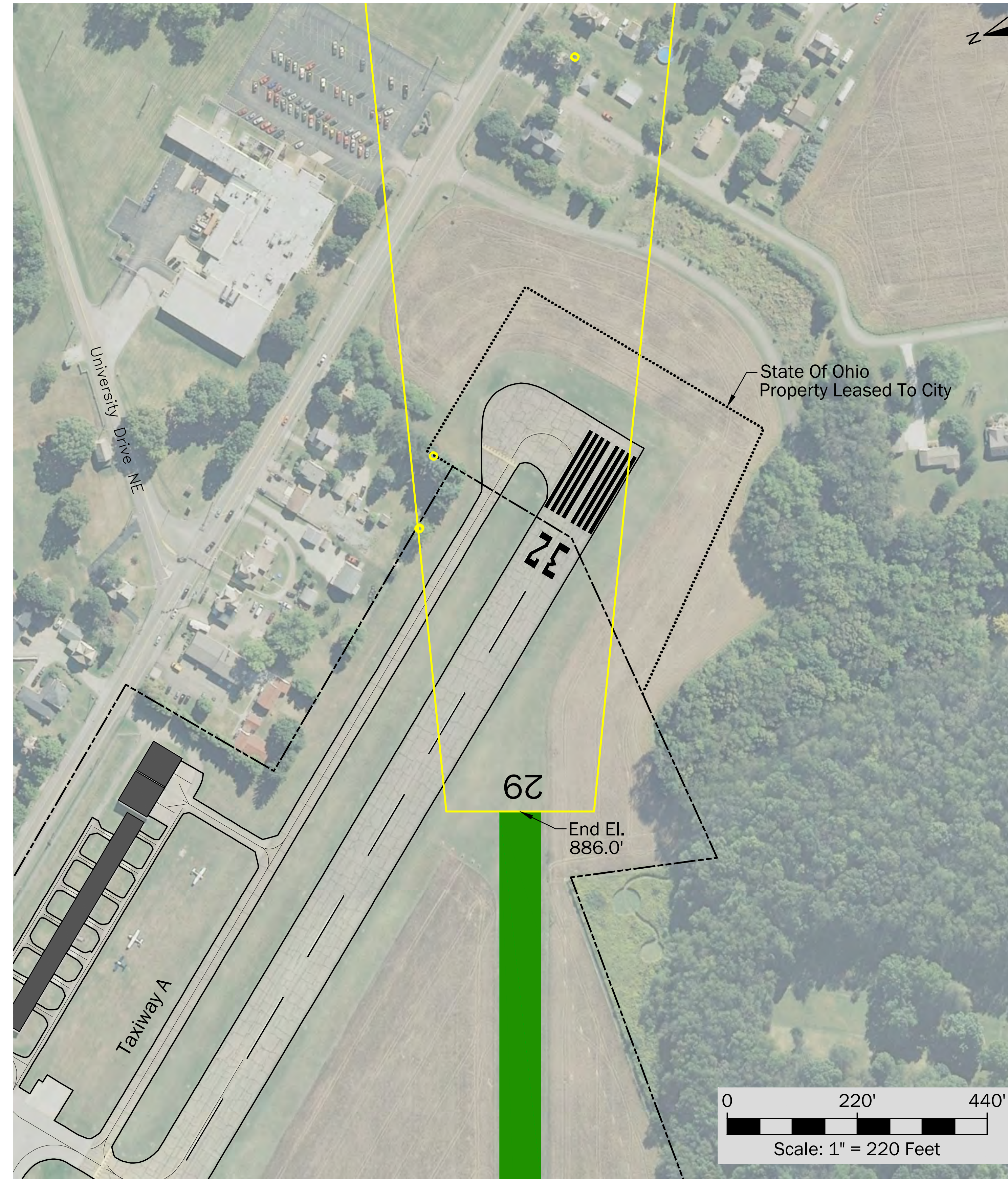


Figure 4-1 Runway 14-32 Obstruction Analysis



Runway 11



Runway 29

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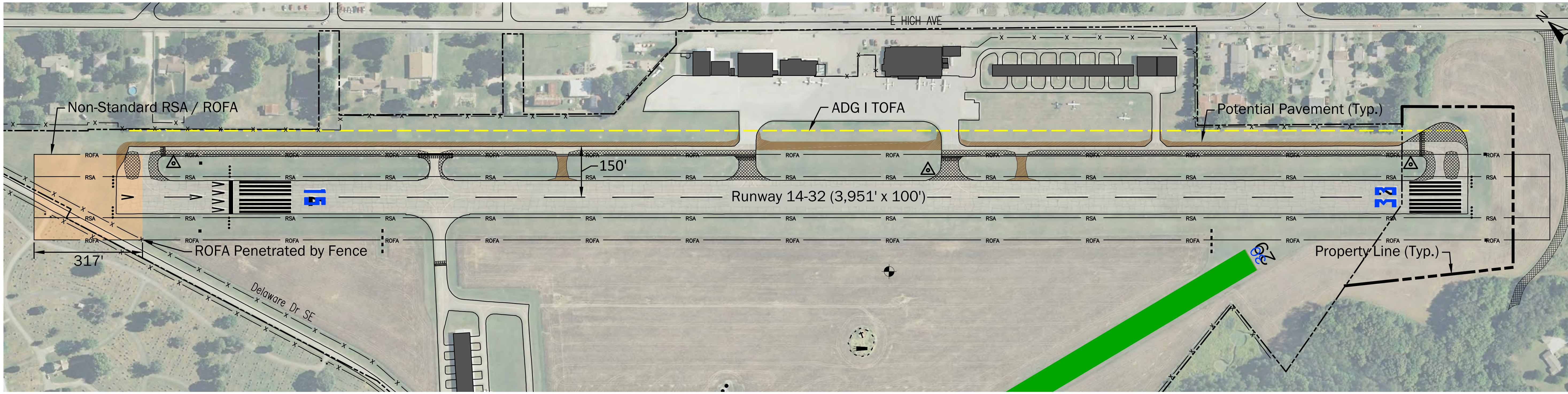
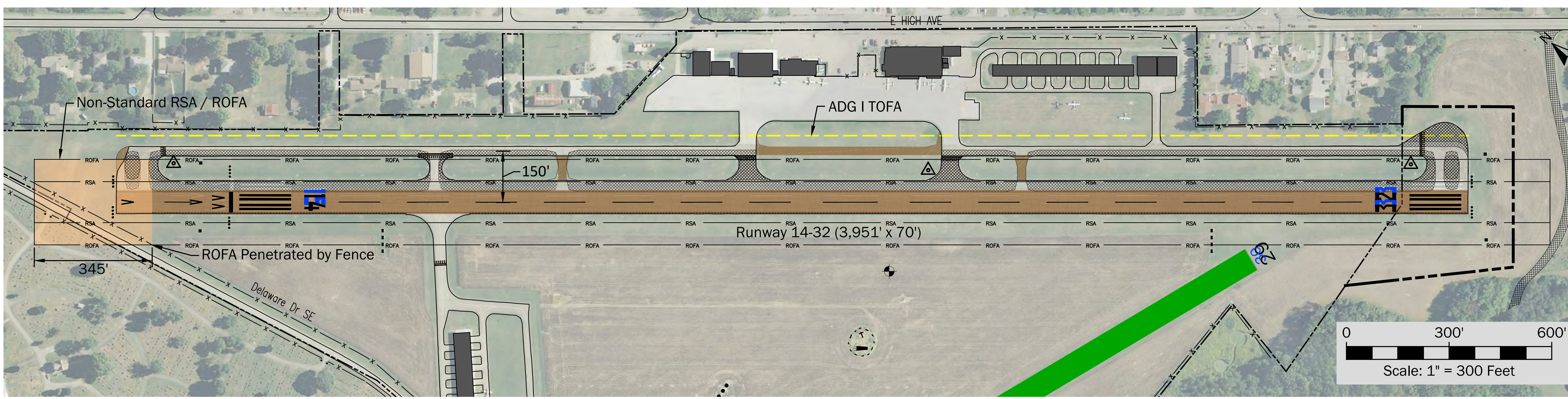
Parallel Taxiway Alternative 1 - Relocate Taxiway Centerline 15'



Parallel Taxiway Alternative 2 - Relocate Runway Centerline 15' & Reduce Runway Width to 70'



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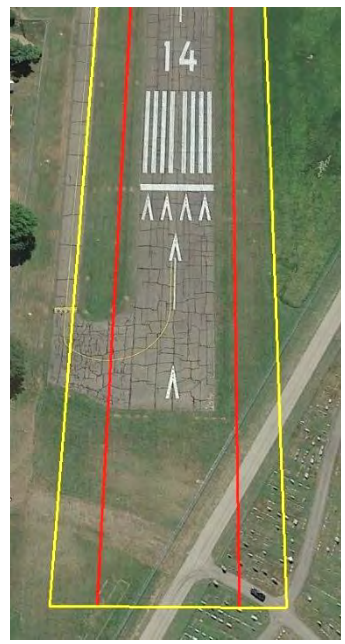
4.3 Airfield Design Standards Alternative

The airfield design standards alternative includes several improvements to correct non-standard and non-preferential conditions at PHD including RSA and ROFA, runway incursion prevention recommendations in accordance with FAA Engineering Brief 75 (EB-75), Incorporation of Runway Incursion Prevention into Taxiway and Apron Design, and changes in taxiway fillet/turn geometry as dictated in FAA Advisory Circular (AC) 150/5300-13A, Airport Design. The airfield design standards alternative is illustrated in **Figure 4-4** and is discussed in the following order: 1) correction of non-standard RSA and ROFA, 2) runway incursion prevention recommendations, and 3) taxiway fillet geometry recommendations.

4.3.1 Correction of Non-Standard RSA and ROFA



As shown in Figure 4-4, the RSA and ROFA of primary concern at PHD are located beyond the Runway 14 end where they extend over Delaware Drive Southeast and into East Avenue Cemetery, which are non-standard for those protective surfaces. The ROFA is penetrated by the airport fence approximately 77 feet before the Runway 14 end and is the first point along the entire runway where a ROFA violation occurs. According to AC 150/5300-13A, Airport Design, the FAA may issue a Modification of Standards (MOS) for "Any approved nonconformance to FAA standards, other than dimensional standards for RSAs, applicable to airport design, construction, or equipment procurement project that is necessary to accommodate an unusual local condition for a specific project on a case-by-case basis while maintaining an acceptable level of safety." Therefore, it is necessary to resolve the non-standard RSA at PHD based on one of the strategies identified in FAA Order 5200.8, Runway Safety Area Program (RSA Program Order). As listed below, the RSA Program Order recommends that several different alternatives be considered in the determination of a preferred correction measure.

a. Relocation, shifting, or realignment of the runway.
b. Reduction in runway length where the existing runway length exceeds that which is required for the existing or projected design aircraft.
c. A combination of runway relocation, shifting, grading, realignment, or reduction.
d. Declared distances.
e. Engineered Materials Arresting Systems (EMAS).

At PHD, the following criteria were established to make the ultimate determination regarding the non-standard RSA: 1) no road relocations, property acquisitions, or grave site relocations were considered appropriate to provide compliant RSA, 2) it is desirable to maintain as much runway length as possible, and 3) EMAS are not applicable corrective measures for PHD because they are intended for 1,000 foot long RSAs, which are crushable concrete blocks that slow and stop an aircraft during an emergency. There is already a critical shortage of available grave plots within the city and it was deemed to be overly cost-prohibitive and sensitive relocate roads and grave sites simply to obtain a minimal amount of useable runway length.

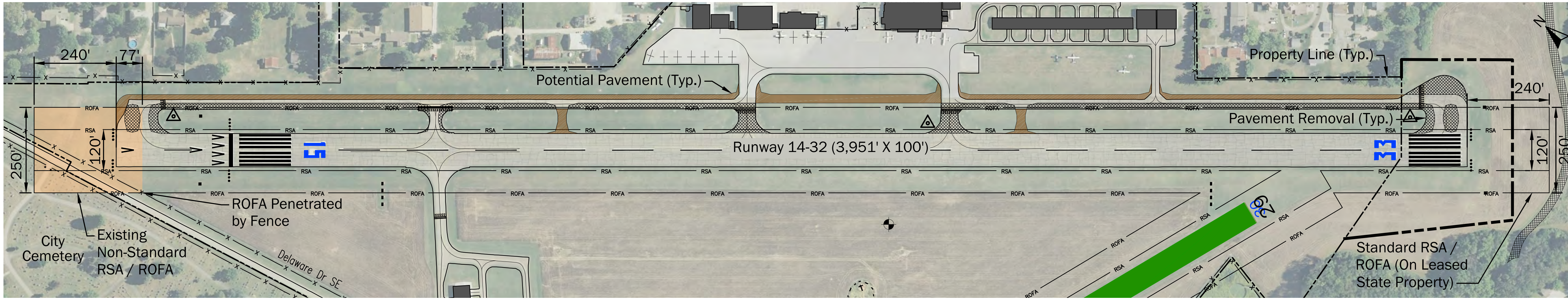
The TAC and city collectively determined that previous recommendations that illustrated large-scale property acquisition, runway realignment, and grave and road relocations should no longer be carried forward as the recommended development for PHD. Therefore, declared distances was considered the most appropriate corrective measure for PHD. In general, the entire length of a runway might not be declared available for aircraft takeoff and/or landing calculations because of issues such as non-standard RSA or ROFA length beyond a runway end, obstructions to approach or departure surfaces, or other property conflicts associated with movement of Runway Protection Zones (RPZs). The declared distance calculations are defined below.

- **Takeoff Run Available (TORA)** – The runway length declared available and suitable for the ground run of an airplane taking off. The entire runway length is typically declared available for TORA, unless obstructions to the departure surface or property conflicts make movement of the departure RPZ infeasible. General aviation aircraft usually follow TORA when evaluating takeoff requirements, as opposed to commercial and corporate aircraft that have stricter operating requirements.
- **Takeoff Distance Available (TODA)** – The TORA plus the length of any remaining clearway beyond the far end of the TORA. At PHD, TODA should always be equal to the runway length.
- **Accelerate-Stop Distance Available (ASDA)** – The distance to accelerate from brake release to V_1 (i.e., takeoff decision speed) and then to decelerate to stop, plus safety factors. ASDA is the runway length available during an aborted takeoff and is used by commercial and corporate aircraft to evaluate takeoff requirements. Restrictions to ASDA occur when there is insufficient RSA length beyond a runway end.
- **Landing Distance Available (LDA)** – The distance from the threshold to complete the approach, touchdown, and decelerate to stop, plus safety factors. If the full runway is not available for landing, a displaced threshold is typically provided to indicate the point where aircraft can touchdown. Common impacts to LDA include obstructions to the approach surface, property conflicts that make movement of the approach RPZ infeasible, and insufficient RSA length prior to the landing threshold.

The bottom half of Figure 4-4 illustrates the declared distances that would need to be published in order to provide standard RSA and ROFA beyond the Runway 14 end. The main differences are that the ASDA and LDA calculations would be reduced to 3,364 feet for Runway 36 operations. Although a reduction in any usable runway length is not ideal for PHD, a potential reduction may be necessary to meet standards, particularly considering the desire not to conduct an overly costly and controversial project to extend the runway and acquire property at this time.

Existing RSA / ROFA Deficiencies

0 300' 600'
Scale: 1" = 300 Feet



Declared Distances Alternative (No Physical Changes to the Runway)

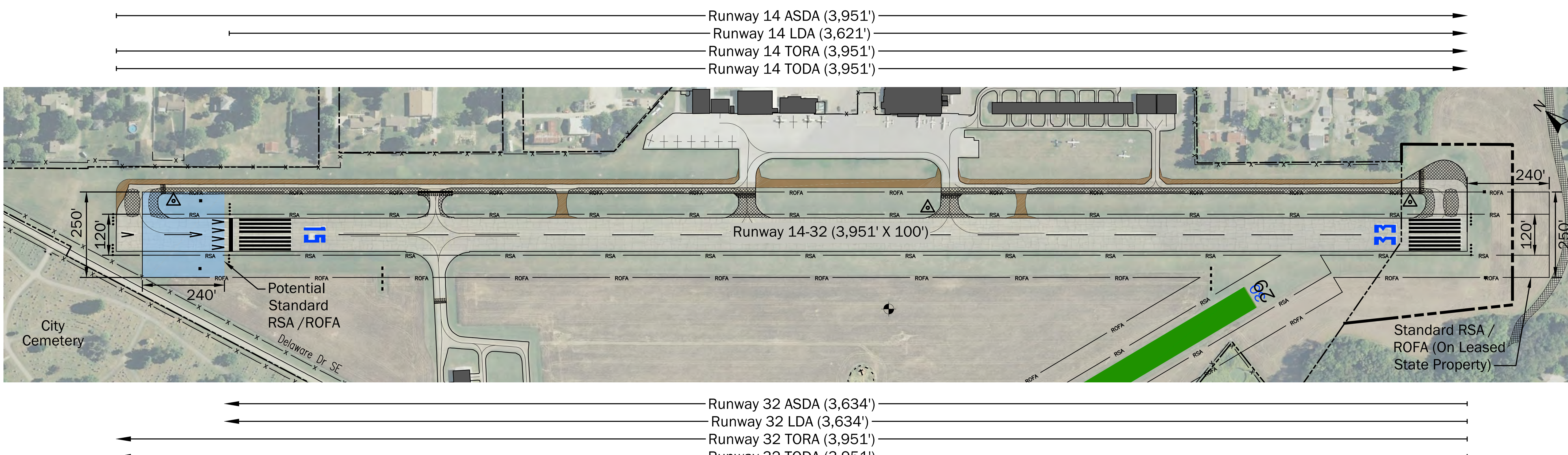


Figure 4-4 Design Standards Alternative

4.3.2 Runway Incursion Prevention Recommendations

In accordance with EB-75 and AC 150/5300-13A, Airport Design, several airfield improvements are recommended to improve situational awareness for pilots and to prevent the chance for incursions. The recommendations include the following and are depicted in Figure 4-4:

- Removal of excess pavement.
- Removal of direct connections from runways to aircraft parking areas.
- Correction of complex intersections and hot spot.

Where appropriate, other taxiway improvements may be considered as part of the preferred alternative to further enhance traffic flows at PHD.

4.3.3 Taxiway Fillet Geometry Recommendations

Taxiway fillet geometry was recently revised with the release of AC 150/5300-13A, Airport Design, to include additional pavement at curves and intersections. The purpose was to improve the standards for cockpit over centerline steering, which is intended to reduce the potential for aircraft excursions from the pavement surface. It is likely that these projects would be conducted in conjunction with taxiway rehabilitation projects during the planning period.

4.4 Land Use Analysis

The purpose of this analysis was to evaluate vacant parcels on the airport property in terms of their potential use, aircraft and automobile access, allowable construction elevations, and feasibility of development. This land use analysis should provide the airport with information that will be useful for identifying suitable sites for potential tenants. As shown in **Figure 4-5**, 11 vacant parcels were identified on the airport property and are evaluated in **Table 4-1**. The graphic illustrates a relocation of the Automated Surface Observing System (ASOS) on the south side of the airport to an area that would maximize the hangar development opportunities on the property while meeting the FAA's ASOS siting criteria. According to FAA Order 6560.20B, Siting Criteria for Automated Weather Observing Systems, "It is desired that all obstructions (e.g., vegetation, buildings, etc.) be at least 15 feet lower than the height of the [wind] sensor within the 500 foot radius and be no greater than 10 feet above the sensor from 500 to 1,000 feet." Because wind sensors are typically installed at a height of 30 to 33 feet above ground level, it is desirable to prevent constructing facilities (i.e., obstructions) close to the sensor that may impact the reliability of the ASOS weather reports. This analysis did not consider the impacts to the farming activities that occur on the airport property because priority was given to aviation development.

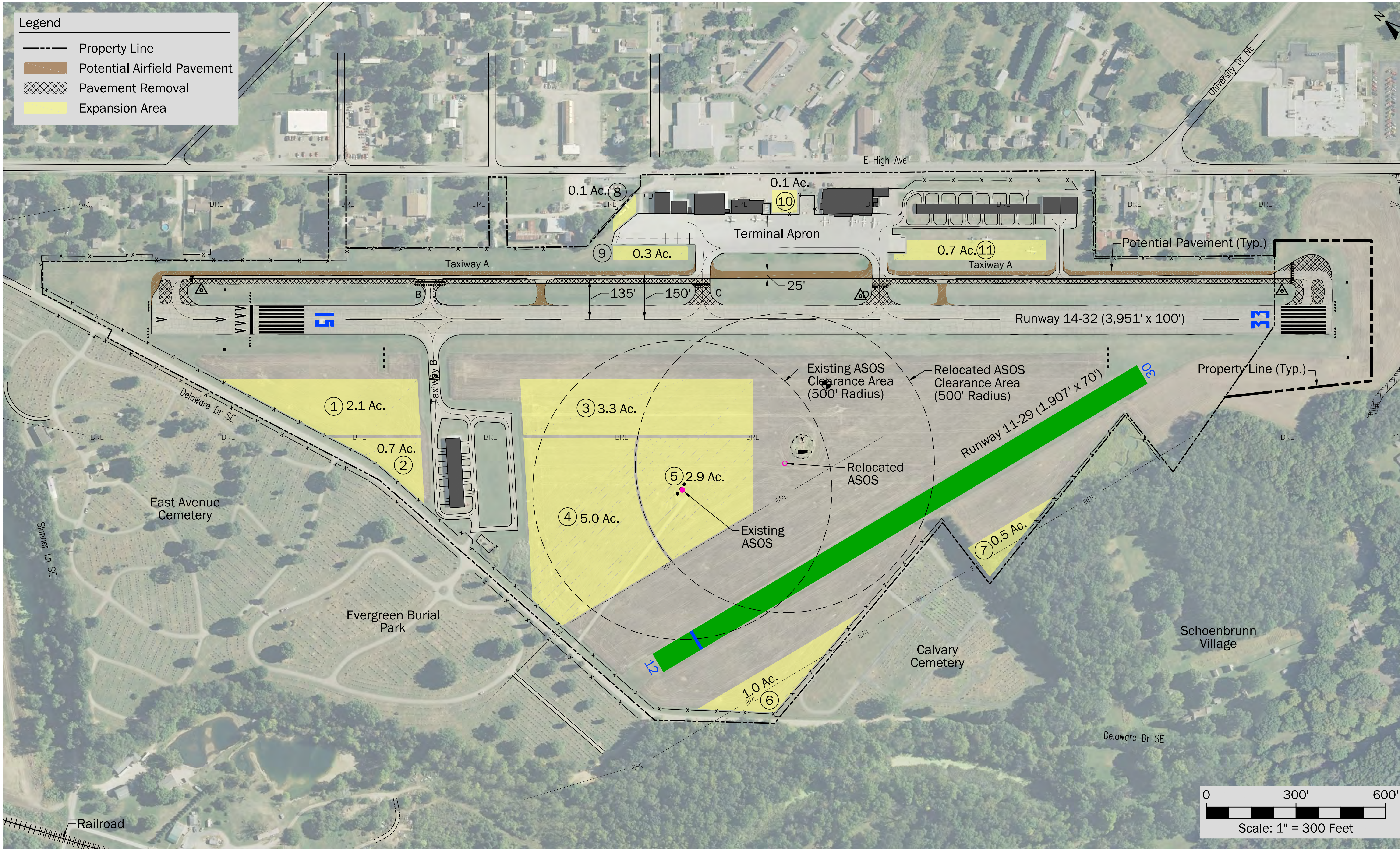


Figure 4-5 Land Use Analysis

Michael Baker
INTERNATIONAL

Table 4-1 Land Use Analysis					
Expansion Area	**Approximate Acreage**	**Min / Max Elevation Above Nearest Point of Runway**	**Potential Use**	**Aircraft / Automobile Access**	**Development Considerations**
1	2.1	7' to 20'	Aviation/Rural	Aviation – Future parallel taxiway or from Taxiway B Automobile – Delaware Drive Southeast	The only foreseeable aviation use for this area would be an aircraft parking apron.
2	0.7	20' to 50'	Aviation/Rural	Aviation – Taxiway B Automobile – Delaware Drive Southeast	This would be a good area to consider the development of several smaller hangars with direct access from Taxiway B.
3	3.3	7' to 20'	Aviation	Aviation – Future parallel taxiway Automobile – By connection to Delaware Drive Southeast	The only foreseeable aviation use for this area would be an aircraft parking apron.
4	5.0	20' to 40'	Aviation/Rural	Aviation – Future parallel taxiway and existing taxilanes Automobile – By connection to Delaware Drive Southeast	This area should be reserved for long-term hangar development.
5	2.9	Max 15'	Aviation	Aviation – Future parallel taxiway Automobile – By connection to Delaware Drive Southeast	The only foreseeable aviation use for this area would be an aircraft parking apron or lower profile buildings.
6	1.0	10' to 30'	Non-Aviation/Rural	Aviation – N/A Automobile – Delaware Drive Southeast	This area is not needed for aviation purposes, but cannot contain high structures.
7	0.5	10' to 30'	Non-Aviation/Rural	Aviation – N/A Automobile – N/A	This area is not needed for aviation purposes, but cannot contain high structures.
8	0.1	10' to 25'	Aviation	Aviation – Existing taxiway network Automobile – East High Avenue	This area was identified as a potential site for aboveground fuel tanks.
9	0.3	0'	Aviation	Aviation – Existing taxiway network Automobile – East High Avenue	The only foreseeable aviation use for this area would be an aircraft parking and circulation.
10	0.1	15' to 25'	Aviation	Aviation – Existing taxiway network Automobile – East High Avenue	A hangar could be developed in this area, particularly if the underground fuel tanks are removed.
11	0.7	0'	Aviation	Aviation – Existing taxiway network Automobile – East High Avenue	The only foreseeable aviation use for this area would be an aircraft parking and circulation.
Source: Michael Baker International, Inc., 2016.					

4.5 Landside Alternatives

Landside alternatives are intended to illustrate hypothetical examples of how hangar and apron developments could be arranged at an airport. In the case of PHD, there are very few development opportunities remaining along the terminal apron and along East High Avenue, and for that reason, the southern portion of the property needed to be evaluated for its development potential. The envelope on the south side of the property is currently limited by the presence of Delaware Drive Southeast, required separations from both runways, and the required clearance area around the existing ASOS. Therefore, relocating the ASOS to a location that would allow for the most development potential on the south side of the airport is viewed as a critical project for PHD. Both of the landside development alternatives illustrate a relocation of the ASOS to a site near the segmented circle, which would free up an area that could then be used for the construction of several large hangars.

Development Alternative 1 is illustrated in **Figure 4-6**. This area shows some improvements in the terminal area that include removing the underground fuel tanks and replacing them with aboveground fuel tanks in the northern corner of the Terminal Apron, which would free up space for the construction of a new hangar in the middle of the Terminal Apron. The aboveground tanks could be accessed directly from Taxiway A with a new connector to the Terminal Apron. Additional paved tie-downs could also be constructed on the southern portion of the Terminal Apron. On the southern portion of the property, this alternative shows 31 T-hangar units, 13 small box hangars, and three larger corporate hangars. Without the relocation of the existing ASOS, it is possible that many of the illustrated facilities would negatively impact the reliability of the wind sensor (including 18 T-hangar units, 10 small box hangars, and three larger corporate hangars). A paved tie-down apron is shown adjacent to the three larger corporate hangars, as well as an aircraft wash rack. The taxilane for the paved tie-down apron could help to provide improved access for operations on Runway 11-29. The purpose of illustrating various types of developments on the south side of the property is to show that the property has the flexibility to accommodate a wide range of potential users. Some of the developments could be accessed by the public and could therefore support a mix of aviation-related businesses, a flight school, etc. Although the illustrated development in this alternative far exceeds the forecast based aircraft demands during the 20-year planning period, it helps show the development potential for PHD and may serve as a marketing tool for the airport to attract future lease and development opportunities. The two expansion areas are locations that would not be valuable for aviation-related purposes.

Development Alternative 2 is illustrated in **Figure 4-7** and is similar to Development Alternative 1, but with less intense development in the southern portion of the property where 25 T-hangar units, nine small box hangars, and three larger corporate hangars are shown. Without the relocation of the existing ASOS, it is possible that many of the illustrated facilities would negatively impact the reliability of the wind sensor (including 12 T-hangar units, six small box hangars, and three larger corporate hangars). This alternative also shows aboveground fuel tanks on the large apron next to the three larger corporate hangars, which may be ideal if the Fixed Base Operator (FBO) wanted to relocate to new facilities on the southern portion of the property. With the less intense development under this alternative, an additional expansion area becomes available that could be considered for non-aviation purposes.

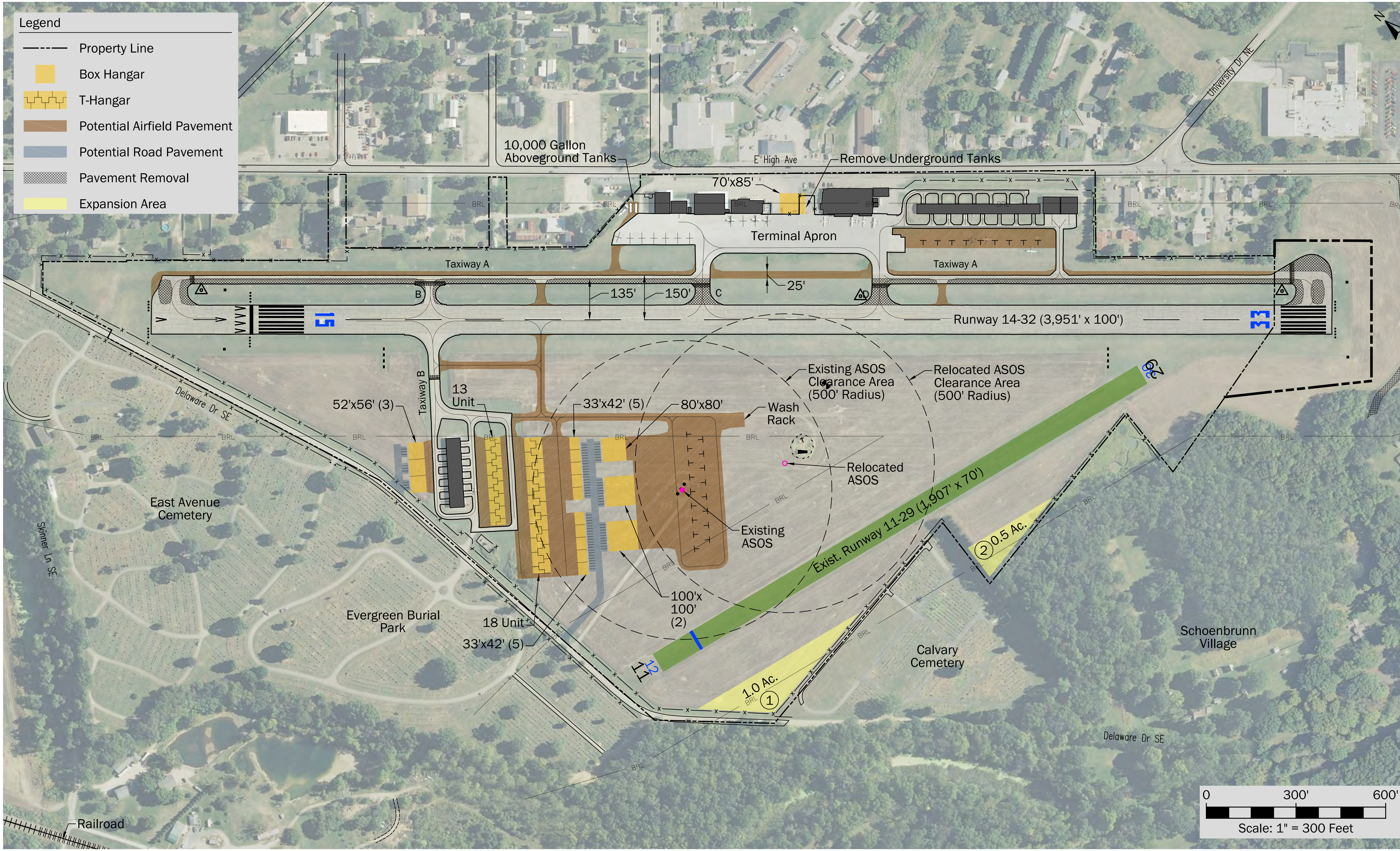


Figure 4-6 Development Alternative 1

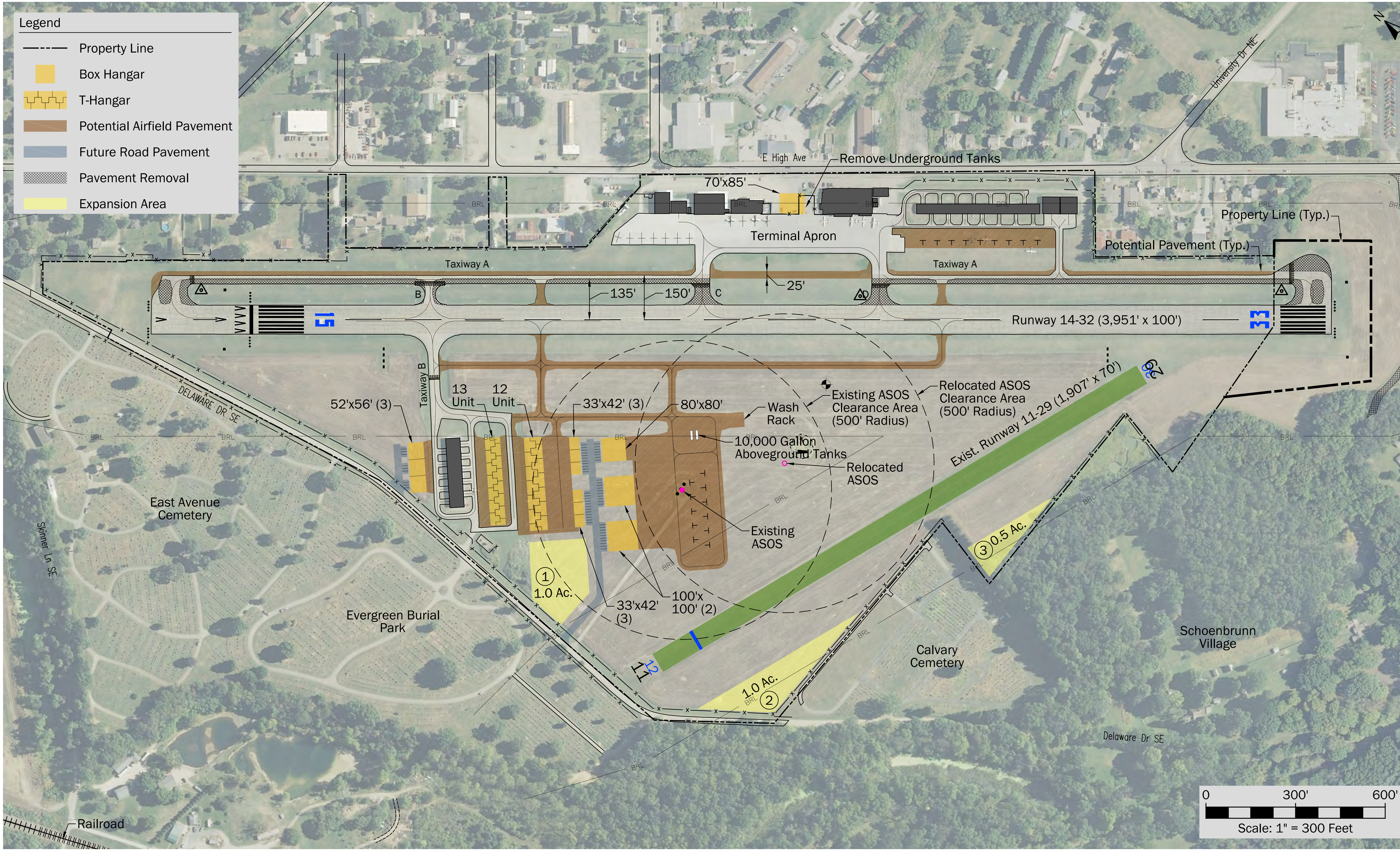


Figure 4-7 Development Alternative 2

4.6 Support Facilities

Support facilities are those airport features that are not necessarily specific to aircraft operations, movement, and storage, but which are vital to ensuring the efficiency, safety, and persistency of aircraft activity. For PHD, the existing support facilities consist of the FBO terminal area, airport fueling facilities, airport maintenance facility, and automobile parking and access. The alternatives throughout this chapter illustrate opportunities for relocating and improving many of the support facilities at PHD. In the next chapter of this master plan update, the preferred alternative will identify the desired location and configuration of the airport's support facilities during the planning period.

5.0 Preferred Alternative

5.1 Introduction

The previous chapter presented the preliminary alternatives for the Harry Clever Field Airport (PHD). The preliminary alternatives included a mix of corrective actions for non-standard airfield conditions (e.g., the runway centerline to parallel taxiway centerline separation and removal of direct connections between Runway 14-32 and aircraft parking areas), new taxiway infrastructure to support future landside development, and landside development options for both sides of Runway 14-32. The third Technical Advisory Committee (TAC) meeting was held on September 14, 2016 to discuss the preliminary alternatives, which was immediately followed by a public meeting to present the initial findings of the Master Plan Update. The TAC concluded that a combination of Development Alternative 1 (Figure 4-6) and Development Alternative 2 (Figure 4-7) should be used to produce the preferred alternative for PHD. The TAC and New Philadelphia Airport Commission (Airport Commission) also want to pursue property acquisition along East High Avenue and beyond the Runway 32 end as it becomes available and there is sufficient demand and funding to do so. This chapter presents the preferred alternative for PHD as well as additional property analyses for parcels along East High Avenue and within the approaches to both Runways 14-32 and 11-29. Although previous planning efforts have shown the closure of Runway 11-29 (i.e., the turf runway), members of the TAC, Airport Commission, and public expressed an interest in preserving the runway because it: 1) is in good condition, 2) requires little to no maintenance, 3) serves a niche aircraft and pilot market, and 4) is frequently used during crosswind conditions. After the fourth TAC meeting was held on January 25, 2017, the preferred alternative was modified and an environmental review was conducted to determine if any projects would have the potential to create impacts. Airport noise exposure contours were also produced for the baseline year of this master plan update (2015) and the last forecast year (2035). The following chapter includes the costs estimates and a Capital Improvement Plan (CIP) with anticipated project phasing and funding sources during the 20-year planning period.

The elements of the preferred alternative are conceptual in nature and are intended to illustrate what can be done with the airport property should the demand and funding be available to construct facilities. The following evaluations were conducted as part of this chapter:

- Properties Analysis
- Runway Protection Zone (RPZ) Properties Analysis
- Summary of Preferred Alternative
- Noise Contours
- Environmental Review

5.2 Properties Analysis

High Avenue (East and West) is the main thoroughfare in the City of New Philadelphia and connects to U.S. Interstate 77. In addition to various dining, shopping, and entertainment establishments, the John Knisely Municipal Centre (city hall) and the Tuscarawas County Courthouse Annex (county administrative offices) are also located along East High Avenue. Consequently, the airport's East High Avenue border is the most highly-visible one and may generate additional interest for development if properties can be acquired and redeveloped for aviation purposes (e.g., hangar development). The Federal Aviation Administration (FAA) provides the checklist shown in **Table 5-1** to identify the process that should be followed when Airport Improvement Program (AIP) grants are being utilized to acquire property; however, the individual elements of the checklist may vary depending upon the scope of the property acquisition and the funding source. FAA Advisory Circular (AC) 150/5100-17, Land Acquisition and Relocation Assistance for Airport Improvement Program Assisted Projects, provides detailed procedural guidance regarding property acquisition.

Table 5-2 and **Figure 5-1** illustrate the properties analysis that was conducted for PHD. As shown, parcels along East High Avenue and beyond the Runway 32 end were broken into three priorities. All of the parcels shown are located within the municipal limits of the City of New Philadelphia. The basic thought process behind the properties analysis was to continue to expand out from the existing airport development by purchasing parcels as they become available. The Priority 1 parcels include six state-owned parcels (28 through 31, 42, and 43) that would be ideal to acquire in the short-term (in whole or in part). The city leases a portion of Parcel 43 from the state for airport purposes. With the upcoming runway rehabilitation project, the FAA requested that the city obtain long-term control over the section of Parcel 43 that is being used for airport purposes by either extending the lease or acquiring the property. Acquisition of all or part of the six state-owned parcels would provide the city with indefinite control over the properties and the potential to use portions of them for future airport development. Furthermore, vehicles travelling on the access road to Schoenbrunn Village are obstructions to the Runway 32 approach surface. It is recommended that the road be relocated to a location where vehicles would no longer be obstructions, potentially off of 20th Street Southeast.

Parcels 24 through 27 are also identified as Priority 1 parcels because of their proximity to existing airport development along East High Avenue and near-central location along Runway 14-32. The parcels are owned by the same private property owner and contain a mix of retail and commercial establishments. It is anticipated that the airport's long-term (2035) conventional hangar space requirement of 14,000 square feet could be achieved on the Priority 1 parcels if they can be acquired and cleared. The next chapter of this study contains additional details regarding potential property acquisition and facility development costs to better illustrate the commitment that would be required to develop on the Priority 1 parcels.

Parcels 20 through 23 are identified as Priority 2 parcels and are located along Taxiway A (near Taxiway B). These include a mix of residential and retail parcels that would likely be considered for acquisition after the Priority 1 parcels. Parcels 1 through 19 and 32 through 41 are identified as the Priority 3 parcels because they are not located as central along Runway 14-32 as the others and it is unlikely that the city would need to acquire them to meet aviation demands during the 20-year planning period.

Table 5-1 FAA Land Project Checklist	
Step	**Description**
1	Develop Exhibit A Property Map that clearly delineates the land to be required.
2	Consult with the FAA Project Manager to verify that proposed parcels are identified on an approved Airport Layout Plan (ALP).
3	Verify environmental requirements of the National Environmental Policy Act (NEPA) are met.
4	Prepare surveys and plats for proposed property acquisition.
5	Order preliminary title search to confirm ownership and encumbrances on property title.
6	Select and negotiate contract for qualified appraiser and review appraiser.
7	Select and negotiate contract for Environmental Site Assessment (ESA) consultant (if not completed in project planning phase).
8	Select and negotiate contract for qualified land acquisition and relocation consultant, if required.
9	Conduct Environmental Site Assessment of property suspected of being contaminated.
10	Prepare relocation plan if there are any persons to be displaced.
11	Perform appraisals and appraisal review, and approve appraised fair market value. The property owner shall be given the opportunity to accompany the appraiser on the inspection of the property.
12	Submit appraisal and review appraisal reports to the FAA if required by project manager.
13	Make written offer of just compensation. At initiation of negotiations, provide general notice of the property owner's rights and entitlements on the acquisition of their property and an explanation of the relocation assistance and payment entitlements. Provide notice of relocation eligibility to displaced persons.
14	Negotiate purchase agreement. If reasonable attempts to negotiate an agreement or acceptable settlement are unsuccessful, the acquisition may be referred to the sponsor's attorney for condemnation under the airport's eminent domain authority.
15	Closing/court award, title conveyance, and schedule possession of acquired property. (Sponsor's attorney / title company /escrow agent.)
16	Complete relocation assistance for displaced persons. Assure a comparable replacement dwelling has been made available for all persons displaced from their residence, (as applicable).
17	Clear property for project use.
18	Furnish project application with Exhibit A Property Map and land acquisition cost breakdown sheet, Certification of Environmental Site Assessment, Certificate of Title, and Sponsor Certification for Real Property.
19	Execute grant agreement.
20	Submit final Outlay Report and Request for Reimbursement for Construction Programs (Form SF-271) and make final drawdown.
Source: FAA Land Project Checklist.	

Table 5-2 Properties Analysis by Priority					
Priority	Graphic Parcel ID	County Parcel ID	Acres	Class	Appraised Value
Priority 1 Parcels (As Warranted and Available)					
1	24	43-02571-000	0.60	Retail	$24,080
1	25	43-02572-000	0.60	Retail	$32,330
1	26	43-02573-000	0.29	Retail	$150,330
1	27	43-02574-000	0.42	Commercial	$11,580
1	28	43-08489-000	0.33	State	$20,600
1	29	43-08491-000	0.22	State	$248,260
1	30	43-07317-000	0.29	State	$90,170
1	31	43-08490-000	0.19	State	$53,540
1	42	43-07310-000	0.37	State	$0
1	43	43-07308-000	15.56	State (Partial Pursuit)	$135,300
Priority 1 Totals			18.88		$766,190
Priority 2 Parcels (As Warranted and Available)					
2	20	43-03702-000	0.61	Residential	$194,570
2	21	43-04372-000	0.37	Residential	$80,350
2	22	43-04372-002	1.02	Retail	$206,000
2	23	43-04089-000	0.30	Residential	$93,380
Priority 2 Totals			2.30		$574,300
Priority 3 Parcels (As Warranted and Available)					
3	1	43-05163-000	0.27	Commercial	$39,950
3	2	43-05162-000	0.30	Commercial	$81,520
3	3	43-06063-000	0.57	Residential	$134,040
3	4	43-02799-000	0.64	Residential	$120,090
3	5	43-00881-000	0.49	Residential	$102,990
3	6	43-04142-000	0.17	Residential	$7,630
3	7	43-04142-001	0.17	Residential	$7,630
3	8	43-04143-000	0.36	Residential	$108,400
3	9	43-02546-000	0.15	Residential	$4,200
3	10	43-02545-000	0.52	Residential	$146,930
3	11	43-03274-000	0.33	Residential	$113,820
3	12	43-03276-000	0.07	Residential	$6,470
3	13	43-03275-000	0.26	Residential	$9,570
3	14	43-06332-000	0.48	Residential	$120,230
3	15	43-00235-000	0.48	Residential	$140,720
3	16	43-00236-000	0.09	Residential	$3,810
3	17	43-03827-001	1.15	Residential	$206,830
3	18	43-03827-002	0.63	Residential	$22,590
3	19	43-02421-000	0.52	Residential	$101,220
3	32	43-00173-000	0.68	Residential	$86,850
3	33	43-02943-000	0.62	Residential	$111,010
3	34	43-02944-001	0.62	Residential	$107,340
3	35	43-01982-000	0.29	Car	$61,420
3	36	43-01984-000	0.08	Car	$6,710
3	37	43-01985-000	0.26	Residential	$93,660
3	38	43-00888-000	0.54	Residential	$58,600
3	39	43-00887-000	0.54	Residential	$58,600
3	40	43-01537-000	0.06	Residential	$69,960
3	41	25-01755-000	0.03	Unplatted	$250
Priority 3 Totals			11.37		$2,133,040
Totals (All Parcels)			28.83		$3,473,530
Sources: Tuscarawas County Auditor and Michael Baker International, Inc., 2017.					

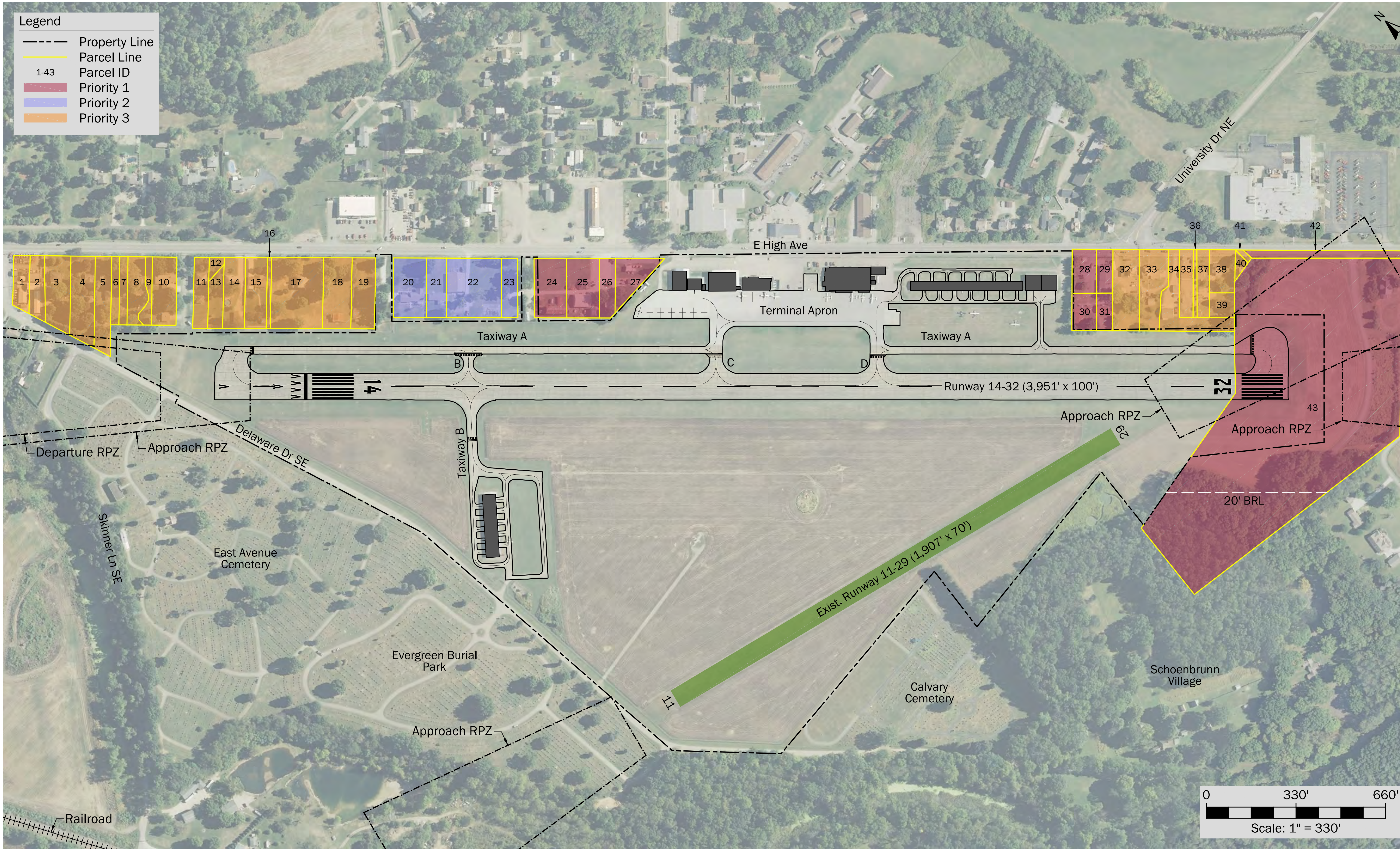


Figure 5-1 Properties Analysis

5.3 Runway Protection Zone (RPZ) Properties Analysis

As mentioned in the facility requirements chapter, the RPZs extend off the airport property beyond the four runway ends at PHD. According to FAA AC 150/5300-13A, "the RPZ's function is to enhance the protection of people and property on the ground. This is achieved through airport owner control over RPZs. Such control includes clearing RPZ areas (and maintaining them clear) of incompatible objects and activities. Control is preferably exercised through the acquisition of sufficient property interest in the RPZ." In 2012, the FAA issued a memorandum called Interim Guidance on Land Uses Within a Runway Protection Zone. The guidance in the memorandum must be used to coordinate any potential changes to RPZs with the FAA. For the RPZs that currently extend off the airport property, some degree of control should be implemented in order to maintain land use compatibility within the vicinity of PHD and to allow the airport to remove obstructions beyond the runway ends.

Figure 5-2 illustrates 31 off-airport parcels where the RPZs extend over, with the exception of property that is currently owned by the city and state. This graphic provides a preliminary look at parcels where the city should implement some degree of control, but does not account for other off-airport parcels where easements may be needed to clear approach surface obstacles (e.g., trees), which will be identified in conjunction with the Airport Layout Plan (ALP) drawing set for this study. There are several measures the city can consider to obtain control over the RPZs including outright acquisition, easement, or by implementing zoning; however, because some parcels extend outside the city limits primarily beyond the ends of Runways 11 and 32, the preferred degree of control needs to considered for each parcel.

At a minimum, zoning controls should be implemented to prevent the development of further incompatible land uses within the RPZs and to restrict the height of new structures surrounding the runways. **Figure 5-3** illustrates a sample of the Federal Aviation Regulations (FAR) Part 77 Imaginary Surfaces surrounding the runways at PHD. Because the Imaginary Surfaces cross multiple jurisdictions in Tuscarawas County, it is anticipated that zoning for PHD would have to be adopted in cooperation with the city, county, and other affected jurisdictions. Chapter 4563 of the Ohio Revised Code (ORC) provides the guidance for adopting federal obstruction standards and zoning regulations in accordance with FAR Part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace. The city should review the guidance and work with the county to establish those elements described in Chapter 4563 of the ORC.

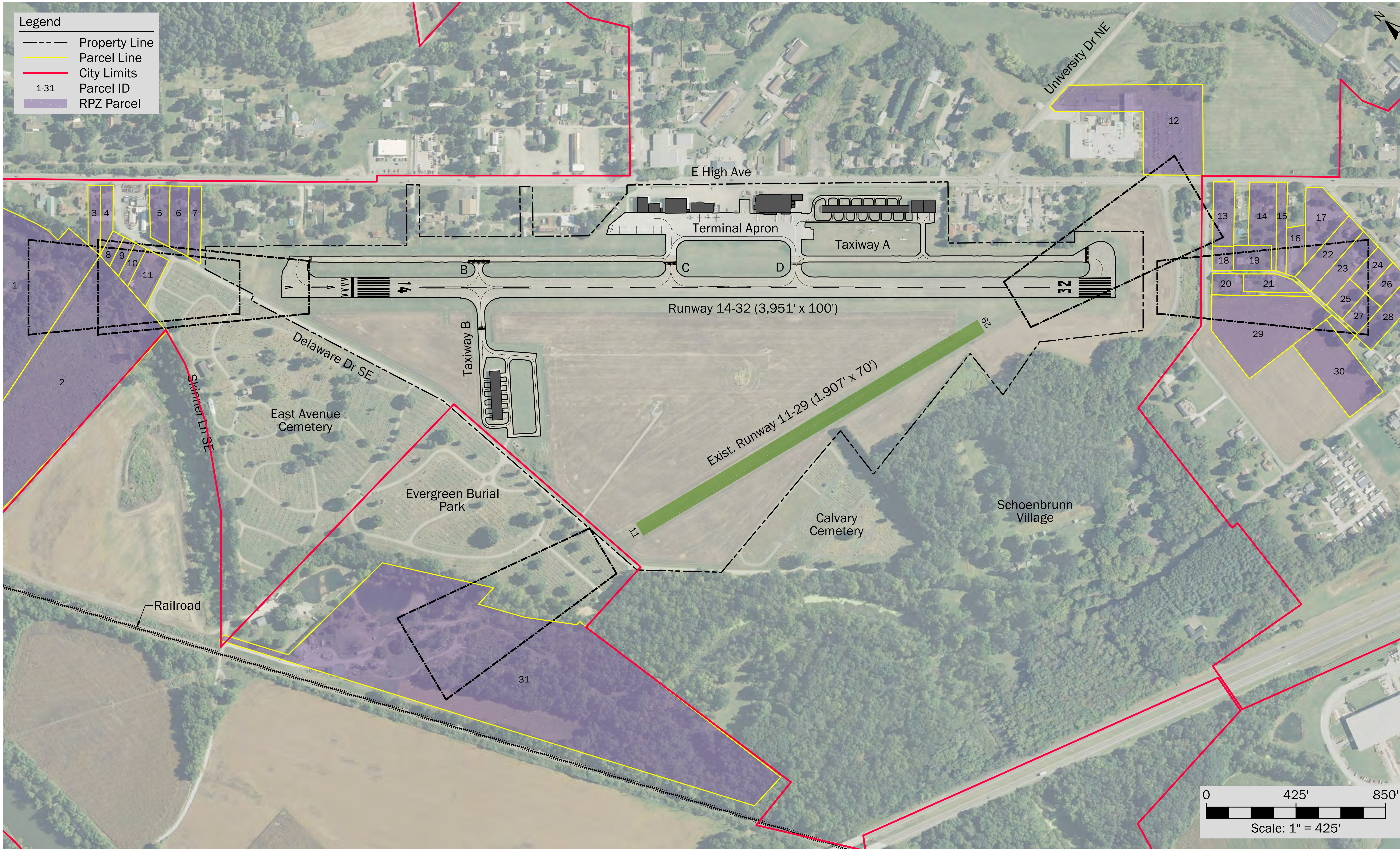


Figure 5-2 RPZ Properties Analysis

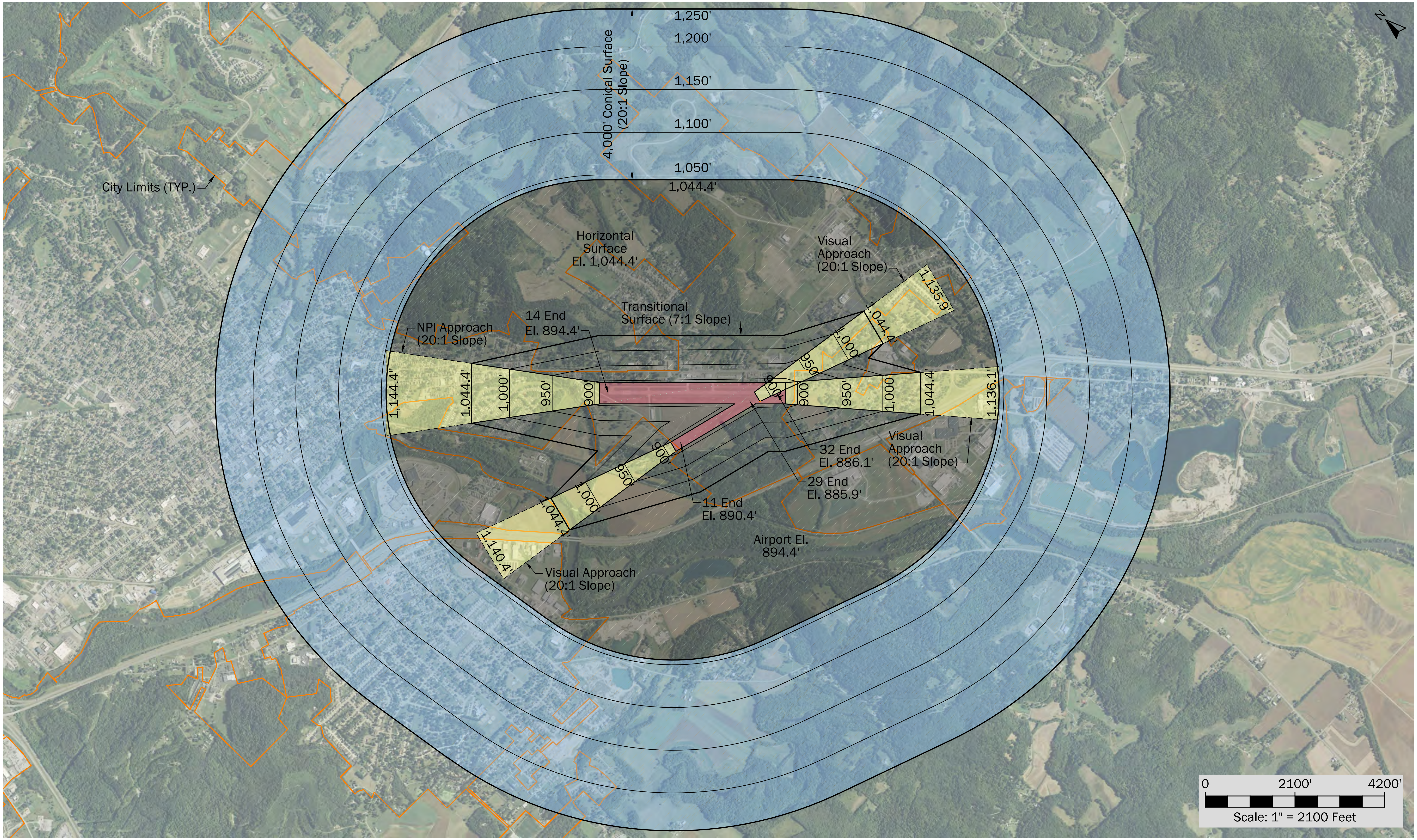


Figure 5-3 Part 77 Airspace Drawing

5.4 Summary of Preferred Alternative

The preferred alternative is illustrated in **Figure 5-4** and includes a combination of Development Alternative 1 (Figure 4-6) and Development Alternative 2 (Figure 4-7). The main difference is that the preferred alternative shows additional hangar development options on the Priority 1 parcels immediately adjacent to existing airport facilities. The primary airfield improvements include the correction of the non-standard separation between the runway centerline and parallel taxiway centerline from 135 feet to 150 feet, removal of direct connections between the runway and aircraft parking areas, and additional taxiways to improve aircraft traffic flows between both existing and future infrastructure. Based on the current magnetic headings of both runways, the runway numbers should also be changed as follows: 1) Runway 14-32 should be changed to Runway 15-33, and 2) Runway 11-29 should be changed to Runway 12-30.

The preferred alternative also shows some improvements in the terminal area that include removing the underground fuel tanks and replacing them with aboveground fuel tanks in the northern corner of the Terminal Apron, which would free-up space for the construction of a new hangar in the middle of the Terminal Apron. The aboveground fuel tanks could be accessed directly from Taxiway A with a new connector to the Terminal Apron. Additional paved tie-downs could also be constructed on the southern portion of the Terminal Apron.

On the opposite side of Runway 14-32, the preferred alternative shows 25 T-hangar units, eight small box hangars, and three larger corporate hangars, with the relocation of the Automated Surface Observing System (ASOS) to accommodate those developments. A paved tie-down apron is shown adjacent to the three larger corporate hangars, as well as an aircraft wash rack and aboveground fuel tanks. The taxilane for the paved tie-down apron would provide improved access for operations on Runway 11-29. The purpose of illustrating various types of developments along Delaware Drive Southeast is to show that the property has the flexibility to accommodate a wide range of potential users. Some of the developments could be accessed by the public and could support a mix of aviation-related businesses, a flight school, or a relocated Fixed Base Operator (FBO) facility. **Figure 5-5** illustrates a zoom-in of this area to illustrate how the facilities could be fenced in order to prevent access to the airfield.

Overall, the preferred alternative illustrates an additional 25 T-hangar bays (14 required by 2035), 20 paved tie-downs (three required by 2035), and 69,960 square feet of corporate/box hangar space (14,000 square feet required by 2035). Although the illustrated development far exceeds forecast demands during the 20-year planning period, it helps show the development potential for PHD and may serve as a marketing tool for the airport to attract future lease and development opportunities. The three expansion areas are locations that would not be valuable for aviation development and could therefore be used for other non-aviation purposes. The city needs to consider whether the expansion areas should remain airport property or if it would be beneficial to request a land release from the FAA. If the expansion areas are to remain airport property, all revenues generated from their use must be used for airport purposes. If the city prefers to release the expansion areas from being federally-obligated properties, additional steps and coordination with the FAA would need to occur.

The individual projects associated with the preferred alternative are summarized in the list below. The ALP drawing set illustrates many of the more finite recommendations for the airport, such as obstruction removal requirements and areas for property acquisition and easements.

A. 13-Unit T-Hangar (Construct)
B. Relocate Parallel Taxiway A (Design/Construct)
C. 5,950 SF Hangar & Aboveground Fuel Tanks (Design/Construct)
D. Tiedowns (Construct)
E. 2-3,472 SF Hangars (Design/Construct)
F. 6-2,500 SF Hangars (Design/Construct)
G. 3-2,912 Hangars (Design/Construct)
H. New Partial Parallel Taxiway (Design/Construct)
I. 12-Unit T-Hangar & AWOS Relocation (Design/Construct)
J. 5-1,386 SF Hangars (Design/Construct)
K. New Partial Parallel Taxiway (Design/Construct)
L. 6,400 SF Hangar (Design/Construct)
M. 10,000 SF Hangar (Design/Construct)
N. 10,000 SF Hangar (Design/Construct)
O. New Apron & Aboveground Fuel Tanks (Design/Construct)
P. Acquire Property & Relocate Road

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Figure 5-4 Preferred Alternative

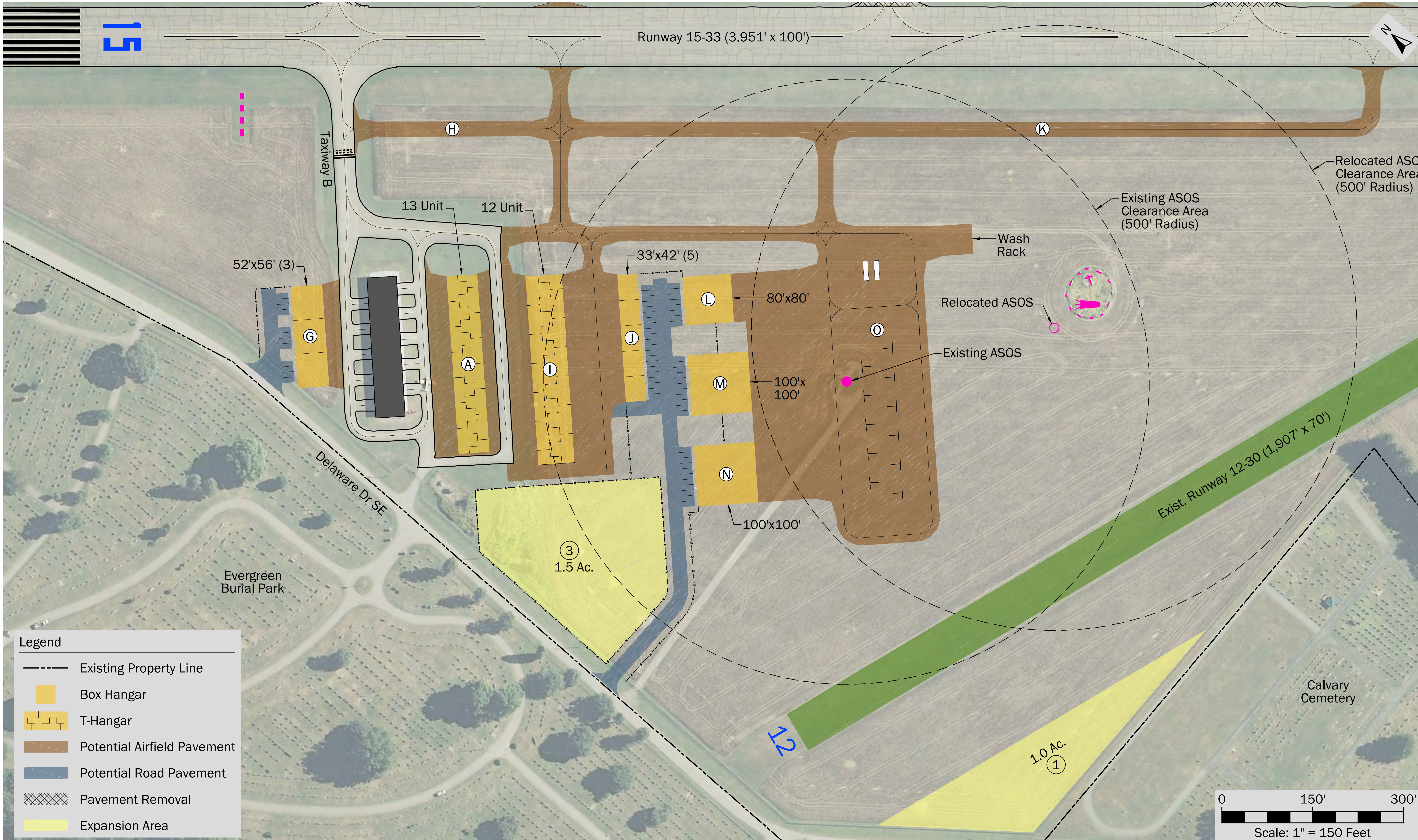


Figure 5-5 Preferred Alternative (South Development Area)

5.5 Noise Contours

The Aviation Environmental Design Tool (AEDT) is the FAA-approved computer program that is used to generate airport noise contours and to evaluate incompatible noise exposure to sensitive land uses such as residential properties, schools, places of worship, and hospitals. The noise contours illustrate the Day-Night Average Sound Level (DNL) that occurs during an average day and are generated by inputting various airport-specific factors into AEDT (aircraft activity and fleet mix, flight tracks, runway utilization, day and night activity, etc.). According to the FAA's Environmental Desk Reference for Airport Actions, "DNL is the 24-hour average sound level in decibels (dB). This average is derived from all aircraft operations during a 24-hour period that represents an airport's average annual operational day. [...] DNL adds a 10 dB noise penalty to each aircraft operation occurring during nighttime hours (10 p.m. to 7 a.m.). DNL includes that penalty to compensate for people's heightened sensitivity to noise during this period." The FAA identifies DNL levels of 65 dB and higher as incompatible with noise sensitive land uses.

Using the latest version of AEDT (Version 2c), DNL noise contours were generated for the following two scenarios at PHD: 1) existing 2015 activity levels, fleet mix, and runway configuration, and 2) forecast 2035 activity levels, fleet mix, and runway configuration. The AEDT inputs in **Table 5-3** were derived from the fleet mix forecast in Table 2-7 and by reviewing historical flight records to identify aircraft models that commonly operate at PHD. As shown in **Figure 5-6**, portions of the DNL 65 dB contour extend off the airport under the existing and forecast scenarios. The DNL 65 dB contour extends over sensitive land uses (e.g., residential properties) under both scenarios. However, because there are not changes recommended for the airfield, the impacts are associated with the natural growth in operations that is forecast for the airport and not because of the study recommendations.

Table 5-3
Noise Inputs (2015 & 2035)

Aircraft Type	Model	2015 Operations	2035 Operations
Single-Engine Piston (Turf Runway Activity)	Cessna 172	4,000	4,000
Single-Engine Piston	Cessna 182	11,238	18,834
Multi-Engine Piston	Beechcraft Baron 58	1,147	1,719
Turboprop	De Havilland Twin Otter	77	262
Jet (Small)	Cessna Citation 2	22	45
Helicopter	Bell 206	166	672
Source: Michael Baker International, Inc., 2016.			

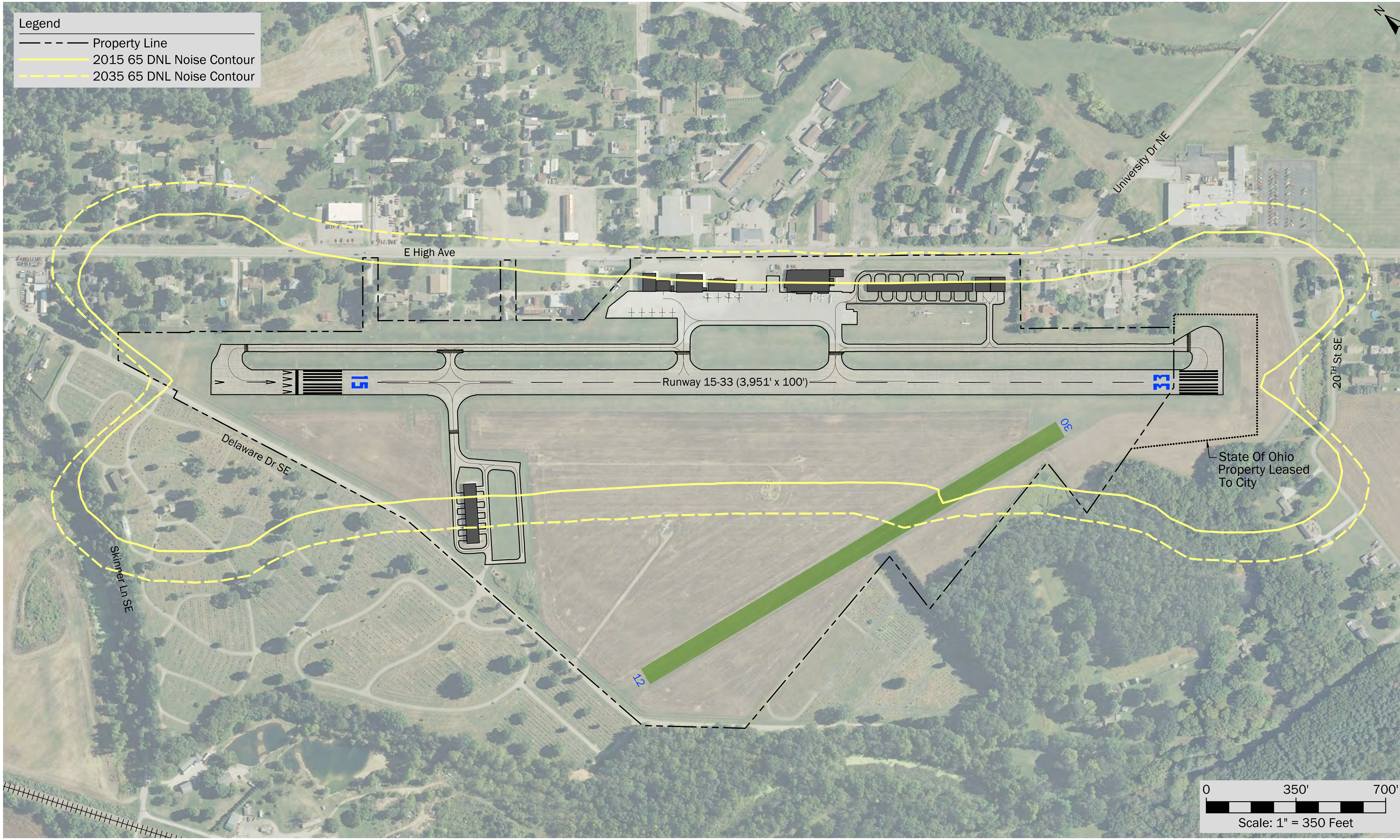


Figure 5-6 Noise Contours

5.6 Environmental Review

The following sections describe the necessary level of documentation and permitting that would be associated with undertaking the projects proposed within the preferred alternative in accordance with the National Environmental Policy Act (NEPA), and identify potential environmental impacts that would be expected as a result of implementation of those projects.

5.6.1 Potential NEPA Documentation

FAA Order 1050.1F, Environmental Impacts: Policies and Procedures, provides the FAA policy and procedures to ensure compliance with the requirements of NEPA for FAA-funded projects and lists the type of NEPA documentation required for each project type. Chapter 5 of that document contains advisory and emergency actions and categorically excluded projects and actions. Categorically excluded projects and actions are those that meet the criteria contained in 40 CFR 1508.4 and represent actions that do not normally require an Environmental Assessment (EA) or Environmental Impact Statement (EIS) and do not individually or cumulatively have a significant effect on the environment. Chapter 3 of that document provides a summary of requirements for environmental assessments [a summary of Findings of No Significant Impact (FONSI) is provided in Chapter 6 of that document], and lists examples of actions or projects that normally require an EA which includes but is not limited to the following:

- Actions that are not categorically excluded
- Actions that are categorically excluded but involves at least one extraordinary circumstance that may significantly impact the environment
- Actions that require land acquisition greater than three acres
- Federal financial participation in or unconditional airport layout plan approval of a major runway extension

The examples were limited to those relevant to the projects proposed in the preferred alternative. Subsequently, the proposed projects are not anticipated to require an EIS to meet NEPA requirements.

5.6.2 Potential Regulatory Permits

Permitting requirements for each project type are based upon current federal, state, and local environmental regulations. The following criteria were used to determine the potential environmental permit that would be required for each project:

1. *National Pollutant Discharge Elimination System (NPDES) Permit for Construction Activity*

   An NPDES for Construction permit is required if the project area is greater than one acre.

2. *Section 404 Permit or Corps of Engineers (COE) Dredge and Fill Permit*

A Section 404 Permit is required if the project proposes to fill or dredge wetlands that are waters of the U.S.

3. *Ohio EPA Isolated Wetland Permit*
   An Isolated Wetland Permit is required if the project proposes to fill or dredge into isolated wetlands that are not waters of the U.S.

5.6.3 Preferred Alternative Projects

The proposed projects of the preferred alternative were overlaid on the most recent aerial photograph to determine if the projects could impact developed areas, wetlands, non-forested uplands, and forested uplands. **Table 5-4** identifies the potential environmental impacts associated with the preferred alternative, the anticipated level of documentation and regulatory permits that would be needed for each project such as a Categorical Exclusion or Environmental Assessment (EA). The projects were divided into the following:

1. Projects with no potential environmental impact
2. Projects with potential protected species impact
3. Projects with potential wetland impact

Projects with No Potential Environmental Impacts

Projects with no potential environmental impacts are those located on developed areas on the airport property (i.e., mowed upland or paved areas), do not require land acquisition, and have a project area greater than one acre. Those projects are typically categorically excluded and require a NPDES permit except when specifically identified in FAA Order 1050.1F such as the construction of a fueling facility, major extension of a runway, etc. The projects under this category are categorically excluded except for the road relocation land acquisition project which normally requires an EA per FAA Order 1050.1F.

Projects with Potential Protected Species Impacts

Projects with potential protected species impacts are projects that are located in or near habitat types that have the potential to contain state or federally listed species. The projects proposed for the preferred alternative are not located on or near any habitats that are likely to support state or federally listed species. None of the projects proposed are located in or near any designated critical habitat for state or federally listed species.

Projects with Potential Wetland Impacts

Projects with potential wetland impacts are projects that are located in areas that contain wetlands or are near wetlands. Those projects are required to have either a Section 404 Permit, COE Dredge and Fill Permit, or an Ohio EPA Isolated Wetland Permit. The projects proposed for the preferred alternative are not located on or near any waters of the U.S. or wetlands.

Table 5-4 Environmental Review of Preferred Alternative													
Figure 5-4 Reference	Project	Disturbed Area (Acres)	Property Acquisition (Acres)	Potential Impact (Y or N)					Potential NEPA Documentation	FAA Order 1050.1F Reference	Potential State Permit	Potential Federal Permit
				Noise	Air Quality	Wetlands	Upland Forested	Protected Species				
Projects With No Environmental Impacts												
A	13-Unit T-Hangar (Construct)	0.75		N	N	N	N	N	CatEx	5-6.4 f.		None
B	Relocate Parallel Taxiway A (Design/Construct)	3.36		N	N	N	N	N	CatEx	5-6.4 e.	NPDES	None
C	5,950 SF Hangar & Aboveground Fuel Tanks (Design/Constuct)	0.30		N	N	N	N	N	CatEx	3-1.2.b.(1)		None
D	Tiedowns (Construct)	0.79		N	N	N	N	N	CatEx	5-6.4 f.		None
E	2-3,472 SF Hangars (Design/Construct)	0.90	0.90	N	N	N	N	N	CatEx	5-6.4 f.		None
F	6-2,500 SF Hangars (Design/Construct)	1.90	1.90	N	N	N	N	N	CatEx	5-6.4 f.	NPDES	None
G	3-2,912 Hangars (Design/Construct)	0.46		N	N	N	N	N	CatEx	5-6.4 f.		None
H	New Partial Parallel Taxiway (Design/Construct)	0.39		N	N	N	N	N	CatEx	5-6.4 e.		None
I	12-Unit T-Hangar & AWOS Relocation (Design/Construct)	1.58		N	N	N	N	N	CatEx	5-6.4 f.	NPDES	None
J	5-1,386 SF Hangars (Design/Construct)	0.16		N	N	N	N	N	CatEx	5-6.4 f.		None
K	New Partial Parallel Taxiway (Design/Construct)	1.17		N	N	N	N	N	CatEx	5-6.4 e.	NPDES	None
L	6,400 SF Hangar (Design/Construct)	0.80		N	N	N	N	N	CatEx	5-6.4 f.		None
M	10,000 SF Hangar (Design/Construct)	0.23		N	N	N	N	N	CatEx	5-6.4 f.		None
N	10,000 SF Hangar (Design/Construct)	0.23		N	N	N	N	N	CatEx	5-6.4 f.		None
O	New Apron & Aboveground Fuel Tanks (Design/Construct)	3.05		N	N	N	N	N	EA	3-1.2.b.(5)	NPDES	None
P	Acquire Property & Relocate Road	0.65	12.9*	N	N	N	Y	N	EA	3-1.2.b.(1)		None

Source: Michael Baker International, Inc., 2017.
NPDES – National Pollutant Discharge Elimination System Permit for Construction Activity
*Per FAA Order 1050.1F, land acquisitions over three acres require an EA.

6.0 Implementation Plan

6.1 Introduction

The primary objective of this chapter is to analyze the financial feasibility of developing the projects included in the Capital Improvement Program (CIP) for the Harry Clever Field Airport (PHD). The proposed financial plan was developed after evaluating the financial structure of PHD and identifying potential sources of revenue that may be available to fund capital improvement projects. The funding sources were then matched with projects over an estimated phasing schedule to determine the financial implications of undertaking the recommended capital improvements. The implementation plan presented herein describes the staging of proposed improvements and identifies various means of funding the improvements. It is the intent of this implementation plan to provide general financial guidance to the New Philadelphia Airport Commission (Airport Commission) for making policy decisions regarding the recommended development of the airport over the 20-year planning period. The information in this chapter presents a preliminary review of the CIP and financial structure of PHD.

6.2 Federal and State Funding Eligibility

The CIP identifies recommended projects and associated cost estimates for the 20-year planning period at PHD. FAA Order 5100.38D, Airport Improvement Program (AIP) Handbook, sets forth the official policy and procedures to be used in the administration of AIP grants. **Table 6-1** lists typical examples of eligible and ineligible AIP projects. Projects eligible for AIP funding may receive up to 90 percent of the project cost to be covered by the FAA with the Ohio Department of Transportation (ODOT) and City of New Philadelphia responsible for five percent each. The city receives $150,000 in entitlement funds from the FAA each year, which are spent on projects at PHD. Those funds are mostly used for safety, pavement, lighting, and planning/design/environmental projects. If the airport is conducting a larger project that is more expensive, the FAA may provide additional discretionary funding.

ODOT also has a Direct Grant Program that covers up to 95 percent of eligible project costs. The Direct Grant Program is competitive and the amount of annual funding is based on the remainder of budgeted funds after ODOT allocates the state share of AIP grants. It is noted that these are typical funding shares.

Table 6-1
Examples of Eligible vs. Ineligible AIP Projects

Eligible Projects	Ineligible Projects
Runway construction/rehabilitation	Maintenance equipment and vehicles
Taxiway construction/rehabilitation	Office and office equipment
Apron construction/rehabilitation	Fuel farms*
Airfield lighting	Landscaping
Airfield signage	Artworks
Airfield drainage	Aircraft hangars*
Land acquisition	Industrial park development
Weather observation stations (AWOS)	Marketing plans
NAVAIDs such as REILs and PAPIs	Training
Planning studies	Improvements for commercial enterprises
Environmental studies	Maintenance or repairs of buildings
Safety area improvements	
Airport layout plans (ALPs)	
Access roads only located on airport property	
Removing, lowering, moving, marking, and lighting hazards	
Glycol Recovery Trucks/Glycol Vacuum Trucks**	

Source: FAA AIP Overview, FAA website.
*May be eligible. Contact your local Airport District or Regional Office for more information.
**To be eligible, the vehicles must be owned and operated by the Airport and meet the Buy American Preference specified in the AIP grant. Contact your local Airport District or Regional Office for more information.

In addition, the following must also apply for FAA to consider a project for AIP funding:
The project sponsorship requirements have been met.
The project is reasonably consistent with the plans of planning agencies for the development of the area in which the airport is located.
Sufficient funds are available for the portion of the project not paid for by the Federal Government.
The project will be completed without undue delay.
The airport location is included in the current version of the NPIAS.
The project involves more than $25,000 in AIP funds.
The project is depicted on a current airport layout plan approved by FAA.

6.3 Project Costs & Phasing

6.3.1 Project Costs

As shown in **Table 6-2**, a CIP and phasing plan were identified for the 20-year planning period that includes a mixture of the study recommendations and routine maintenance of existing facilities. The CIP planning period is defined as 2017 through 2035+. Each project within the CIP was assigned to a particular planning period or development phase (i.e., Phase 1, Phase 2, or Phase 3). The Phase 1 time period extends from 2017 to 2022, the Phase 2 period extends from 2023 to 2028, and the Phase 3 period spans through 2029 to 2035+. A detailed breakdown of costs and phasing was produced for Phase 1 projects; however, the Phase 2 and 3 projects are listed in a more generalized order that should remain flexible. Although this study charts a course for planned development, it must be emphasized that the planning and development of an airport is a continuous process. The rehabilitation of existing facilities and development of new facilities must be predicated on sustained demand, which justifies the costs of improvements. As aviation demand may change at PHD and also specific project requirements and funding mechanisms may change, the Airport Commission should consider the impact on the CIP and the potential need to modify certain elements of the Airport Layout Plan (ALP).

The estimated cost for each of the recommended airport improvements reflects a preliminary opinion of the probable implementation cost for the project. In addition to the estimated construction costs, anticipated fees for design, inspection, permitting, surveying, testing and administration were also included in the overall estimate where applicable. Each project cost is presented in the base year dollar value and therefore does not reflect unanticipated increases in labor and material costs or changes in environmental legislation. This is done for master planning purposes because the dates of project are generally identified in phases as opposed to specific years. In addition, a contingency was added to the overall costs of some projects to account for unforeseen variables. A detailed environmental analysis may be required to recognize the full scope of environmental and budgetary impacts associated with the proposed development. Some projects may also require mitigation measures to offset impacts to environmentally sensitive areas whereas others may require some level of environmental remediation based on conditions that may or may not have been identified as part of this study. For those reasons, it is important to note that the estimates shown are accurate based on the costs of labor, materials, and anticipated impacts calculated at the time of this writing. As such, it is important to revisit and update costs regularly to ensure that an accurate CIP is maintained.

6.3.2 Project Phasing

Since the airport's actual versus forecast activity levels may vary, it is important for the staging of proposed improvement projects remain sensitive to such variations. Some projects may take precedence over others, depending on their level of priority or due to the availability of funding. Thus, a list of prioritized improvements was established based upon the urgency of need, ease of implementation, and logic of project sequencing. The objective was to establish an efficient order for project development and implementation that meets or exceeds the forecasted aviation demands at PHD.

The total cost of the 20-year CIP is estimated at $21.70 million. Those figures include all studies, infrastructure improvements, and proposed construction costs necessary to achieve the developments shown in the CIP. The CIP for each period presents the improvements slated for implementation during the period, but it does not assume how financially feasible it will be for the city to undertake the projects or whether or not funding will be available.

Much of the funding for the projects in Phase 1 has been pre-determined between the Airport Commission and ODOT, but can be subject to change on a case-by-case and annual basis. The Phase 2 projects include items that will be necessary based on the forecast demand and to provide anticipated maintenance activities. Many of the Phase 3 projects include routine maintenance and higher price private developments that would likely only be implemented as required by demand. This CIP relies heavily on private investment to construct future hangars with the overall goal of reducing the city's maintenance and development costs by encouraging private facility development.

6.3.3 Consumer Price Index (CPI) Adjustment

The improvements shown in previous tables illustrate the facilities needed at PHD to meet the forecast demands through the end of the 20-year planning period and likely beyond as well. The cost estimates were determined in year 2017 dollars, so as time goes by the values should be reviewed to determine if any project cost adjustments have occurred. Although the costs for construction projects is highly variable due to the fluctuating cost of materials (e.g., asphalt, steel, and energy production), a reasonable estimate of future costs can be calculated by adjusting the 2015 costs by the appropriate Consumer Price Index (CPI) inflation factor. The Bureau of Labor Statistics (BLS) provides an online CPI inflation calculator that may be used to compare historical costs to present day cost and is available on this website (http://www.bls.gov/data/inflation_calculator.htm).

Table 6-2
Capital Improvement Program (2017-2035+)

Year	Figure 5-2 ID	Project Title	Estimated Cost	AIP Grants	ODOT Grants	City Funds	Private Funds	AIP %	ODOT %	City %	Private %
2017	CIP	Runway 14-32 Rehab (Construction)	$1,300,000	$1,170,000	$65,000	$65,000	$0	90.00%	5.00%	5.00%	
2017	A	13-Unit T-Hangar (Construct)	$350,000	$0	$0	$350,000	$0			100.00%	
2018	CIP	Implement Zoning Ordinance	$50,000	$0	$47,500	$2,500	$0		95.00%	5.00%	
2019	P	Acquire Property & Relocate Road	$480,000	$432,000	$24,000	$24,000	$0	90.00%	5.00%	5.00%	
2020	CIP	Install Beacon	$80,000	$72,000	$4,000	$4,000	$0	90.00%	5.00%	5.00%	
2021	B	Relocate Parallel Taxiway A & Install Signage (Design/Construct)	$1,630,000	$1,467,000	$81,500	$81,500	$0	90.00%	5.00%	5.00%	
2021	CIP	RPZ Acquisition/Clearing (Runway 32)	$300,000	$270,000	$15,000	$15,000	$0	90.00%	5.00%	5.00%	
2021	CIP	East Box Hangar Taxilane Rehab (Design/Construct)	$80,000	$21,600	$1,200	$57,200	$0	27.00%	1.50%	71.50%	
2022	G	3-2,912 Hangars (Design/Construct)	$750,000	$0	$0	$150,000	$600,000			20.00%	80.00%
2022	CIP	Airport Wildlife Fencing (Design/Construct)	$350,000	$315,000	$17,500	$17,500	$0	90.00%	5.00%	5.00%	
TBD	C	5,950 SF Hangar & Aboveground Fuel Tanks (Design/Construct)	$860,000	$232,200	$12,900	$12,900	$602,000	27.00%	1.50%	1.50%	70.00%
TBD	D	Tiedowns (Construct)	$520,000	$468,000	$26,000	$26,000	$0	90.00%	5.00%	5.00%	
TBD	CIP	West T-Hangar Taxilane Rehab (Design/Construct)	$280,000	$252,000	$14,000	$14,000	$0	90.00%	5.00%	5.00%	
TBD	CIP	East T-Hangar Taxilane Rehab (Design/Construct)	$160,000	$144,000	$8,000	$8,000	$0	90.00%	5.00%	5.00%	
TBD	H	New Partial Parallel Taxiway (Design/Construct)	$260,000	$234,000	$13,000	$13,000	$0	90.00%	5.00%	5.00%	
TBD	I	12-Unit T-Hangar & AWOS Relocation (Design/Construct)	$2,120,000	$572,400	$31,800	$1,515,800	$0	27.00%	1.50%	71.50%	
TBD	J	5-1,386 SF Hangars (Design/Construct)	$480,000	$0	$0	$0	$480,000				100.00%
TBD	CIP	Master Plan Update	$350,000	$315,000	$17,500	$17,500	$0	90.00%	5.00%	5.00%	
TBD	CIP	Terminal Apron Rehab (Design/Construct)	$880,000	$792,000	$44,000	$44,000	$0	90.00%	5.00%	5.00%	
TBD	E	2-3,472 SF Hangars (Design/Construct)	$1,220,000	$329,400	$18,300	$18,300	$854,000	27.00%	1.50%	1.50%	70.00%
TBD	K	New Partial Parallel Taxiway (Design/Construct)	$780,000	$702,000	$39,000	$39,000	$0	90.00%	5.00%	5.00%	
TBD	L	6,400 SF Hangar (Design/Construct)	$870,000	$0	$0	$0	$870,000				100.00%
TBD	O	New Apron & Aboveground Fuel Tanks (Design/Construct)	$1,790,000	$1,611,000	$89,500	$89,500	$0	90.00%	5.00%	5.00%	
TBD	M	10,000 SF Hangar (Design/Construct)	$920,000	$0	$0	$0	$920,000				100.00%
TBD	F	6-2,500 SF Hangars (Design/Construct)	$2,420,000	$653,400	$36,300	$36,300	$1,694,000	27.00%	1.50%	1.50%	70.00%
TBD	N	10,000 SF Hangar (Design/Construct)	$920,000	$0	$0	$0	$920,000				100.00%
TBD	CIP	Runway 14-32 Rehab (Construction)	$1,500,000	$1,350,000	$75,000	$75,000	$0	90.00%	5.00%	5.00%	

	Estimated Cost	AIP Grants	ODOT Grants	City Funds	Private Funds
Total All	**$21,700,000**	**$11,403,000**	**$681,000**	**$2,676,000**	**$6,940,000**
Total Phase 1 (2017-2022)	**$5,520,000**	**$3,747,600**	**$255,700**	**$766,700**	**$600,000**
Total Phase 2 (2023-2028)	**$5,030,000**	**$2,217,600**	**$123,200**	**$1,607,200**	**$1,082,000**
Total Phase 3 (2029-2035+)	**$11,300,000**	**$5,437,800**	**$302,100**	**$302,100**	**$5,258,000**
Average Per Year (2017-2035)	**$1,205,556**	**$633,500**	**$37,833**	**$148,667**	**$385,556**
FAA Entitlement Balance (2017)		**$430,270**			
FAA Entitlements (2018-2035)		**$2,550,000**			
Anticipated FAA Discretionary Funding (2017-2035)		**$8,422,730**			

Source: Michael Baker International, Inc., 2017.

6.4 Airport Financial Structure

This section presents the historical revenues and expenses that were generated from the city's operation of PHD, as well as a forecast of revenues and expenses and a projection of annual cash outlays that will be required by the city after capital improvements are accounted for. The information in this chapter represents baseline conditions only and does not include strategies for increasing the revenues of PHD or decreasing the city's annual investment into the airport. The city's sources of revenue from PHD primarily include the following items:

- Hangar Rental Fees (specific to the hangar)
- Hangar Maintenance Fees ($25 per month)
- Hangar Land Lease
- Restaurant Lease (based on monthly sales)
- Fuel Flowage Fee ($0.035 per gallon)
- Fixed Base Operator (FBO) Lease

Those revenues are collected by the city each month and managed within the city's airport account. Each year, the city appropriates funds for the airport to be used for equipment maintenance, capital improvements, facility maintenance, and hangar maintenance. The city budgets money from the general fund each year to pay for general maintenance and capital improvements at the airport. The budgeted funds do not carry over each year (i.e., funds not utilized do not come out of the general fund and do not go into the airport account). However, the hangar maintenance funds are part of the airport account and the remaining balance carries over each year to be utilized for projects at PHD. Members of the Airport Commission have indicated that the city has always had the ability to pay the local share for projects and cover the airport's annual maintenance costs.

6.5 Cash Flow Analysis

As part of this Master Plan Update, a more detailed analysis of the airport's financial structure was undertaken following the acceptance of the CIP by the TAC and Airport Commission. The airport's historical revenues and expenses for 2015 and 2016 are summarized in **Table 6-3**. At this time, any differences between revenues and expenses are covered by the city's general fund. The airport's revenues and expenses are not tracked by a separate airport fund within the city's budget. Therefore, it is recommended that the city establish an airport fund in order to be able to better track the airport's financial records. That will allow the city to better plan for how much the airport will need in general fund transfers each year (when necessary) and to better monitor the financial performance of the airport. The goal should be to make the airport as financially self-sustainable as possible and to make sure that all airport-generated revenues are allocated to the airport.

The historical information shown in Table 6-3 was estimated from financial reports from the city and airport and is intended to represent what a separate airport fund for PHD might resemble. As shown, general revenues and expenses remain fairly consistent from year to year, and without the added costs for capital improvements and hangar maintenance, the airport has the ability to make a small profit each year. As the costs for capital improvements and hangar maintenance tend to vary from year to year, the annual financial performance/profit for PHD can be negative, which is illustrated in the potential cash flow analysis in **Table 6-4** for the period from 2017 to 2022. This can be particularly true during a year when there are expensive projects planned for the airport, such as the relocation of the parallel taxiway centerline in 2021. During 2021, the airport's capital improvement costs are estimated to be $153,700, which would result in a negative annual profit of $128,722. The information in Table 6-4 was derived by applying the based aircraft forecast growth rate of 0.91 percent per year to certain revenue and expense items. The anticipated lease revenues from the upcoming T-hangar project were not expected to have a significant effect on the airport's finances because the costs to pay off the loan to construct the facility were assumed to be approximately equal; however, additional hangar maintenance fees would be collected after the T-hangar is constructed. The Airport Commission could consider encouraging private development through land leases. The lessee would be responsible for the cost to construct and maintain their facility throughout the duration of the land lease, after which time ownership of the facility would either revert to the city or the lease would be renegotiated. Because of the high cost to construct hangars and the limited funding availability, the Airport Commission may wish to explore private development at PHD through land leases, particularly when considering partnership opportunities with local universities, flight schools, etc. A rolling balance is shown in Table 6-4 beginning in 2018 and assumes that an airport fund would be created in 2018 and would start with no negative carryover balance from previous years. It shows when transfers from the general fund would be needed to cover the local share for annual capital improvements.

Table 6-3
Historical Revenues and Expenses (2015-2016)

Item	2015	2016
Revenues		
Hangar Maintenance Fees	$10,375.00	$10,675.00
Hangar Rents	$41,439.05	$48,942.47
FBO Lease	$12,000.00	$12,000.00
Fuel Sales	$1,000.00	$1,000.00
Restaurant	$13,770.47	$13,770.47
Total Revenues	**$78,584.52**	**$86,387.94**
Expenses		
Equipment Maintenance/Operations	$13,029.70	$13,755.44
Capital Improvements	$0.00	$10,000.00
Facility Maintenance	$12,628.21	$13,085.78
Hangar Maintenance	$0.00	$20,074.59
FBO Management Services	$20,719.53	$24,471.24
Total Expenses	**$46,377.44**	**$81,387.05**
Annual Profit		
Revenues – Expenses	**$32,207.09**	**$5,000.90**
Source: Estimated from city and airport financial records.		

Table 6-4 Potential Cash Flow Analysis (2017-2022)						
Item	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Revenues						
Hangar Maintenance Fees	$10,772.14	$14,470.17	$14,601.85	$14,734.72	$14,868.81	$15,004.12
Hangar Rents	$49,387.85	$49,837.28	$50,290.80	$50,748.44	$51,210.25	$51,676.27
FBO Lease	$12,000.00	$12,000.00	$12,000.00	$12,000.00	$12,000.00	$12,000.00
Fuel Sales	$1,009.10	$1,018.28	$1,027.55	$1,036.90	$1,046.34	$1,055.86
Restaurant	$13,895.78	$14,022.23	$14,149.84	$14,278.60	$14,408.53	$14,539.65
New Land Lease	$0.00	$0.00	$0.00	$0.00	$0.00	$6,000.00
Total Revenues	**$87,064.87**	**$91,347.96**	**$92,070.03**	**$92,798.66**	**$93,533.93**	**$100,275.89**
Expenses						
Maintenance & Operation	$13,755.44	$13,755.44	$13,755.44	$13,755.44	$13,755.44	$13,755.44
Capital Improvements	$65,000.00	$2,500.00	$24,000.00	$4,000.00	$153,700.00	$17,500.00
Facility Maintenance	$13,204.86	$13,325.02	$13,446.28	$13,568.64	$13,692.12	$13,816.72
Hangar Maintenance	$15,000.00	$15,136.50	$15,274.24	$15,413.24	$15,553.50	$15,695.04
FBO Management Services	$24,693.92	$24,918.64	$25,145.40	$25,374.22	$25,605.13	$25,838.13
Total Expenses	**$131,654.22**	**$69,635.60**	**$91,621.36**	**$72,111.54**	**$222,306.18**	**$86,605.32**
Annual Profit						
Revenues – Expenses	**-$44,589.35**	**$21,712.36**	**$448.66**	**$20,687.12**	**-$128,772.25**	**$13,670.57**
Rolling Balance (Beginning in 2018)						
Rolling Balance		**$21,712.36**	**$22,161.02**	**$42,848.14**	**-$85,924.11**	**-$72,253.54**
Annual Projects						
Capital Improvement Costs	Runway Rehab ($65,000) T-Hangar Construction (Loan Cost ≈ Lease Income)	Zoning Update ($2,500)	Property Acquisition ($24,000)	Install Beacon ($4,000)	Relocate Taxiway ($81,500) RPZ Clearing ($15,000) Taxilane Rehab ($57,200)	Hangar Construction (Private Development) Wildlife Fencing ($17,500)
Source: Michael Baker International, Inc., 2017.						

7.0 Airport Layout Plan

7.1 Introduction

The purpose of an approved Airport Layout Plan (ALP) is to serve as the blueprint for future airport development. One condition of accepting and utilizing grant funding for airport improvement projects is to maintain an updated ALP. For Harry Clever Field Airport (PHD), the updated development recommendations presented in this study are pictorially summarized in the ALP drawing set and include the preferred concepts for airfield development, landside facility development, and other reserved areas for non-aviation use. The ALP drawing set represents a scaled, graphic presentation of the airport's 20-year development program, thereby providing the airport with a feasible improvement plan that would increase the capability and safety of aircraft operations, promote compatibility with existing and proposed developments, and further upgrade the airport to effectively serve the anticipated demands of general aviation and small corporate aircraft traffic. The drawings depict the recommendations of this study with regard to aviation development for the short, intermediate, and long-term planning periods.

The dimensional information provided in the drawings demonstrates compliance with minimum airport design standards established by federal, state, and local authorities. The ALP Drawing Set was developed in accordance with the guidance outlined in Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5070-6, Airport Master Plans, AC 150/5300-13A, Airport Design, FAA ARP Standard Operating Procedure (SOP) 2.0, Standard Operating Procedure for FAA Review and Approval of Airport Layout Plans and other supporting circulars and orders. The ALP drawing set includes the following individual drawing sheets which are provided at the end of this chapter in reduced-size format:

- Title Sheet (Sheet 1)
- Airport Data Sheet (Sheet 2)
- Airport Layout Plan Drawing (Sheet 3)
- Airport Airspace Drawings (Sheets 4 and 5)
- Inner Portion of the Approach Surface Drawings (Sheets 6 and 7)
- Runway Departure Surface Drawing – Runway 15-33 (Sheet 8)
- Terminal Area Drawing (Sheet 9)
- Land Use Drawing (Sheet 10)
- Airport Property Map (Sheet 11)

7.2 Title Sheet (Sheet 1)

The Title Sheet serves as the introduction to the ALP drawing set. It includes the airport name, a location/vicinity map, and an index of drawings included in the ALP drawing set. Also highlighted on the Title Sheet are the project name, sponsor's name, and the FAA grant number.

7.3 Airport Data Sheet (Sheet 2)

The Airport Data Sheet summarizes key elements that are depicted on the Airport Layout Plan Drawing such as airport coordinates, runway end elevations, runway high and low points, and true azimuths for each runway. Supplemental tables, as required by the FAA ALP Review Checklist, are depicted on the Airport Data Sheet including the airport data table and runway data table.

7.4 Airport Layout Plan Drawing (Sheet 3)

The Airport Layout Plan Drawing, also referred to as the ALP, depicts all existing facilities and proposed developments planned over the 20-year planning period at PHD. These plans are reviewed by and must be approved by the FAA prior to authorizing federal funding for future improvement projects. The ALP provides clearance and dimensional information required to show conformance with applicable FAA design standards as outlined in FAA AC 150/5300-13A, Airport Design. The ALP also reflects planned changes to physical features on the airport property and critical land use changes near the airport property that may impact navigable airspace or the ability of the airport to operate. The features of the ALP include, but are not limited to: the runway, taxiways, lighting, navigational aids, terminal facilities, hangars, other airport buildings, aircraft parking areas, automobile parking, and airport access elements.

Key dimensional criteria for the airfield was based on Runway Design Code (RDC) B-I (small aircraft. The RDC and other runway approach factors are used to determine the physical characteristics of the runways (e.g., length, width, and strength), taxiway widths, and dimensions for the Runway Safety Area (RSA), Runway Object Free Area (ROFA), Building Restriction Line (BRL), clearance areas around navigational aids, etc.

7.5 Airport Airspace Drawings (Sheets 4 and 5)

Federal Aviation Regulations (FAR) Part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace, prescribes airspace standards, which establish criteria for evaluating navigable airspace. Airport imaginary surfaces are established relative to the airport runways and types of approaches they provide. The size of each imaginary surface is based on the runway category with respect to the existing approaches. The slope and dimensions of the respective approach surfaces are determined by the most demanding, existing or proposed, approach for each runway. For Runway 15-33 at PHD, the dimensions of the imaginary surfaces are applicable to the existing non-precision approach to Runway 15 and the proposed non-precision approach to Runway 33. For Runway 12-30, the dimensions of the imaginary surfaces are applicable to the existing visual approaches to each end.

- Primary Surface – A rectangular area symmetrically located about the runway centerline and extending a distance of 200 feet beyond each runway end. Its elevation is the same as the nearest point along the runway edge. The primary surface for Runway 15-33 is 500 feet wide and the primary surface for Runway 12-30 is 250 feet wide.

- Horizontal Surface – An oval shaped, flat area situated 150 feet above the published airport elevation of PHD. Its dimensions are determined by connecting 50,000 foot arcs starting 200 feet beyond the future runway ends.

- Conical Surface – A sloping area whose inner perimeter conforms to the shape of the horizontal surface. It extends outward for a distance of 4,000 feet measured horizontally, and slopes upward at a 20:1 ratio.

- Transitional Surface – A sloping area beginning at the edges of the primary and approach surfaces and sloping upward and outward at a ratio of 7:1.

- Approach Surface – This surface begins at the ends of the primary surface and slopes upward at a predetermined ratio while at the same time flaring out horizontally. The width and elevation of the inner ends conform to that of the primary surface, while the slope, length, and outer width are determined by the runway service category and existing or proposed instrument approach procedures.

7.6 Inner Portion of the Approach Surface Drawings (Sheets 6 and 7)

The Inner Portion of the Approach Surface Drawings show both plan and profile views of the approach surfaces beyond each end of Runway 15-33. The purpose of these drawings is to locate and document existing objects which represent obstructions to navigable airspace within the existing and proposed approach slopes for each runway. Additionally, the drawings show the ground profile and terrain features along the extended centerline of each runway end.

Any controlling structures, such as roadways, natural ground elevations, and trees, are also shown on the Inner Portion of the Approach Surface Drawings, if applicable. Additionally, fixed objects located along the extended runway centerlines are also illustrated on the sheets to provide an indication of the relative distance to the approach surfaces. As applicable, obstructions to navigable airspace are listed in an obstruction data table along with a recommended action for each obstruction.

7.7 Runway Departure Surface Drawing (Sheet 8)

The Runway Departure Surface Drawing consists of large scale plan views of departure surfaces for Runway 15-33. The Departure Surface Drawing depicts the ground contour along the extended runway centerline plus any significant natural or non-natural objects located along the extended runway centerline and also provides a top elevation for those objects. Commonly shown objects include buildings, roads, ditches, and trees. Surface penetration and disposition information is included in the associated obstruction data tables.

7.8 Terminal Area Drawing (Sheet 9)

The Terminal Area Drawing presents an enlarged view of the Fixed Base Operator (FBO) area at PHD and therefore provides additional dimensional details such as apron areas (existing and proposed) that are not easily visible on the ALP. These drawings denote the short and long-term developments and improvements within the vicinity of the FBO complex at PHD and also illustrates many of the surrounding landside development recommendations. Existing and proposed automobile access and parking improvements are also included.

7.9 Land Use Drawing (Sheet 10)

The Land Use Drawing designates various sectors of the property for specific uses and also shows an aerial view of the land surrounding PHD. Additionally, the 2015 and 2035 noise contours developed as a component of this study have been superimposed on the drawing to ensure that appropriate aviation-compatible zoning is maintained. The FAA has established national guidelines for land use compatibility related to airport-generated noise impacts. In most cases, noise sensitive land uses are considered incompatible if they are exposed to Day-Night Average Sound Levels (DNL) of 65 decibels or higher, unless noise mitigation measures are undertaken.

7.10 Airport Property Map (Sheet 11)

In order to comply with FAA grant requirements, airport owners must demonstrate that they hold “good title, satisfactory to the Secretary, to the landing area of the airport or site thereof, or will give assurance satisfactory to the Secretary that good title will be acquired.” In order to meet the FAA’s grant assurances, a sponsors' title must be free and clear of any reversionary interest, lien, easement, lease, or other encumbrance that would create undue risk that might deprive the sponsor of control or possession, interfere with its use for public airport purposes, or make it impossible for the sponsor to carry out the obligations and covenants in the grant agreement. This drawing was developed based on the FAA’s most recent guidance – Standard Operating Procedure (SOP) for FAA Review of Exhibit “A” Airport Property Inventory Maps (ARP SOP 3.00). The purpose of the drawing and associated tables is to identify how property was acquired in the past as well as to illustrate properties and easements that should be obtained in the future as necessary to accommodate the proposed development plan. The existing property information was determined from a 2003 property map and parcel data from the Tuscarawas County Property Appraiser.

AIRPORT LAYOUT PLAN DRAWING SET

HARRY CLEVER FIELD AIRPORT

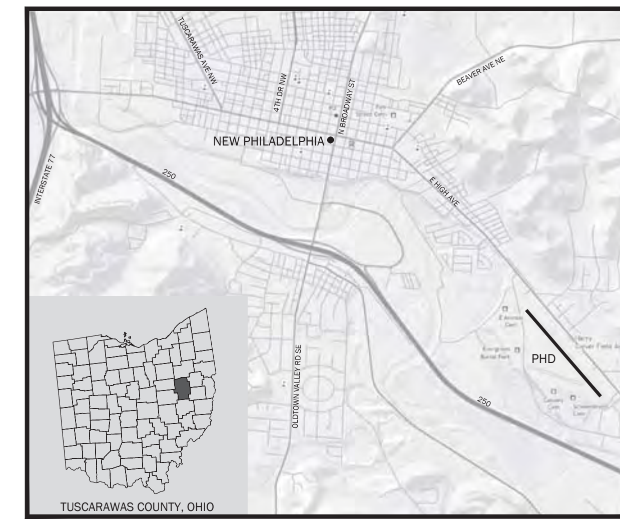
NEW PHILADELPHIA, OHIO

FAA APPROVAL LETTER

DRAWING INDEX

DRAWING NO.	DESCRIPTION	REVISION DATE
1	TITLE SHEET	
2	AIRPORT DATA SHEET	
3	AIRPORT LAYOUT PLAN DRAWING	
4	AIRPORT AIRSPACE DRAWING - RUNWAY 15-33	
5	AIRPORT AIRSPACE DRAWING - RUNWAY 12-30	
6	INNER PORTION OF THE APPROACH SURFACE DRAWING - RUNWAY 15	
7	INNER PORTION OF THE APPROACH SURFACE DRAWING - RUNWAY 33	
8	RUNWAY DEPARTURE SURFACE DRAWING - RUNWAY 15-33	
9	TERMINAL AREA DRAWING	
10	LAND USE DRAWING	
11	AIRPORT PROPERTY MAP	

NOTE:
NO INNER PORTION OF THE APPROACH SURFACE DRAWING WAS PRODUCED FOR RUNWAY 12-30.



LOCATION / VICINITY MAP
NOT TO SCALE

MARCH 2018

PREPARED FOR:

CITY OF NEW PHILADELPHIA

PREPARED BY:

MICHAEL BAKER INTERNATIONAL, INC

Michael Baker
INTERNATIONAL

AIRPORT SPONSOR APPROVAL

THIS AIRPORT DRAWING IS APPROVED BY:

(SIGNATURE) ________________ DATE: ________

NAME: ________________

TITLE: ________________

ODOT OFFICE OF AVIATION APPROVAL

THIS AIRPORT DRAWING IS APPROVED BY:

(SIGNATURE) ________________ DATE: ________

NAME: ________________

TITLE: ________________

REVISIONS

NO.	DESCRIPTION	DATE	BY

PROJECT NAME:
AIRPORT MASTER PLAN UPDATE

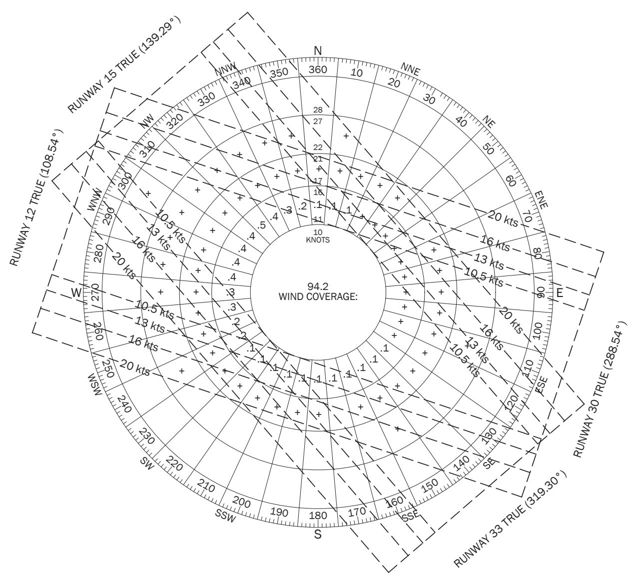
DRAWING NAME:
TITLE SHEET

FAA AIP #
3-39-0060-012-2015

DIVISION:
PLANNING

DATE:
MARCH 2018

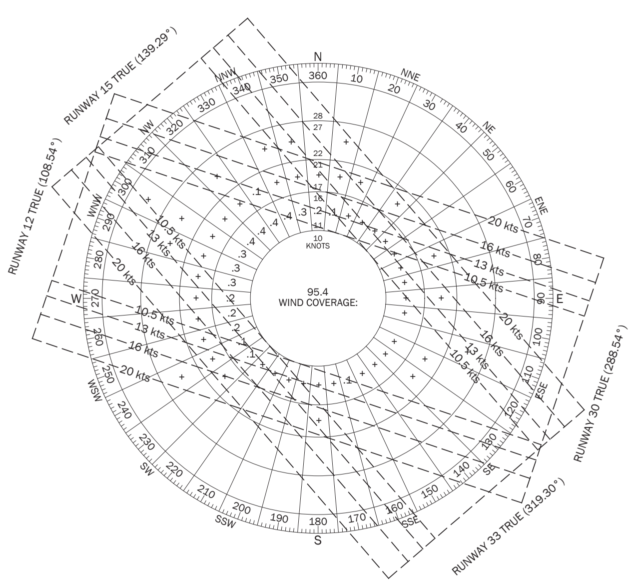
DRAWING NUMBER:
1



WIND DATA SOURCE:
NATIONAL CLIMATIC DATA CENTER
STATION 725224 - NEW PHILADELPHIA, OHIO
116,357 OBSERVATIONS
PERIOD OF RECORD: (2006-2015)

WIND COVERAGE %			
CROSSWIND COMPONENT (KTS/MPH)	RUNWAY 12-30	RUNWAY 15-33	COMBINED
10.5 / 12	98.39%	98.44%	99.28%
13 / 15	99.32%	99.29%	99.74%
16 / 18	99.92%	99.89%	99.98%
20 / 23	99.99%	99.99%	100.00%

ALL WEATHER WINDROSE

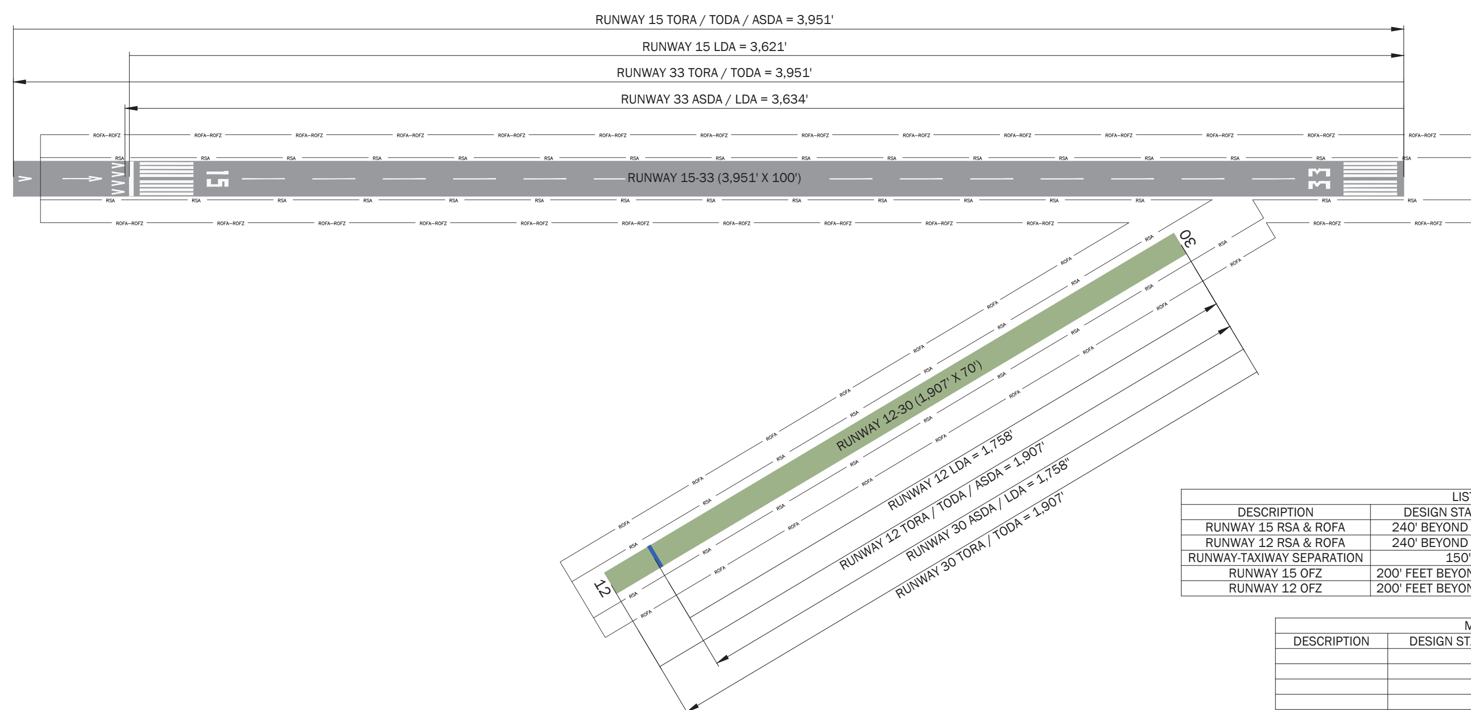


Wind Data Source:
National Climatic Data Center
Station 725224 - New Philadelphia, Ohio
28,335 Observations
Period Of Record: (2006-2015)

WIND COVERAGE %			
CROSSWIND COMPONENT (KTS/MPH)	RUNWAY 12-30	RUNWAY 15-33	COMBINED
10.5 / 12	98.72%	98.98%	99.56%
13 / 15	99.48%	99.54%	99.84%
16 / 18	99.91%	99.92%	99.98%
20 / 23	99.98%	99.99%	100.00%

IFR WEATHER WINDROSE

EXISTING / FUTURE DECLARED DISTANCES TABLE								
	EXISTING		FUTURE		EXISTING		FUTURE	
DISTANCES	RUNWAY 12	RUNWAY 30	RUNWAY 12	RUNWAY 30	RUNWAY 15	RUNWAY 30	RUNWAY 15	RUNWAY 33
TORA	1,907'	1,907'	SAME	SAME	3,951'	3,951'	SAME	SAME
TODA	1,907'	1,907'	SAME	SAME	3,951'	3,951'	SAME	SAME
ASDA	1,907'	1,758'	SAME	SAME	3,951'	3,634'	SAME	SAME
LDA	1,758'	1,758'	SAME	SAME	3,621'	3,634'	SAME	SAME



EXISTING BUILDING TABLE		
ID	DESCRIPTION	TOP EL.
1	T-HANGAR	913.4'
2	HANGAR	915.0'
3	HANGAR	910.7'
4	SHED	897.8'
5	HANGAR	915.1'
6	RESTAURANT	908.3'
7	TERMINAL / FBO	918.3'
8	SHED	899.5'
9	SHED	898.9'
10	HANGAR	902.1'
11	T-HANGAR (14-UNIT)	903.3'
12	HANGAR	915.4'
13	HANGAR	915.3'

FUTURE BUILDING TABLE		
ID	DESCRIPTION	TOP EL.
A	50'x50' HANGAR (3)	908'
B	50'x50' HANGAR (3)	908'
C	70'x85' HANGAR	908'
D	56'x62' HANGAR (2)	908'
E	52'x56' HANGAR (3)	911'
F	T-HANGAR (13-UNIT)	911'
G	T-HANGAR (12-UNIT)	911'
H	33'x42' HANGAR (5)	911'
I	80'x80' HANGAR	912'
J	100'x100' HANGAR	917'
K	100'x100' HANGAR	917'

1. FUTURE BUILDING ELEVATIONS WERE CALCULATED BASED UPON THEIR ESTIMATED HEIGHT ABOVE GROUND LEVEL.

LIST OF NON-STANDARD ITEMS			
DESCRIPTION	DESIGN STANDARD	NON-STANDARD CONDITION	DISPOSITION
RUNWAY 15 RSA & ROFA	240' BEYOND RWY END	ROAD - CEMETERY	DECLARED DISTANCES
RUNWAY 12 RSA & ROFA	240' BEYOND RWY END	ROAD - CEMETERY	DECLARED DISTANCES
RUNWAY-TAXIWAY SEPARATION	150'	135'	RELOCATE TAXIWAY
RUNWAY 15 OFZ	200' FEET BEYOND RWY END	ROAD - CEMETERY	DECLARED DISTANCES
RUNWAY 12 OFZ	200' FEET BEYOND RWY END	ROAD - CEMETERY	DECLARED DISTANCES

MODIFICATION TO FAA DESIGN STANDARDS			
DESCRIPTION	DESIGN STANDARD	AERONAUTICAL STUDY NUMBER	FAA APPROVAL
NONE REQUIRED			

TAXIWAY / TAXILANE DATA TABLE		
	EXISTING	FUTURE
TAXIWAY DESIGN GROUP (TDG)	1B	SAME
TAXIWAY EDGE SAFETY MARGIN (TESM)	5'	SAME
TAXIWAY / TAXILANE WIDTH	25'-50'	25'
TAXIWAY SHOULDER WIDTH	10'	SAME
TAXIWAY OFA	89'	SAME
TAXIWAY TSA	49'	SAME
TAXIWAY SEPARATION		
TAXIWAY CENTERLINE TO PARALLEL TAXIWAY CENTERLINE	70'	SAME
TAXIWAY CENTERLINE TO FIXED OR MOVABLE OBJECT	44.5'	SAME
TAXILANE OFA	79'	SAME
TAXILANE TSA	49'	SAME
TAXILANE CENTERLINE TO PARALLEL TAXILANE CENTERLINE	64'	SAME
TAXILANE CENTERLINE TO FIXED OR MOVABLE OBJECT	39.5'	SAME
TAXIWAY LIGHTING	MITL	SAME

AIRPORT DATA TABLE		
DESCRIPTION	EXISTING	FUTURE
SERVICE LEVEL (NPIAS)	GENERAL AVIATION	SAME
STATE EQUIVALENT SERVICE ROLE	LEVEL 2 GENERAL AVIATION	SAME
AIRPORT REFERENCE CODE (ARC)	B-I (SMALL AIRCRAFT)	SAME
CRITICAL AIRCRAFT	BEECHCRAFT BARON 58	SAME
AIRPORT ELEVATION (AMSL) (NAVD88)	894.6'	SAME
MEAN MAX. TEMP. (HOTTEST MONTH)	83.4° (JULY)	SAME
AIRPORT REFERENCE POINT (NAD 83)		
LATITUDE	40°28' 11.73"	SAME
LONGITUDE	81°25' 10.83"	SAME
MAGNETIC DECLINATION	8°19' W ± 0° 22' (JUNE 2017)	0°2' W PER YEAR
AIRPORT NAVIGATIONAL AIDS	BEACON	SAME
MISCELLANEOUS FACILITIES	AIRFIELD LIGHTING, LIGHTED WIND CONE, ASOS	SAME

RUNWAY DATA TABLE				
	RUNWAY 12-30		RUNWAY 15-33	
	EXISTING	FUTURE	EXISTING	FUTURE
RUNWAY LENGTH	1,907'	SAME	3,951'	SAME
RUNWAY WIDTH	70'	SAME	100'	60'
RUNWAY WIND COVERAGE % (ALL WEATHER):				
10.5KTS / 12MPH	98.39%	SAME	98.98%	SAME
13KTS / 15MPH	99.32%	SAME	99.54%	SAME
16KTS / 18MPH	99.92%	SAME	99.92%	SAME
20KTS / 23MPH	99.99%	SAME	99.99%	SAME
RUNWAY DESIGN CODE (RDC)	A-I (SMALL AIRCRAFT)	SAME	B-I (SMALL AIRCRAFT)	SAME
APPROACH REFERENCE CODE (APRC)	B / I(S) / VIS	SAME	B / I(S) / 5000	SAME
DEPARTURE REFERENCE CODE (DPRC)	B / I(S)	SAME	B / I(S)	SAME
CRITICAL AIRCRAFT	TAILDRAGGER	SAME	BEECHCRAFT BARON 58	SAME
EFFECTIVE GRADIENT (%)	0.267% / -0.267% (SEE NOTE 2)	SAME	0.210% / -0.210% (SEE NOTE 2)	SAME
RSA DIMENSIONS (RUNWAY END) (ACTUAL / STANDARD)	11 (91' x 120' / 240' x 120') / 29 (240' x 120' / 240' x 120')	PUBLISH DECLARED DISTANCES (SEE NOTE 5)	14 (-77' x 120' / 240' x 120') / 32 (240' x 120' / 240' x 120')	PUBLISH DECLARED DISTANCES (SEE NOTE 5)
ROFA DIMENSIONS (RUNWAY END)	11 (91' x 250' / 240' x 250') / 29 (240' x 250' / 240' x 250')	PUBLISH DECLARED DISTANCES (SEE NOTE 5)	14 (-77' x 250' / 240' x 250') / 32 (240' x 250' / 240' x 250')	PUBLISH DECLARED DISTANCES (SEE NOTE 5)
RUNWAY OFZ DIMENSIONS (RUNWAY END)	11 (91' x 120' / 200' x 120') / 29 (200' x 120' / 200' x 120')	PUBLISH DECLARED DISTANCES (SEE NOTE 5)	14 (-77' x 250' / 200' x 250') / 32 (200' x 250' / 200' x 250')	PUBLISH DECLARED DISTANCES (SEE NOTE 5)
INNER APPROACH OFZ	N/A	SAME	N/A	SAME
INNER TRANSITIONAL OFZ	N/A	SAME	N/A	SAME
PRECISION OFZ	N/A	SAME	N/A	SAME
RUNWAY LIGHTING	AIRFIELD CONES	SAME	MIRL	SAME
PAVEMENT STRENGTH:				
SINGLE WHEEL GEAR (LBS)	UTILITY	SAME	52.5	SAME
DUAL WHEEL GEAR (LBS)	UTILITY	SAME	67.5	SAME
DUAL TANDEM WHEEL GEAR (LBS)	UTILITY	SAME	140.0	SAME
PCN	N/A	SAME	UNKNOWN	TBD
SURFACE COMPOSITION	TURF	SAME	ASPHALT	SAME
SURFACE TREATMENT	N/A	SAME	NONE	SAME
FAR PART 77 PRIMARY SURFACE (WIDTH)	250'	SAME	500'	SAME

	RUNWAY 12		RUNWAY 30		RUNWAY 15		RUNWAY 33	
	EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE
FAR PART 77 APPROACH TYPE	VISUAL	SAME	VISUAL	SAME	NPI	SAME	VISUAL	NPI
FAR PART 77 APPROACH SURFACE SLOPE	20:1	SAME	20:1	SAME	34:1	SAME	20:1	SAME
THRESHOLD SITING SURFACE (TSS) SLOPE	15:1 (TYPE 1)	SAME	15:1 (TYPE 1)	SAME	20:1 (TYPE 4)	SAME	20:1 (TYPE 2)	20:1 (TYPE 4)
RUNWAY DEPARTURE SURFACE	NO	SAME	NO	SAME	YES	SAME	NO	YES
VISIBILITY MINIMUMS	VISUAL	SAME	VISUAL	SAME	1-MILE	SAME	VISUAL	1-MILE
TYPE OF AERONAUTICAL SURVEY REQUIRED	NON-VERTICALLY GUIDED	SAME	NON-VERTICALLY GUIDED	SAME	NON-VERTICALLY GUIDED	SAME	NON-VERTICALLY GUIDED	SAME
RUNWAY END COORDINATES:								
LATITUDE (NAD 83)	40° 28' 09.94"	SAME	40° 28' 04.03"	SAME	40° 28' 30.05"	SAME	40° 28' 00.46"	SAME
LONGITUDE (NAD 83)	81° 25' 24.72"	SAME	81° 25' 01.58"	SAME	81° 25' 27.76"	SAME	81° 24' 54.43"	SAME
RUNWAY END ELEVATION (NAVD 88)	891.1'	SAME	886.0'	SAME	894.4'	SAME	886.1'	SAME
TOUCHDOWN ZONE EL. (NAVD 88)	891.1'	SAME	891.1'	SAME	894.6'	SAME	893.0'	SAME
RUNWAY MARKINGS	N/A	SAME	N/A	SAME	NON-PRECISION	SAME	NON-PRECISION	SAME
VISUAL AND INSTRUMENT NAVAIDS	N/A	SAME	N/A	SAME	PAPI-4, REIL, GPS	SAME	PAPI-4, REIL	PAPI-4, GPS
RUNWAY PROTECTION ZONE:								
LENGTH	1,000'	SAME	1,000'	SAME	1,000'	SAME	1,000'	SAME
INNER WIDTH	250'	SAME	250'	SAME	250'	SAME	250'	SAME
OUTER WIDTH	450'	SAME	450'	SAME	450'	SAME	450'	SAME
ACRES	8.035	SAME	8.035	SAME	8.035	SAME	8.035	SAME
DISPLACED THRESHOLD COORDINATES:								
LATITUDE (NAD 83)	N/A	TBD	N/A	SAME	40° 28' 27.58"	SAME	N/A	SAME
LONGITUDE (NAD 83)	N/A	TBD	N/A	SAME	81° 25' 24.97"	SAME	N/A	SAME
DISPLACED THRESHOLD ELEVATION	N/A	TBD	N/A	SAME	894.0'	SAME	N/A	SAME
DISPLACED THRESHOLD DISTANCE	N/A	TBD	N/A	SAME	330'	SAME	N/A	SAME

HARRY CLEVER FIELD AIRPORT
NEW PHILADELPHIA, OHIO

Michael Baker INTERNATIONAL

DESIGNER: APN
CHECKED BY: MJK
TECHNICIAN: APN
PROJECT NUMBER: 148056

NOTES:

GENERAL NOTES:

1. EXISTING BASE MAPPING, ELEVATIONS, AND COORDINATES WERE OBTAINED FROM A SURVEY, FLOWN ON 9/22/15.
2. RUNWAY MEETS LINE OF SIGHT REQUIREMENTS.
3. BASED ON THE CURRENT MAGNETIC AZIMUTHS OF BOTH RUNWAYS, THE RUNWAYS SHOULD BE RENUMBERED AS SHOWN ON THIS SHEET. THE REMAINING SHEETS IN THE ALP SET IDENTIFY THE RUNWAYS AS 12-30 AND 15-33.
4. THE EXISTING RUNWAY 15-33 CENTERLINE TO PARALLEL TAXIWAY A CENTERLINE SEPARATION OF 135' DOES NOT MEET THE STANDARD SEPARATION OF 150'. AS SUCH, THE PROPOSED CORRECTIVE ACTION IS TO RELOCATE THE TAXIWAY CENTERLINE BY 15'.
5. DECLARED DISTANCES ARE RECOMMENDED TO CORRECT EXISTING NON-STANDARD CONDITIONS AND ARE THEREFORE REFLECTED AS AN EXISTING CONDITION THROUGHOUT THIS ALP SET.

REVISIONS			
NO.	DESCRIPTION	DATE	BY

PROJECT NAME: AIRPORT MASTER PLAN UPDATE

DRAWING NAME: AIRPORT DATA SHEET

FAA AIP #: 3-39-0060-012-2015

DIVISION: PLANNING

DATE: MARCH 2018

DRAWING NUMBER: 2

LEGEND		
DESCRIPTION	EXISTING	FUTURE
PROPERTY LINE		
LEASED PROPERTY LINE		N/A
BUILDINGS		
PAVEMENT (AIRFIELD)		
PAVEMENT (ROADS / PARKING)		
RSA	RSA	N/A
ROFA	ROFA	N/A
ROFZ	ROFZ	N/A
BRL	BRL	N/A
NAVAIDS / LIGHTING		
FENCE		
AIRPORT BEACON		N/A
PAVEMENT REMOVAL	N/A	
EASEMENT	N/A	
AIRPORT REFERENCE POINT (ARP)		N/A

EXISTING BUILDING TABLE		
ID	DESCRIPTION	TOP EL.
1	T-HANGAR	913.4'
2	HANGAR	915.0'
3	HANGAR	910.7'
4	SHED	897.8'
5	HANGAR	915.1'
6	RESTAURANT	908.3'
7	TERMINAL / FBO	918.3'
8	SHED	899.5'
9	SHED	898.9'
10	HANGAR	902.1'
11	T-HANGAR (14-UNIT)	903.3'
12	HANGAR	915.4'
13	HANGAR	915.3'

FUTURE BUILDING TABLE		
ID	DESCRIPTION	TOP EL.
A	50'x50' HANGAR (3)	908'
B	50'x50' HANGAR (3)	908'
C	70'x85' HANGAR	908'
D	56'x62' HANGAR (2)	908'
E	52'x56' HANGAR (3)	911'
F	T-HANGAR (13-UNIT)	911'
G	T-HANGAR (12-UNIT)	911'
H	33'x42' HANGAR (5)	911'
I	80'x80' HANGAR	912'
J	100'x100' HANGAR	917'
K	100'x100' HANGAR	917'

RUNWAY 15 END APPROACH TRAVERSE WAY TABLE				
ID	ROADWAY EL.	ROADWAY EL. + PART 77 CLEARANCE REQUIREMENTS	EXISTING PENETRATION	DISPOSITION
R1	890.0'	905.0'	-18.0'	NONE
R2	893.0'	903.0'	-10.7'	NONE
R3	895.0'	905.0'	-2.7'	NONE
R4	895.1'	910.1'	15.7'	OBST. LIGHT (SEE NOTE H)
R5	894.8'	909.8'	13.5'	OBST. LIGHT (SEE NOTE H)

1. ROAD ELEVATIONS ARE ESTIMATED AND INCLUDE PART 77 CLEARANCE REQUIREMENTS.

RUNWAY 33 END APPROACH TRAVERSE WAY TABLE					
ID	ROADWAY EL.	ROADWAY EL. + PART 77 CLEARANCE REQUIREMENTS	EXISTING PENETRATION	FUTURE PENETRATION	DISPOSITION
R6	876.0'	901.0'	11.7'	11.8'	RELOCATE ROAD
R7	873.0'	898.0'	7.1'	7.2'	RELOCATE ROAD
R8	870.0'	895.0'	1.3'	1.4'	OBST. LIGHT (SEE NOTE H)
R9	870.0'	895.0'	-42.1'	-41.1'	NONE
R10	872.0'	897.0'	-40.1'	-39.1'	NONE

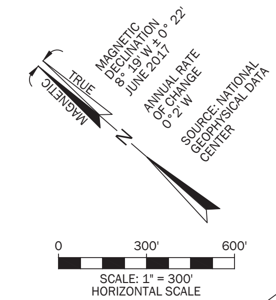
1. ROAD ELEVATIONS ARE ESTIMATED AND INCLUDE PART 77 CLEARANCE REQUIREMENTS.

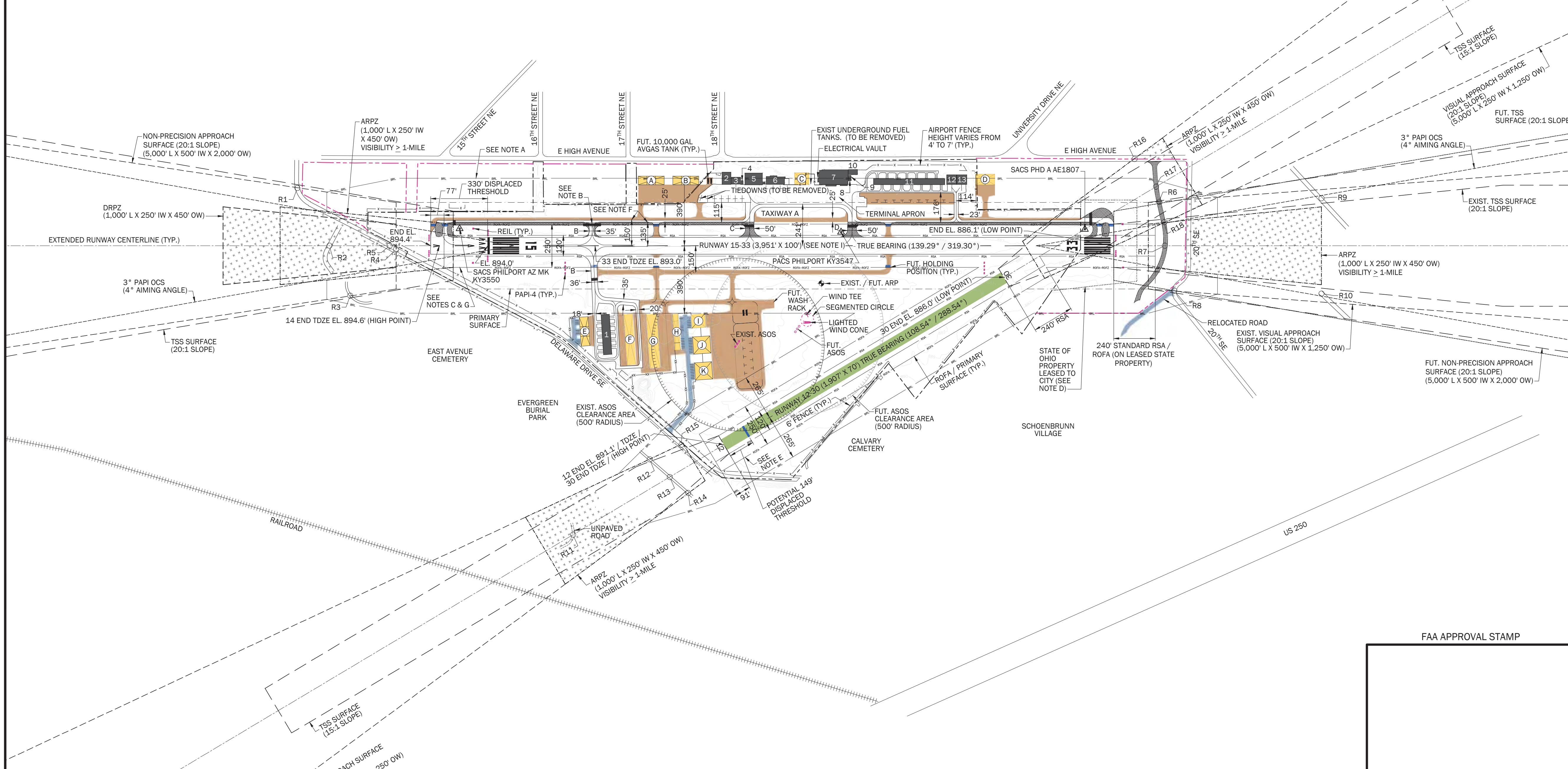
RUNWAY 12 END APPROACH TRAVERSE WAY TABLE				
ID	ROADWAY EL.	ROADWAY EL. + PART 77 CLEARANCE REQUIREMENTS	EXISTING PENETRATION	DISPOSITION
R11	854.0'	864.0'	-67.9'	NONE
R12	893.0'	903.0'	1.3'	OBST. LIGHT (SEE NOTE H)
R13	893.0'	903.0'	3.7'	OBST. LIGHT (SEE NOTE H)
R14	893.0'	903.0'	5.9'	OBST. LIGHT (SEE NOTE H)
R15	893.0'	908.0'	16.3'	OBST. LIGHT (SEE NOTE H)

1. ROAD ELEVATIONS ARE ESTIMATED AND INCLUDE PART 77 CLEARANCE REQUIREMENTS.

RUNWAY 30 END APPROACH TRAVERSE WAY TABLE				
ID	ROADWAY EL.	ROADWAY EL. + PART 77 CLEARANCE REQUIREMENTS	EXISTING PENETRATION	DISPOSITION
R6	886.0'	901.0'	-24.7'	RELOCATE ROAD
R16	888.0'	903.0'	-23.0'	NONE
R17	886.0'	901.0'	-26.2'	RELOCATE ROAD
R18	885.0'	900.0'	-24.0'	RELOCATE ROAD

1. ROAD ELEVATIONS ARE ESTIMATED AND INCLUDE PART 77 CLEARANCE REQUIREMENTS.





	RUNWAY 12		RUNWAY 30		RUNWAY 15		RUNWAY 33	
	EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE	EXISTING	FUTURE
RUNWAY END COORDINATES:								
LATITUDE (NAD 83)	40° 28' 09.94"	SAME	40° 28' 04.03"	SAME	40° 28' 30.05"	SAME	40° 28' 00.46"	SAME
LONGITUDE (NAD 83)	81° 25' 24.72 "	SAME	81° 25' 01.58"	SAME	81° 25' 27.76"	SAME	81° 24' 54.43"	SAME
DISPLACED THRESHOLD COORDINATES:								
LATITUDE (NAD 83)	N/A	TBD	N/A	SAME	40° 28' 27.58"	SAME	N/A	SAME
LONGITUDE (NAD 83)	N/A	TBD	N/A	SAME	81° 25' 24.97"	SAME	N/A	SAME

FAA APPROVAL STAMP

NEW PHILADELPHIA OHIO

HARRY CLEVER FIELD AIRPORT
NEW PHILADELPHIA, OHIO

Michael Baker
INTERNATIONAL

DESIGNER: APN	CHECKED BY: MJK
TECHNICIAN: APN	PROJECT NUMBER: 148056

NOTES:

GENERAL NOTES:

1. EXISTING BASE MAPPING, ELEVATIONS, AND COORDINATES WERE OBTAINED FROM A SURVEY, FLOWN ON 9/22/15.

PLAN REFERENCED NOTES:

A. BUILDING RESTRICTION LINE (BRL) ASSUMES A HEIGHT OF 20' ABOVE THE NEAREST RUNWAY ELEVATION.

B. EXISTING / FUTURE HOLDING POSITION MARKINGS ARE LOCATED 125' FROM RUNWAY CENTERLINE.

C. THE RSA AND ROFA BEYOND RUNWAY 15 CURRENTLY EXTEND OFF THE AIRPORT PROPERTY AND ARE NON-STANDARD DUE TO THE PRESENCE OF A ROAD AND CEMETERY. IN ORDER TO REMOVE THOSE NON-STANDARD FEATURES FROM THE RSA AND ROFA, THE PROPOSED CORRECTIVE ACTION IS TO IMPLEMENT DECLARED DISTANCES TO REDUCE THE RUNWAY 33 ASDA AND LDA CALCULATIONS.

D. ALTHOUGH THE RSA AND ROFA BEYOND RUNWAY 33 CURRENTLY EXTEND BEYOND THE AIRPORT PROPERTY LINE, THE SURFACES MEET FAA GRADING AND CLEARANCE STANDARDS.

E. THE RSA AND ROFA BEYOND RUNWAY 12 CURRENTLY EXTEND OFF THE AIRPORT PROPERTY AND ARE NON-STANDARD DUE TO THE PRESENCE OF A ROAD AND CEMETERY. THE PROPOSED CORRECTIVE ACTION IS IMPLEMENT DECLARED DISTANCES.

F. THE EXISTING RUNWAY 15-33 CENTERLINE TO PARALLEL TAXIWAY A CENTERLINE SEPARATION OF 135' DOES NOT MEET THE STANDARD SEPARATION OF 150'. AS SUCH, THE PROPOSED CORRECTIVE ACTION IS TO RELOCATE THE TAXIWAY CENTERLINE BY 15'.

G. NO OBJECTS ARE LOCATED WITHIN THE OFZ LOCATED 200' BEYOND THE RUNWAY 15 DISPLACED THRESHOLD.

H. THE ROADS DO NOT PENETRATE RUNWAY 15-33 20:1 TSS OR RUNWAY 12-30 15:1 TSS. OBSTRUCTION LIGHTS SHOULD BE INSTALLED FOR PART 77 PENETRATIONS.

I. RUNWAY 15-33 MAY BE REDUCED TO 60 FEET WIDE IN THE FUTURE IN ACCORDANCE WITH RDC B-I (SMALL AIRCRAFT) STANDARDS.

REVISIONS			
NO.	DESCRIPTION	DATE	BY

PROJECT NAME:

AIRPORT MASTER PLAN UPDATE

DRAWING NAME:

AIRPORT LAYOUT PLAN DRAWING

FAA AIP #: 3-39-0060-012-2015

DIVISION: PLANNING

DATE:	DRAWING NUMBER:
MARCH 2018	3

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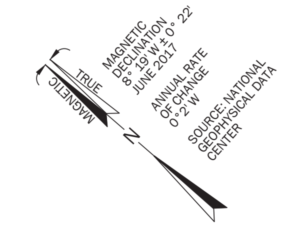
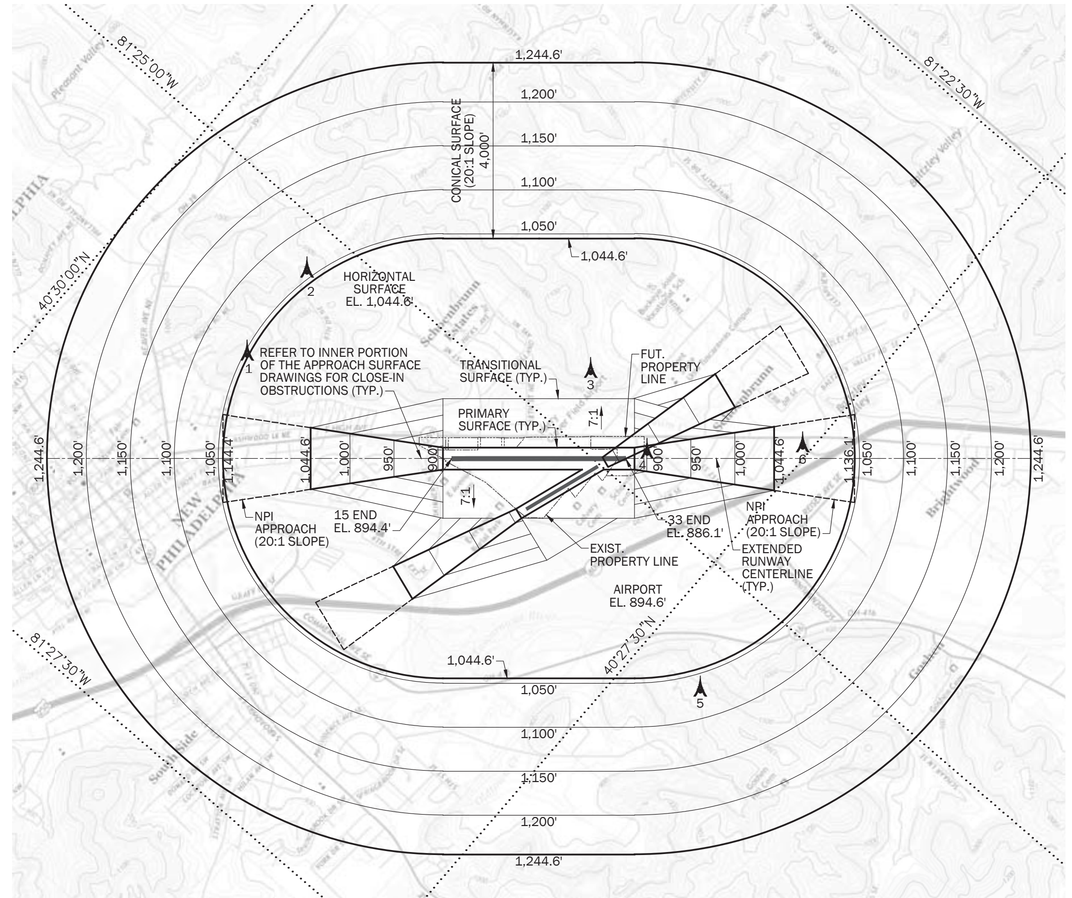
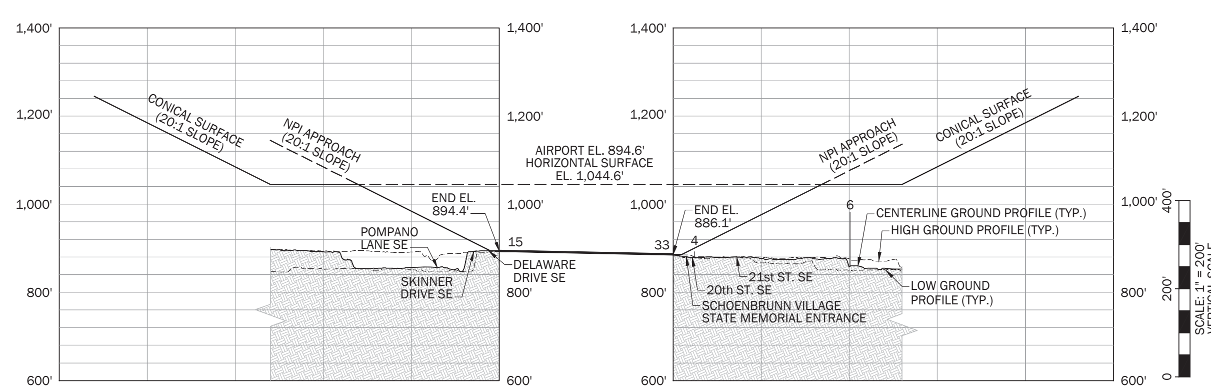
Y:\Planning\PHD-Harry Clever Field Airport\PHD Master Plan Update - 148056 (9-23-2015)\Drawings\ALP Set\04-05_(PDH)_Airspace.dwg Modified: Sep 06, 2017 - 3:40pm Plotted: Mar 13, 2018 - 4:55pm apnazarkewych





PLAN VIEW RUNWAY 15-33

SCALE: 1" = 2,000'
HORIZONTAL SCALE



PROFILE VIEW RUNWAY 15-33

SCALE: 1" = 2,000'
HORIZONTAL SCALE

DIGITAL OBSTACLE FILE (DOF) OBSTRUCTION DATA TABLE

ID	DESCRIPTION	JULIAN DATE	GROUND SURFACE EL.	AGL	AMSL	SURFACE	PENETRATION	LIGHTING	MARKING	FAA_STUDY	DISPOSITION
1	TOWER	2014152	1,104.0'	150.0'	1,254.0'	CONICAL	207.9'	RED	MARKED	1976AGL003560E	NONE
2	TOWER	2014152	1,099.0'	100.0'	1,199.0'	CONICAL	142.2'	UNKNOWN	UNKNOWN		LIGHT / MARK
3	TOWER	2014152	1,039.0'	111.0'	1,150.0'	HORIZONTAL	105.9'	UNKNOWN	UNKNOWN		LIGHT / MARK
4	BUILDING	2014124	878.0'	14.0'	892.0'	APPROACH	-8.6'	NONE	NONE	2002AGL068690E	NONE
5	TOWER	2004053	1,140.0'	169.0'	1,309.0'	CONICAL	239.4'	RED	MARKED	1999AGL015780E	NONE
6	TOWER	2014152	882.0'	100.0'	982.0'	HORIZONTAL / APPROACH	-62.1 / -99.0'	RED	MARKED	1992AGL018190E	NONE

1. OBSTRUCTION DATA SOURCE: FAA DIGITAL OBSTACLE FILE (DOF), 09/13/2015.

HARRY CLEVER FIELD AIRPORT
NEW PHILADELPHIA, OHIO

Michael Baker
INTERNATIONAL

DESIGNER: APN	CHECKED BY: MJK
TECHNICIAN: APN	PROJECT NUMBER: 148056

NOTES:

GENERAL NOTES:

1. EXISTING BASE MAPPING, ELEVATIONS, AND COORDINATES WERE OBTAINED FROM A SURVEY, FLOWN ON 9/22/15.
2. FEDERAL AVIATION REGULATIONS (FAR) PART 77 SPECIFIES CLEARANCE REQUIREMENTS FOR ROADS, RAILROADS, AND WATERWAYS AS FOLLOWS: A) 17 FEET FOR AN INTERSTATE HIGHWAY, B) 15 FEET FOR ANY OTHER PUBLIC ROADWAY, C) 10 FEET OR THE HEIGHT OF THE HIGHEST MOBILE OBJECT THAT WOULD NORMALLY TRAVERSE THE ROAD, WHICHEVER IS GREATER, FOR A PRIVATE ROAD, D) 23 FEET FOR A RAILROAD, AND E) FOR A WATERWAY OR ANY OTHER TRAVERSE WAY NOT PREVIOUSLY MENTIONED, AN AMOUNT EQUAL TO THE HEIGHT OF THE HIGHEST MOBILE OBJECT THAT WOULD NORMALLY TRAVERSE IT.
3. THERE IS NOT CURRENTLY A LOCAL ZONING ORDINANCE IN PLACE TO PROTECT THE AIRSPACE SURROUNDING THE AIRPORT. HOWEVER, THE OHIO AIRPORT PROTECTION ACT REQUIRES THAT SPECIFIC PROPOSED DEVELOPMENTS IN THE VICINITY OF THE AIRPORT BE COORDINATED WITH THE FAA IN ACCORDANCE WITH FAR PART 77.

REVISIONS

NO.	DESCRIPTION	DATE	BY

PROJECT NAME:
AIRPORT MASTER PLAN UPDATE

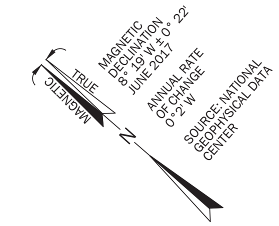
DRAWING NAME:
AIRPORT AIRSPACE DRAWING - RUNWAY 15-33

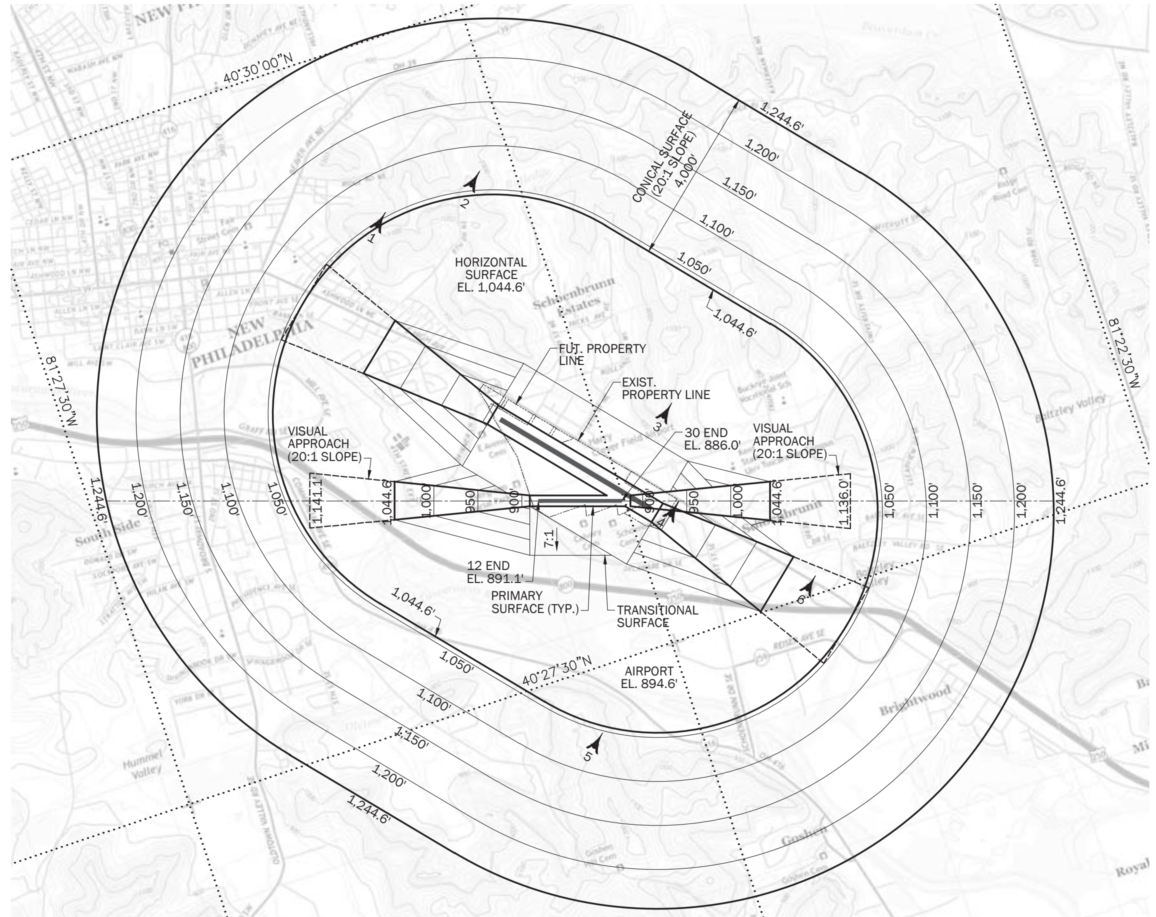
FAA AIP #: 3-39-0060-012-2015

DIVISION: PLANNING

DATE: MARCH 2018

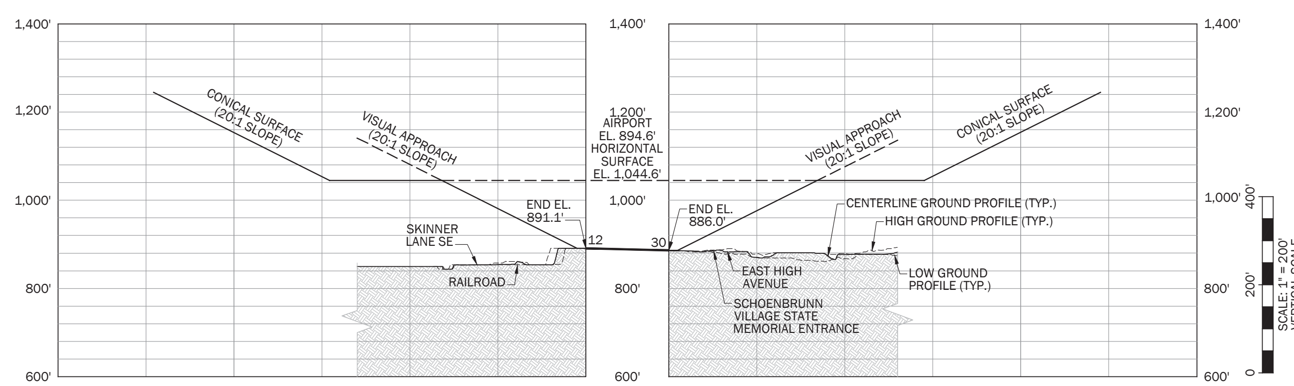
DRAWING NUMBER: 4





PLAN VIEW RUNWAY 12-30

0 2,000' 4,000'
SCALE: 1" = 2,000'
HORIZONTAL SCALE



PROFILE VIEW RUNWAY 12-30

0 2,000' 4,000'
SCALE: 1" = 2,000'
HORIZONTAL SCALE

DIGITAL OBSTACLE FILE (DOF) OBSTRUCTION DATA TABLE

ID	DESCRIPTION	JULIAN DATE	GROUND SURFACE EL.	AGL	AMSL	SURFACE	PENETRATION	LIGHTING	MARKING	FAA_STUDY	DISPOSITION
1	TOWER	2014152	1,104.0'	150.0'	1,254.0'	CONICAL	207.9'	RED	MARKED	1976AGL003560E	NONE
2	TOWER	2014152	1,099.0'	100.0'	1,199.0'	CONICAL	142.2'	UNKNOWN	UNKNOWN		LIGHT / MARK
3	TOWER	2014152	1,039.0'	111.0'	1,150.0'	HORIZONTAL	105.9'	UNKNOWN	UNKNOWN		LIGHT / MARK
4	BUILDING	2014124	878.0'	14.0'	892.0'	APPROACH	-8.6'	NONE	NONE	2002AGL068690E	NONE
5	TOWER	2004053	1,140.0'	169.0'	1,309.0'	CONICAL	239.4'	RED	MARKED	1999AGL015780E	NONE
6	TOWER	2014152	882.0'	100.0'	982.0'	HORIZONTAL / APPROACH	-62.1 / -99.0'	RED	MARKED	1992AGL018190E	NONE

1. OBSTRUCTION DATA SOURCE: FAA DIGITAL OBSTACLE FILE (DOF), 09/13/2015.

HARRY CLEVER FIELD AIRPORT
NEW PHILADELPHIA, OHIO

Michael Baker
INTERNATIONAL

DESIGNER: APN	CHECKED BY: MJK
TECHNICIAN: APN	PROJECT NUMBER: 148056

NOTES:

GENERAL NOTES:

1. EXISTING BASE MAPPING, ELEVATIONS, AND COORDINATES WERE OBTAINED FROM A SURVEY, FLOWN ON 9/22/15.
2. FEDERAL AVIATION REGULATIONS (FAR) PART 77 SPECIFIES CLEARANCE REQUIREMENTS FOR ROADS, RAILROADS, AND WATERWAYS AS FOLLOWS: A) 17 FEET FOR AN INTERSTATE HIGHWAY, B) 15 FEET FOR ANY OTHER PUBLIC ROADWAY, C) 10 FEET OR THE HEIGHT OF THE HIGHEST MOBILE OBJECT THAT WOULD NORMALLY TRAVERSE THE ROAD, WHICHEVER IS GREATER, FOR A PRIVATE ROAD, D) 23 FEET FOR A RAILROAD, AND E) FOR A WATERWAY OR ANY OTHER TRAVERSE WAY NOT PREVIOUSLY MENTIONED, AN AMOUNT EQUAL TO THE HEIGHT OF THE HIGHEST MOBILE OBJECT THAT WOULD NORMALLY TRAVERSE IT.
3. THERE IS NOT CURRENTLY A LOCAL ZONING ORDINANCE IN PLACE TO PROTECT THE AIRSPACE SURROUNDING THE AIRPORT. HOWEVER, THE OHIO AIRPORT PROTECTION ACT REQUIRES THAT SPECIFIC PROPOSED DEVELOPMENTS IN THE VICINITY OF THE AIRPORT BE COORDINATED WITH THE FAA IN ACCORDANCE WITH FAR PART 77.

REVISIONS

NO.	DESCRIPTION	DATE	BY

PROJECT NAME:
AIRPORT MASTER PLAN UPDATE

DRAWING NAME:
AIRPORT AIRSPACE DRAWING - RUNWAY 12-30

FAA AIP #: 3-39-0060-012-2015

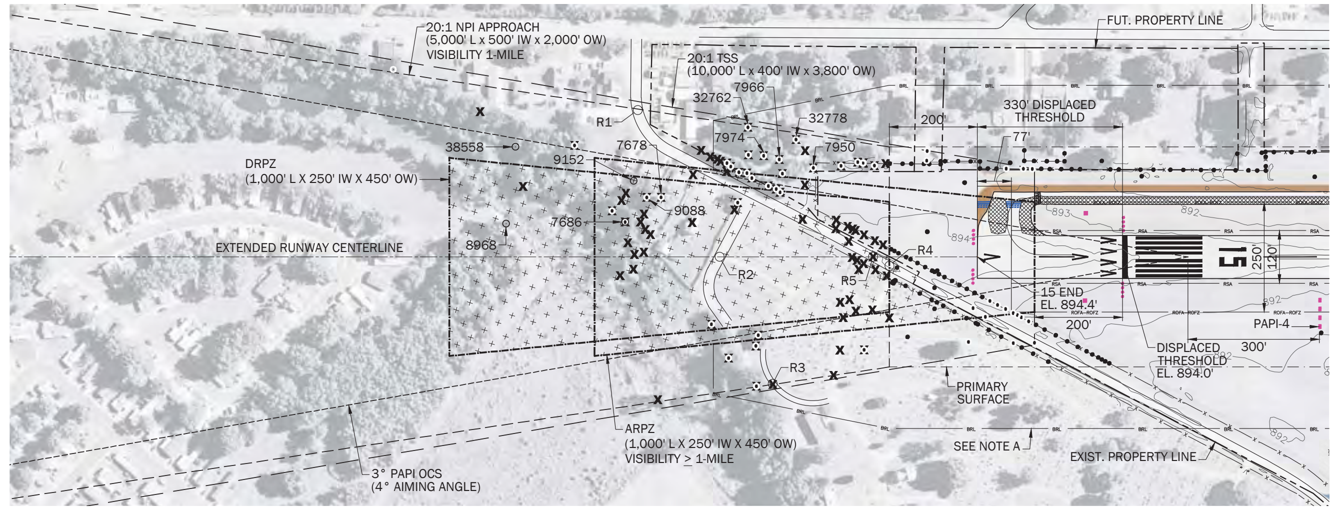
DIVISION: PLANNING

DATE: MARCH 2018

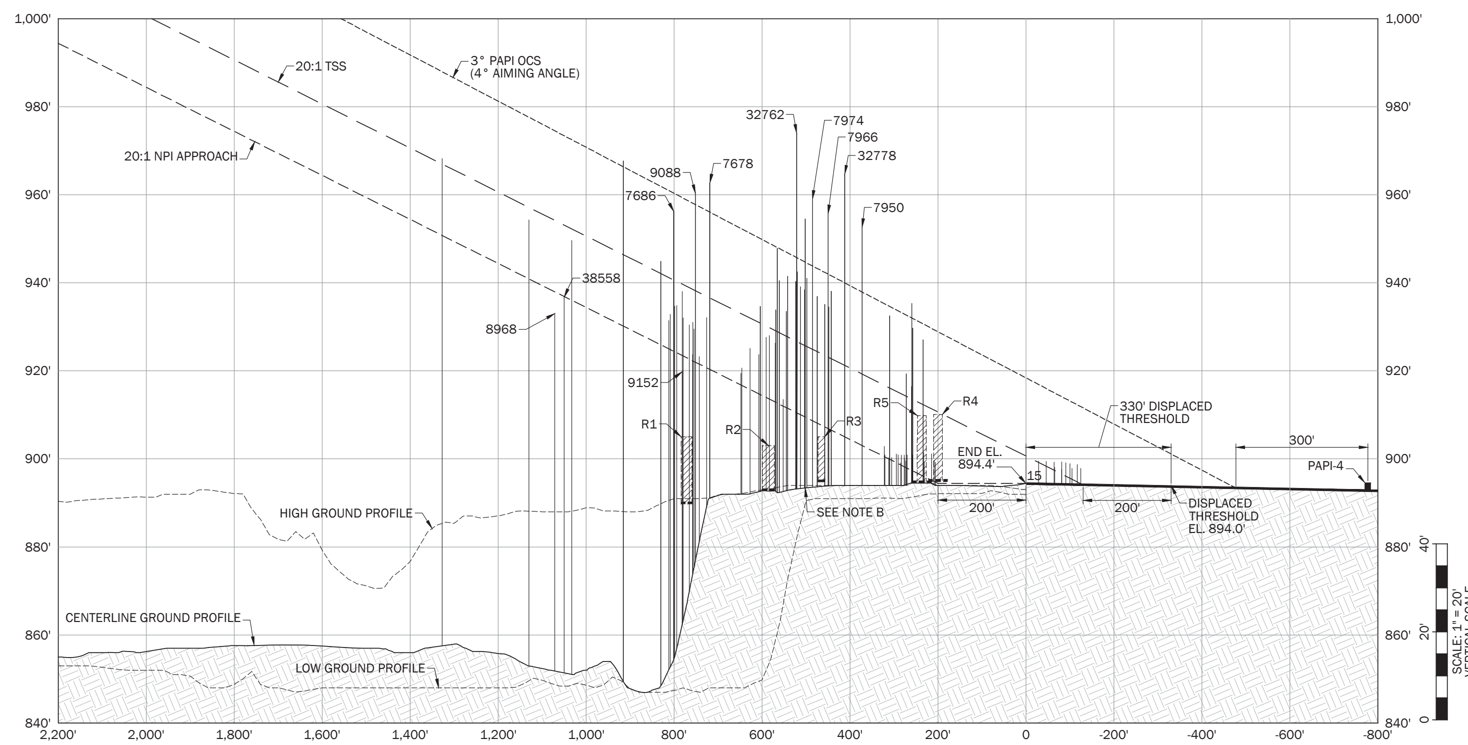
DRAWING NUMBER: 5

LEGEND

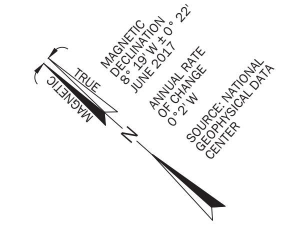
- TSS SURFACE OBSTRUCTION
- X PART 77 SURFACE OBSTRUCTION
- • PRIMARY SURFACE OBSTRUCTION
- O OBSTRUCTION WITHIN 5' OF SURFACE



PLAN VIEW RUNWAY 15



PROFILE VIEW RUNWAY 15



RUNWAY 15 OBSTRUCTION DATA TABLE - (20:1) PART 77 APPROACH SURFACE (NPI)						
ID	DESCRIPTION	TRIGGERING EVENT	OBJECT TOP EL.	EXISTING SURFACE EL.	EXISTING PENETRATION	DISPOSITION
7678	TREE	EXISTING	962.7'	920.3'	42.4'	TRIM / REMOVE
7686	TREE	EXISTING	956.2'	924.4'	31.8'	TRIM / REMOVE
7950	TREE	EXISTING	952.6'	903.0'	49.6'	TRIM / REMOVE
7966	TREE	EXISTING	955.7'	906.9'	48.7'	TRIM / REMOVE
7974	TREE	EXISTING	959.0'	908.7'	50.3'	TRIM / REMOVE
8968	TREE	EXISTING	933.0'	938.0'	-5.0'	MONITOR
9088	TREE	EXISTING	960.3'	922.0'	38.3'	TRIM / REMOVE
9152	TREE	EXISTING	919.8'	923.5'	-3.7'	MONITOR
32762	TREE	EXISTING	974.0'	910.5'	63.5'	TRIM / REMOVE
32778	TREE	EXISTING	964.7'	905.0'	59.7'	TRIM / REMOVE
38558	TREE	EXISTING	936.7'	936.9'	-0.2'	MONITOR

1. ONLY A SAMPLING OF OBSTRUCTIONS ARE SHOWN IN TABLES DUE TO DENSITY.

RUNWAY 15 OBSTRUCTION DATA TABLE - (20:1) THRESHOLD SITING SURFACE (TSS)						
ID	DESCRIPTION	TRIGGERING EVENT	OBJECT TOP EL.	EXISTING SURFACE EL.	EXISTING PENETRATION	DISPOSITION
7678	TREE	EXISTING	962.7'	936.5'	26.2'	TRIM / REMOVE
7686	TREE	EXISTING	956.2'	940.6'	15.6'	TRIM / REMOVE
7950	TREE	EXISTING	952.6'	919.2'	33.4'	TRIM / REMOVE
7966	TREE	EXISTING	955.7'	923.1'	32.6'	TRIM / REMOVE
7974	TREE	EXISTING	959.0'	924.9'	34.1'	TRIM / REMOVE
9088	TREE	EXISTING	960.3'	938.2'	22.1'	TRIM / REMOVE
32762	TREE	EXISTING	974.0'	926.7'	47.3'	TRIM / REMOVE
32778	TREE	EXISTING	964.7'	921.2'	43.5'	TRIM / REMOVE

1. ONLY A SAMPLING OF OBSTRUCTIONS ARE SHOWN IN TABLES DUE TO DENSITY.

RUNWAY 15 END APPROACH TRAVERSE WAY TABLE				
ID	ROADWAY EL.	ROADWAY EL. + PART 77 CLEARANCE REQUIREMENTS	EXISTING PENETRATION	DISPOSITION
R1	890.0'	905.0'	-18.0'	NONE
R2	893.0'	903.0'	-10.7'	NONE
R3	895.0'	905.0'	-2.7'	NONE
R4	895.1'	910.1'	15.7'	OBST. LIGHT (SEE NOTE C)
R5	894.8'	909.8'	13.5'	OBST. LIGHT (SEE NOTE C)

RUNWAY 15 END TSS TRAVERSE WAY TABLE				
ID	ROADWAY EL.	ROADWAY EL. + PART 77 CLEARANCE REQUIREMENTS	EXISTING PENETRATION	DISPOSITION
R1	890.0'	905.0'	-34.2	NONE
R2	893.0'	903.0'	-26.9	NONE
R3	895.0'	905.0'	-18.9	NONE
R4	895.1'	910.1'	-0.5	OBST. LIGHT (SEE NOTE H)
R5	894.8'	909.8'	-2.7	OBST. LIGHT (SEE NOTE H)

RUNWAY 15 OBSTRUCTION DATA TABLE - 3° PAPI OCS (4° AIMING ANGLE)						
ID	DESCRIPTION	TRIGGERING EVENT	OBJECT TOP EL.	EXISTING SURFACE EL.	EXISTING PENETRATION	DISPOSITION
7678	TREE	EXISTING	962.7'	956.8'	5.9'	TRIM / REMOVE
7686	TREE	EXISTING	956.2'	960.8'	-4.6'	TRIM / REMOVE
9088	TREE	EXISTING	960.3'	958.5'	1.8'	TRIM / REMOVE

HARRY CLEVER FIELD AIRPORT
NEW PHILADELPHIA, OHIO

Michael Baker INTERNATIONAL

DESIGNER: APN	CHECKED BY: MJK
TECHNICIAN: APN	PROJECT NUMBER: 148056

NOTES:

GENERAL NOTES:

1. EXISTING BASE MAPPING, ELEVATIONS, AND COORDINATES WERE OBTAINED FROM A SURVEY, FLOWN ON 9/22/15.
2. FEDERAL AVIATION REGULATIONS (FAR) PART 77 SPECIFIES CLEARANCE REQUIREMENTS FOR ROADS, RAILROADS, AND WATERWAYS AS FOLLOWS: A) 17 FEET FOR AN INTERSTATE HIGHWAY, B) 15 FEET FOR ANY OTHER PUBLIC ROADWAY, C) 10 FEET OR THE HEIGHT OF THE HIGHEST MOBILE OBJECT THAT WOULD NORMALLY TRAVERSE THE ROAD, WHICHEVER IS GREATER, FOR A PRIVATE ROAD, D) 23 FEET FOR A RAILROAD, AND E) FOR A WATERWAY OR ANY OTHER TRAVERSE WAY NOT PREVIOUSLY MENTIONED, AN AMOUNT EQUAL TO THE HEIGHT OF THE HIGHEST MOBILE OBJECT THAT WOULD NORMALLY TRAVERSE IT.
3. THE CITY WAS IN THE PROCESS OF REMOVING TREE OBSTRUCTIONS AT THE TIME THIS EVALUATION WAS CONDUCTED. THEREFORE, SOME TREE OBSTRUCTIONS SHOWN MAY HAVE BEEN IDENTIFIED AND REMOVED BY THE CITY.

PLAN REFERENCED NOTES:

A. BUILDING RESTRICTION LINE (BRL) ASSUMES A HEIGHT OF 20' ABOVE THE NEAREST RUNWAY ELEVATION.
B. THE BASE ELEVATIONS OF ALL OBJECTS ARE UNKNOWN. THEREFORE, OBJECTS WERE TRIMMED AT THE COMPOSITE PROFILE HIGH.
C. THE ROADS DO NOT PENETRATE THE 20:1 TSS. OBSTRUCTION LIGHTS SHOULD BE INSTALLED FOR PART 77 PENETRATIONS.

REVISIONS			
NO.	DESCRIPTION	DATE	BY

PROJECT NAME: AIRPORT MASTER PLAN UPDATE

DRAWING NAME: INNER PORTION OF THE APPROACH SURFACE DRAWING - RUNWAY 15

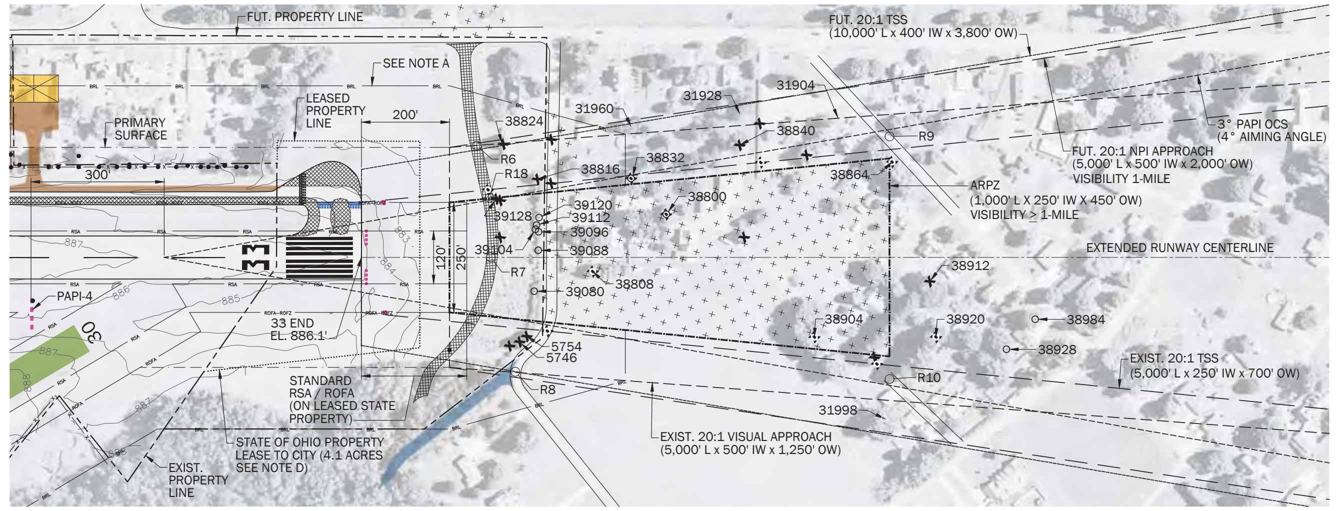
FAA AIP #: 3-39-0060-012-2015

DIVISION: PLANNING

DATE: MARCH 2018

DRAWING NUMBER: 6

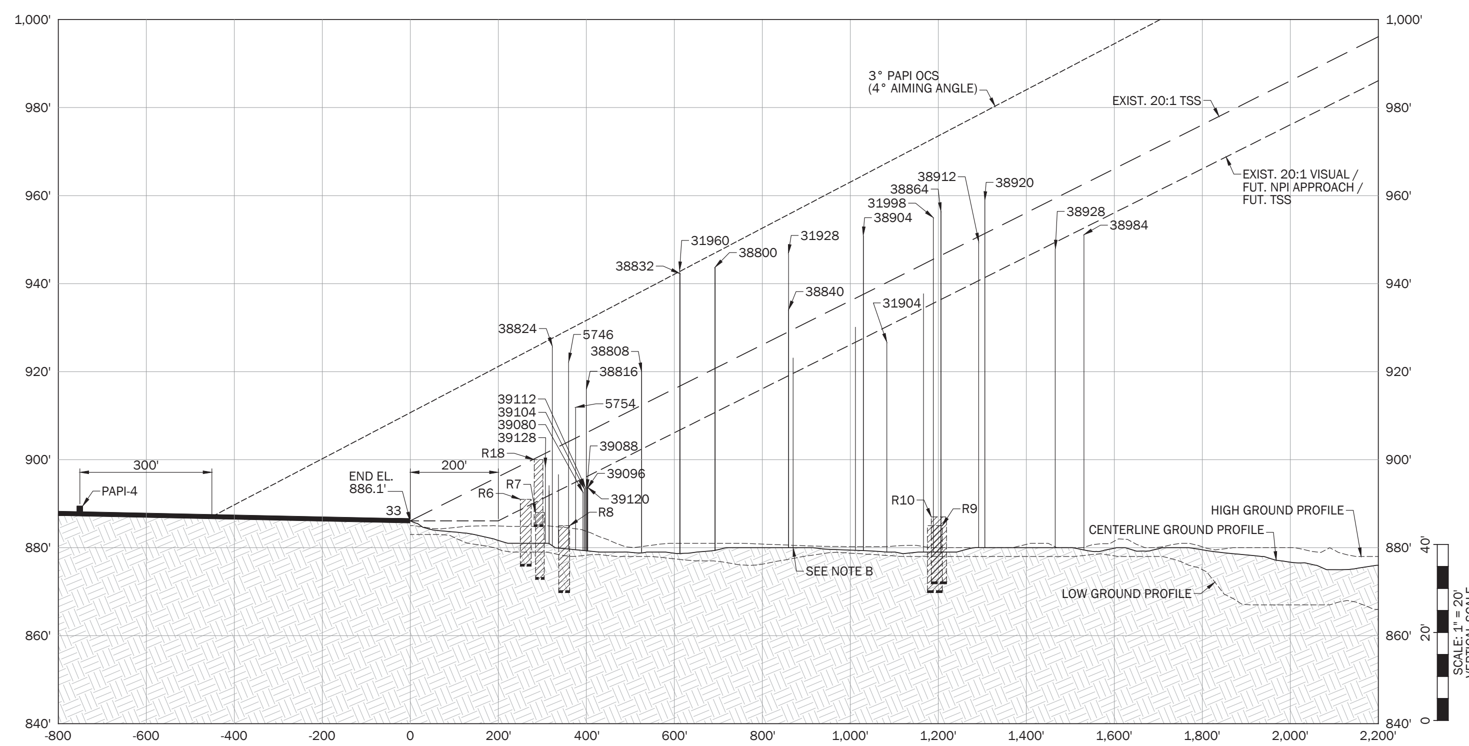
LEGEND
- TSS SURFACE OBSTRUCTION
- X PART 77 SURFACE OBSTRUCTION
- • PRIMARY SURFACE OBSTRUCTION
- O OBSTRUCTION WITHIN 5' OF SURFACE



MAGNETIC DECLINATION 8° 19' W ± 0° 22' JUNE 2017
ANNUAL RATE OF CHANGE 0° 2' W
SOURCE: NATIONAL GEOPHYSICAL DATA CENTER
TRUE N
MAGNETIC

PLAN VIEW RUNWAY 33

SCALE: 1" = 200'
HORIZONTAL SCALE



PROFILE VIEW RUNWAY 33

SCALE: 1" = 200'
HORIZONTAL SCALE

RUNWAY 33 OBSTRUCTION DATA TABLE - EXISTING (20:1) VISUAL / FUT. (20:1) NPI PART 77 APPROACH SURFACE

ID	DESCRIPTION	TRIGGERING EVENT	OBJECT TOP EL.	EXISTING SURFACE EL.	EXISTING PENETRATION	FUTURE SURFACE EL.	FUTURE PENETRATION	DISPOSITION
5746	TREE	EXISTING	922.3'	894.1'	28.2'	SAME	SAME	TRIM / REMOVE
31832	TREE	EXISTING	964.1'	N/A	N/A	962.2'	1.9'	TRIM / REMOVE
31896	TREE	EXISTING	933.4'	N/A	N/A	936.4'	-3.0'	MONITOR
31904	TREE	EXISTING	942.9'	N/A	N/A	930.2'	12.6'	TRIM / REMOVE
31928	TREE	EXISTING	946.7'	N/A	N/A	919.1'	27.6'	TRIM / REMOVE
31960	TREE	EXISTING	926.7'	N/A	N/A	906.7'	20.0'	TRIM / REMOVE
31998	TREE	EXISTING	955.0'	N/A	N/A	935.5'	19.5'	TRIM / REMOVE
38800	TREE	EXISTING	943.7'	910.7'	33.0'	SAME	SAME	TRIM / REMOVE
38824	TREE	EXISTING	925.8'	892.2'	33.5'	SAME	SAME	TRIM / REMOVE
38832	TREE	EXISTING	942.3'	906.7'	35.6'	SAME	SAME	TRIM / REMOVE
38928	TREE	EXISTING	947.9'	949.4'	-1.5'	SAME	SAME	MONITOR
38984	TREE	EXISTING	951.1'	952.7'	-1.5'	SAME	SAME	MONITOR
39080	BUSH	EXISTING	892.6'	895.7'	-3.1'	SAME	SAME	MONITOR
39088	BUSH	EXISTING	893.5'	896.2'	-2.7'	SAME	SAME	MONITOR
39096	BUSH	EXISTING	893.5'	896.2'	-2.7'	SAME	SAME	MONITOR
39104	BUSH	EXISTING	893.4'	895.9'	-2.5'	SAME	SAME	MONITOR
39112	BUSH	EXISTING	893.7'	896.0'	-2.3'	SAME	SAME	MONITOR
39120	BUSH	EXISTING	893.7'	896.3'	-2.5'	SAME	SAME	MONITOR

1. ONLY A SAMPLING OF OBSTRUCTIONS ARE SHOWN IN TABLES DUE TO DENSITY.

RUNWAY 33 END APPROACH TRAVERSE WAY TABLE

ID	ROADWAY EL.	ROADWAY EL. + PART 77 CLEARANCE REQUIREMENTS	EXISTING PENETRATION	FUTURE PENETRATION	DISPOSITION
R6	876.0'	901.0'	11.7'	11.8'	RELOCATE ROAD
R7	873.0'	898.0'	7.1'	7.2'	RELOCATE ROAD
R8	870.0'	895.0'	1.3'	1.4'	OBST. LIGHT (SEE NOTE C)
R9	870.0'	895.0'	-42.1'	-41.1'	NONE
R10	872.0'	897.0'	-40.1'	-39.1'	NONE

RUNWAY 33 OBSTRUCTION DATA TABLE - (20:1) THRESHOLD SITING SURFACE (TSS)

ID	DESCRIPTION	TRIGGERING EVENT	OBJECT TOP EL.	EXISTING SURFACE EL.	EXISTING PENETRATION	FUTURE SURFACE EL.	FUTURE PENETRATION	DISPOSITION
5746	TREE	EXISTING	922.3'	N/A	N/A	904.1'	18.2'	TRIM / REMOVE
5754	TREE	EXISTING	911.9'	N/A	N/A	904.9'	7.0'	TRIM / REMOVE
31904	TREE	EXISTING	942.9'	N/A	N/A	940.2'	2.6'	TRIM / REMOVE
31928	TREE	EXISTING	946.7'	N/A	N/A	929.1'	17.6'	TRIM / REMOVE
31960	TREE	EXISTING	926.7'	N/A	N/A	916.7'	10.0'	TRIM / REMOVE
31998	TREE	EXISTING	955.0'	N/A	N/A	945.5'	9.5'	TRIM / REMOVE
38800	TREE	EXISTING	943.7'	920.7'	23.0'	SAME	SAME	TRIM / REMOVE
38808	TREE	EXISTING	920.0'	N/A	N/A	912.4'	7.6'	TRIM / REMOVE
38816	TREE	EXISTING	916.0'	N/A	N/A	906.1'	9.9'	TRIM / REMOVE
38832	TREE	EXISTING	942.3'	916.7'	25.6'	SAME	SAME	TRIM / REMOVE
38840	TREE	EXISTING	934.1'	N/A	N/A	929.1'	5.0'	TRIM / REMOVE
38864	TREE	EXISTING	956.4'	N/A	N/A	946.4'	10.0'	TRIM / REMOVE
38904	TREE	EXISTING	950.9'	N/A	N/A	937.6'	13.3'	TRIM / REMOVE
38912	TREE	EXISTING	949.5'	950.7'	-1.2'	SAME	SAME	MONITOR
38920	TREE	EXISTING	958.9'	N/A	N/A	951.4'	7.6'	TRIM / REMOVE
39128	BUSH	EXISTING	898.4'	901.5'	-3.0'	SAME	SAME	MONITOR

1. ONLY A SAMPLING OF OBSTRUCTIONS ARE SHOWN IN TABLES DUE TO DENSITY.

RUNWAY 33 END TSS TRAVERSE WAY TABLE

ID	ROADWAY EL.	ROADWAY EL. + PART 77 CLEARANCE REQUIREMENTS	EXISTING PENETRATION	FUTURE PENETRATION	DISPOSITION
R7	883.0'	898.0'	-2.8'	-2.8'	RELOCATE ROAD
R9	880.0'	895.0'	N/A	-51.1'	NONE
R10	882.0'	897.0'	N/A	-49.1'	NONE
R18	885.0'	900.0'	-0.7'	-0.7'	NONE

RUNWAY 33 OBSTRUCTION DATA TABLE - 3° PAPI OCS (4° AIMING ANGLE)

ID	DESCRIPTION	TRIGGERING EVENT	OBJECT TOP EL.	EXISTING SURFACE EL.	EXISTING PENETRATION	DISPOSITION
38800	TREE	EXISTING	943.7'	947.2'	-3.5'	TRIM / REMOVE
38832	TREE	EXISTING	942.3'	943.6'	-1.3'	TRIM / REMOVE

OHIO
NEW PHILADELPHIA

HARRY CLEVER FIELD AIRPORT
NEW PHILADELPHIA, OHIO

Michael Baker
INTERNATIONAL

DESIGNER: APN	CHECKED BY: MJK
TECHNICIAN: APN	PROJECT NUMBER: 148056

NOTES:

GENERAL NOTES:

1. EXISTING BASE MAPPING, ELEVATIONS, AND COORDINATES WERE OBTAINED FROM A SURVEY, FLOWN ON 9/22/15.
2. FEDERAL AVIATION REGULATIONS (FAR) PART 77 SPECIFIES CLEARANCE REQUIREMENTS FOR ROADS, RAILROADS, AND WATERWAYS AS FOLLOWS: A) 17 FEET FOR AN INTERSTATE HIGHWAY, B) 15 FEET FOR ANY OTHER PUBLIC ROADWAY, C) 10 FEET OR THE HEIGHT OF THE HIGHEST MOBILE OBJECT THAT WOULD NORMALLY TRAVERSE THE ROAD, WHICHEVER IS GREATER, FOR A PRIVATE ROAD, D) 23 FEET FOR A RAILROAD, AND E) FOR A WATERWAY OR ANY OTHER TRAVERSE WAY NOT PREVIOUSLY MENTIONED, AN AMOUNT EQUAL TO THE HEIGHT OF THE HIGHEST MOBILE OBJECT THAT WOULD NORMALLY TRAVERSE IT.
3. THE CITY WAS IN THE PROCESS OF REMOVING TREE OBSTRUCTIONS AT THE TIME THIS EVALUATION WAS CONDUCTED. THEREFORE, SOME TREE OBSTRUCTIONS SHOWN MAY HAVE BEEN IDENTIFIED AND REMOVED BY THE CITY.

PLAN REFERENCED NOTES:

A. BUILDING RESTRICTION LINE (BRL) ASSUMES A HEIGHT OF 20' ABOVE THE NEAREST RUNWAY ELEVATION.
B. THE BASE ELEVATIONS OF ALL OBJECTS ARE UNKNOWN. THEREFORE, OBJECTS WERE TRIMMED AT THE COMPOSITE PROFILE HIGH.
C. THE ROADS DO NOT PENETRATE THE 20:1 TSS. OBSTRUCTION LIGHTS SHOULD BE INSTALLED FOR PART 77 PENETRATIONS.

REVISIONS

NO.	DESCRIPTION	DATE	BY

PROJECT NAME:
AIRPORT MASTER PLAN UPDATE

DRAWING NAME:
INNER PORTION OF THE APPROACH SURFACE DRAWING - RUNWAY 33

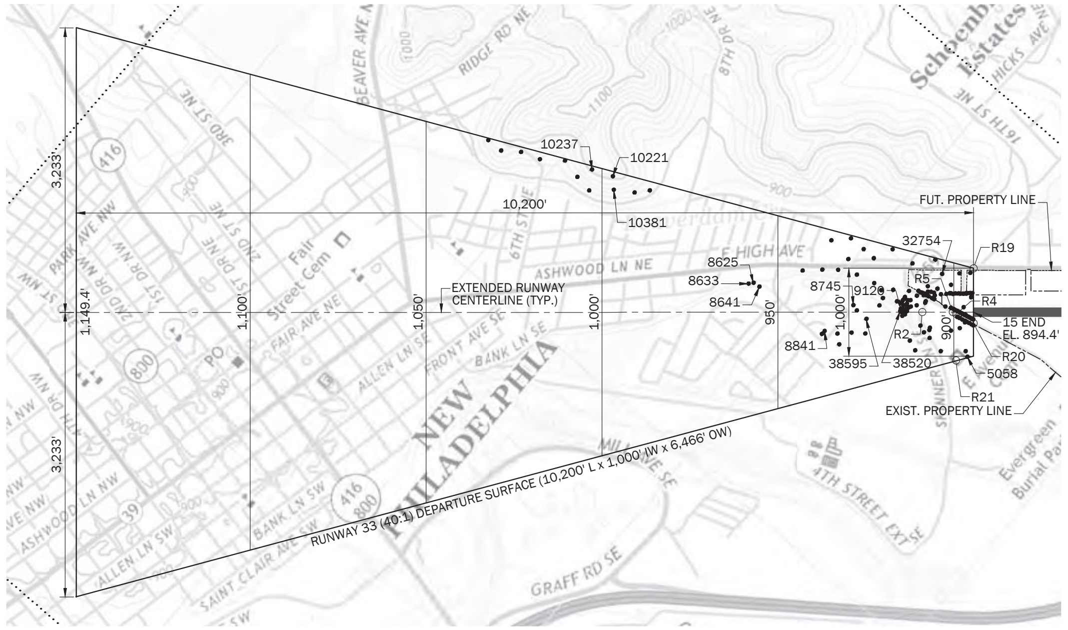
FAA AIP #: 3-39-0060-012-2015

DIVISION: PLANNING

DATE: MARCH 2018

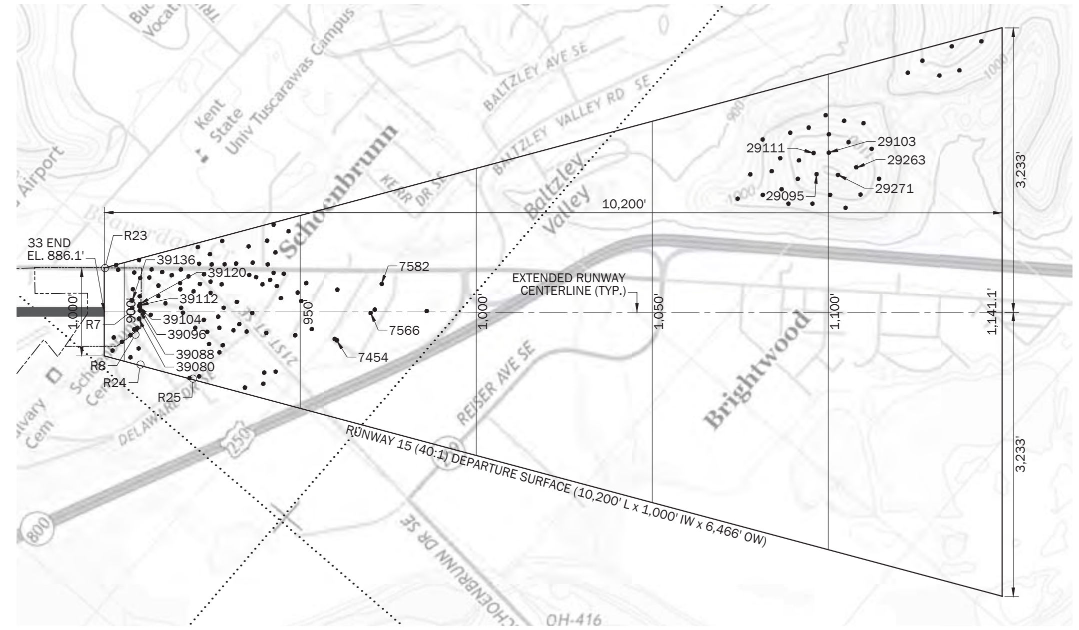
DRAWING NUMBER: 7

HARRY CLEVER FIELD AIRPORT
NEW PHILADELPHIA, OHIO



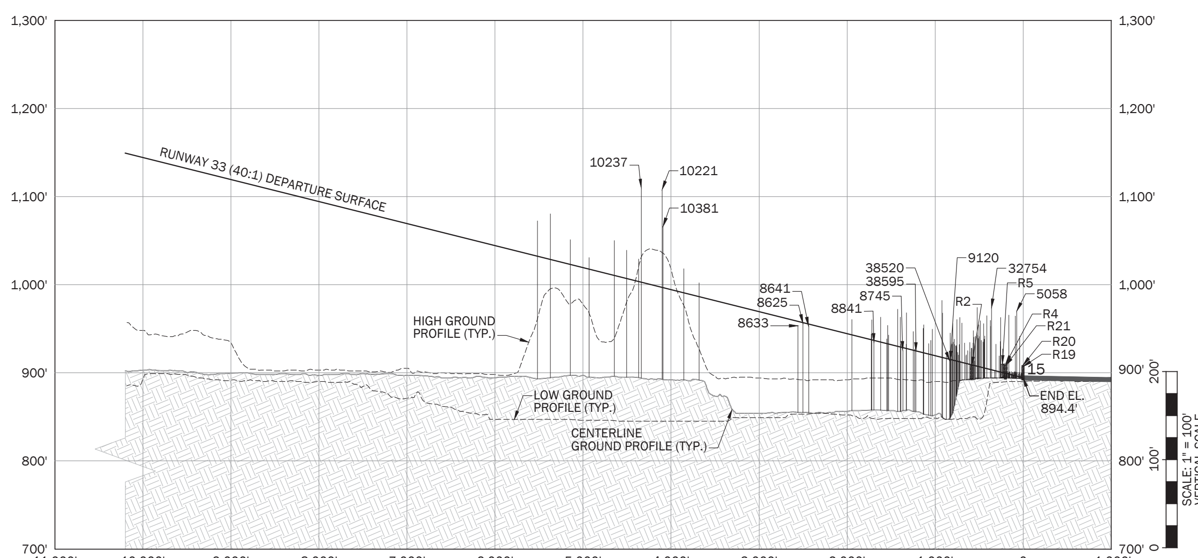
PLAN VIEW RUNWAY 33 DEPARTURE SURFACE

SCALE: 1" = 1,000'
HORIZONTAL SCALE



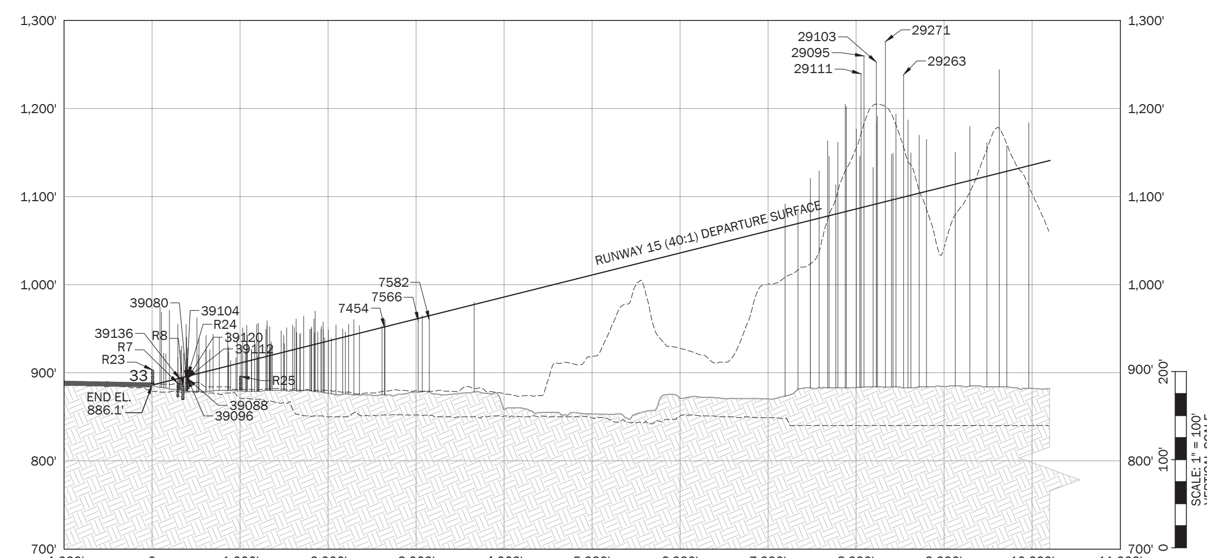
PLAN VIEW RUNWAY 15 DEPARTURE SURFACE

SCALE: 1" = 1,000'
HORIZONTAL SCALE



PROFILE VIEW RUNWAY 33 DEPARTURE SURFACE

SCALE: 1" = 1,000'
HORIZONTAL SCALE



PROFILE VIEW RUNWAY 15 DEPARTURE SURFACE

SCALE: 1" = 1,000'
HORIZONTAL SCALE

RUNWAY 33 (40:1) DEPARTURE SURFACE OBSTRUCTION TABLE

ID	DESCRIPTION	OBJECT TOP EL.	EXISTING SURFACE EL.	EXISTING PENETRATION	DISPOSITION
5058	TREE	970.1'	896.2'	74.0'	TRIM / REMOVE
8625	TREE	956.1'	957.0'	-0.8'	MONITOR
8633	TREE	953.4'	958.4'	-4.9'	MONITOR
8641	TREE	953.3'	955.3'	-2.0'	MONITOR
8745	TREE	925.6'	928.6'	-3.0'	MONITOR
8841	TREE	934.8'	936.8'	-2.0'	MONITOR
9120	TREE	914.7'	915.1'	-0.4'	MONITOR
10221	TREE	1107.8'	996.9'	110.9'	TRIM / REMOVE
10237	TREE	1109.9'	1002.9'	107.0'	TRIM / REMOVE
10381	TREE	1066.2'	996.7'	69.5'	TRIM / REMOVE
32754	TREE	973.8'	903.4'	70.4'	TRIM / REMOVE
38520	TREE	913.7'	915.3'	-1.6'	MONITOR
38595	TREE	924.5'	924.9'	-0.4'	MONITOR

1. ONLY A SAMPLING OF OBSTRUCTIONS ARE SHOWN IN TABLES DUE TO DENSITY.

RUNWAY 33 DEPARTURE TRAVERSE WAY TABLE

ID	ROADWAY EL.	ROADWAY EL. + PART 77 CLEARANCE REQUIREMENTS	EXISTING PENETRATION	DISPOSITION
R2	893.0'	903.0'	-6.1'	NONE
R4	895.1'	910.1'	10.7'	OBST. LIGHT (SEE NOTE A)
R5	894.8'	909.8'	9.5'	OBST. LIGHT (SEE NOTE A)
R19	892.0'	907.0'	12.5'	NONE (SEE NOTE 3)
R20	893.5'	908.5'	14.0'	NONE (SEE NOTE 3)
R21	893.0'	908.0'	8.6'	NONE (SEE NOTE 3)

RUNWAY 15 (40:1) DEPARTURE SURFACE OBSTRUCTION TABLE

ID	DESCRIPTION	OBJECT TOP EL.	EXISTING SURFACE EL.	EXISTING PENETRATION	DISPOSITION
7454	TREE	951.7'	952.1'	-0.4'	MONITOR
7566	TREE	958.9'	961.7'	-2.8'	MONITOR
7582	TREE	960.2'	964.9'	-4.7'	MONITOR
29095	TREE	1259.8'	1088.3'	171.5'	TRIM / REMOVE
29103	TREE	1252.5'	1091.9'	160.7'	TRIM / REMOVE
29111	TREE	1239.4'	1087.5'	151.9'	TRIM / REMOVE
29263	TREE	1238.1'	1099.6'	138.5'	TRIM / REMOVE
29271	TREE	1276.0'	1094.4'	181.6'	TRIM / REMOVE
39080	BUSH	892.6'	895.9'	-3.3'	MONITOR
39088	BUSH	893.5'	896.2'	-2.7'	MONITOR
39096	BUSH	893.5'	896.2'	-2.7'	MONITOR
39104	BUSH	893.4'	896.0'	-2.6'	MONITOR
39112	BUSH	893.7'	896.1'	-2.3'	MONITOR
39120	BUSH	893.7'	896.2'	-2.5'	MONITOR
39136	BUSH	892.9'	894.0'	-1.1'	MONITOR

1. ONLY A SAMPLING OF OBSTRUCTIONS ARE SHOWN IN TABLES DUE TO DENSITY.

RUNWAY 15 DEPARTURE TRAVERSE WAY TABLE

ID	ROADWAY EL.	ROADWAY EL. + PART 77 CLEARANCE REQUIREMENTS	EXISTING PENETRATION	DISPOSITION
R7	883.0'	898.0'	4.5'	RELOCATE ROAD
R8	880.0'	895.0'	0.2'	OBST. LIGHT (SEE NOTE A)
R23	888.0'	903.0'	16.8'	NONE (SEE NOTE 3)
R24	882.0'	897.0'	0.7'	NONE (SEE NOTE 3)
R25	881.0'	896.0'	-15.2'	NONE (SEE NOTE 3)

MAGNETIC DECLINATION 8° 19' W ± 0° 22' JUNE 2017
ANNUAL RATE OF CHANGE 0° 2' W
SOURCE: NATIONAL GEOPHYSICAL DATA CENTER

Michael Baker INTERNATIONAL

DESIGNER: APN	CHECKED BY: MJK
TECHNICIAN: APN	PROJECT NUMBER: 148056

NOTES:

GENERAL NOTES:

1. EXISTING BASE MAPPING, ELEVATIONS, AND COORDINATES WERE OBTAINED FROM A SURVEY, FLOWN ON 9/22/15.
2. FEDERAL AVIATION REGULATIONS (FAR) PART 77 SPECIFIES CLEARANCE REQUIREMENTS FOR ROADS, RAILROADS, AND WATERWAYS AS FOLLOWS: A) 17 FEET FOR AN INTERSTATE HIGHWAY, B) 15 FEET FOR ANY OTHER PUBLIC ROADWAY, C) 10 FEET OR THE HEIGHT OF THE HIGHEST MOBILE OBJECT THAT WOULD NORMALLY TRAVERSE THE ROAD, WHICHEVER IS GREATER, FOR A PRIVATE ROAD, D) 23 FEET FOR A RAILROAD, AND E) FOR A WATERWAY OR ANY OTHER TRAVERSE WAY NOT PREVIOUSLY MENTIONED, AN AMOUNT EQUAL TO THE HEIGHT OF THE HIGHEST MOBILE OBJECT THAT WOULD NORMALLY TRAVERSE IT.
3. NO INSTRUMENT DEPARTURE PROCEDURES ARE CURRENTLY PUBLISHED FOR THE RUNWAYS AT PHD, NOR ARE ANY PLANNED AT THIS TIME. AS SUCH, THIS DEPARTURE SURFACES DRAWING IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY. THE ILLUSTRATED DEPARTURE SURFACES EXTEND OUT AT A SLOPE OF 40:1 FROM THE RUNWAY END ELEVATIONS AND THEREFORE REPRESENT THE STRICTEST FAA EVALUATION CRITERIA FOR DEPARTURE FROM NON-COMMERCIAL RUNWAYS. OVERALL, THE INFORMATION PRESENTED SHOULD BE CONSIDERED FOR LAND USE PLANNING PURPOSES.
4. THE CITY WAS IN THE PROCESS OF REMOVING TREE OBSTRUCTIONS AT THE TIME THIS EVALUATION WAS CONDUCTED. THEREFORE, SOME TREE OBSTRUCTIONS SHOWN MAY HAVE BEEN IDENTIFIED AND REMOVED BY THE CITY.

PLAN REFERENCED NOTES:

A. THE ROADS DO NOT PENETRATE THE 20:1 TSS. OBSTRUCTION LIGHTS SHOULD BE INSTALLED FOR PART 77 PENETRATIONS.

REVISIONS

NO.	DESCRIPTION	DATE	BY

PROJECT NAME: AIRPORT MASTER PLAN UPDATE

DRAWING NAME: RUNWAY DEPARTURE SURFACE DRAWING - RUNWAY 15-33

FAA AIP #: 3-39-0060-012-2015

DIVISION: PLANNING

DATE: MARCH 2018

DRAWING NUMBER: 8

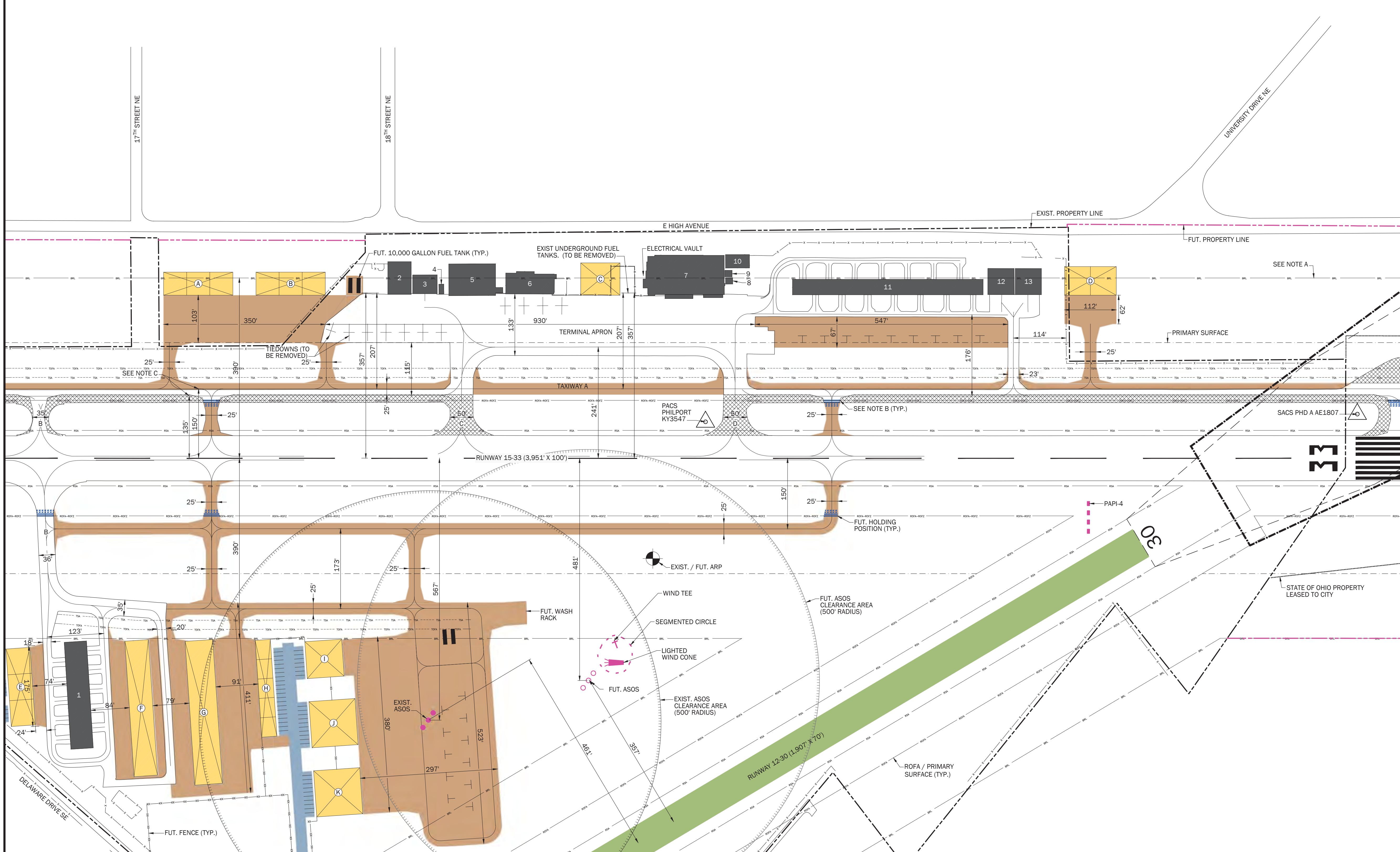
EXISTING BUILDING TABLE		
ID	DESCRIPTION	TOP EL.
1	T-HANGAR	913.4'
2	HANGAR	915.0'
3	HANGAR	910.7'
4	SHED	897.8'
5	HANGAR	915.1'
6	RESTAURANT	908.3'
7	TERMINAL / FBO	918.3'
8	SHED	899.5'
9	SHED	898.9'
10	HANGAR	902.1'
11	T-HANGAR (14-UNIT)	903.3'
12	HANGAR	915.4'
13	HANGAR	915.3'

FUTURE BUILDING TABLE		
ID	DESCRIPTION	TOP EL.
A	50'x50' HANGAR (3)	908'
B	50'x50' HANGAR (3)	908'
C	70'x85' HANGAR	908'
D	56'x62' HANGAR (2)	908'
E	52'x56' HANGAR (3)	911'
F	T-HANGAR (13-UNIT)	911'
G	T-HANGAR (12-UNIT)	911'
H	33'x42' HANGAR (5)	911'
I	80'x80' HANGAR	912'
J	100'x100' HANGAR	917'
K	100'x100' HANGAR	917'

1. FUTURE BUILDING ELEVATIONS WERE CALCULATED BASED UPON THEIR ESTIMATED HEIGHT ABOVE GROUND LEVEL.

TRUE
MAGNETIC
MAGNETIC DECLINATION 8° 19' W ± 0° 22' JUNE 2017
ANNUAL RATE OF CHANGE 0° 2' W
SOURCE: NATIONAL GEOPHYSICAL DATA CENTER

0 100' 200'
SCALE: 1" = 100'
HORIZONTAL SCALE



Y:\Planning\PHD-Harry Clever Field Airport\PHD Master Plan Update - 148056 (9-23-2015)\Drawings\ALP Set\09_(PDH)_Terminal Area.dwg Modified: Mar 23, 2018 - 10:52am Plotted: Mar 23, 2018 - 10:52am smsentelle

OHIO
NEW PHILADELPHIA

HARRY CLEVER FIELD AIRPORT
NEW PHILADELPHIA, OHIO

Michael Baker
INTERNATIONAL

DESIGNER: APN	CHECKED BY: MJK
TECHNICIAN: APN	PROJECT NUMBER: 148056

NOTES:

GENERAL NOTES:

1. EXISTING BASE MAPPING, ELEVATIONS, AND COORDINATES WERE OBTAINED FROM A SURVEY, FLOWN ON 9/22/15.

PLAN REFERENCED NOTES:

A. BUILDING RESTRICTION LINE (BRL) ASSUMES A HEIGHT OF 20' ABOVE THE NEAREST RUNWAY ELEVATION.

B. EXISTING / FUTURE HOLDING POSITION MARKINGS ARE LOCATED 125' FROM RUNWAY CENTERLINE.

C. THE EXISTING RUNWAY 15-33 CENTERLINE TO PARALLEL TAXIWAY A CENTERLINE SEPARATION OF 135' DOES NOT MEET THE STANDARD SEPARATION OF 150'. AS SUCH, THE PROPOSED CORRECTIVE ACTION IS TO RELOCATE TAXIWAY CENTERLINE BY 15'.

REVISIONS			
NO.	DESCRIPTION	DATE	BY

PROJECT NAME:
AIRPORT MASTER PLAN UPDATE

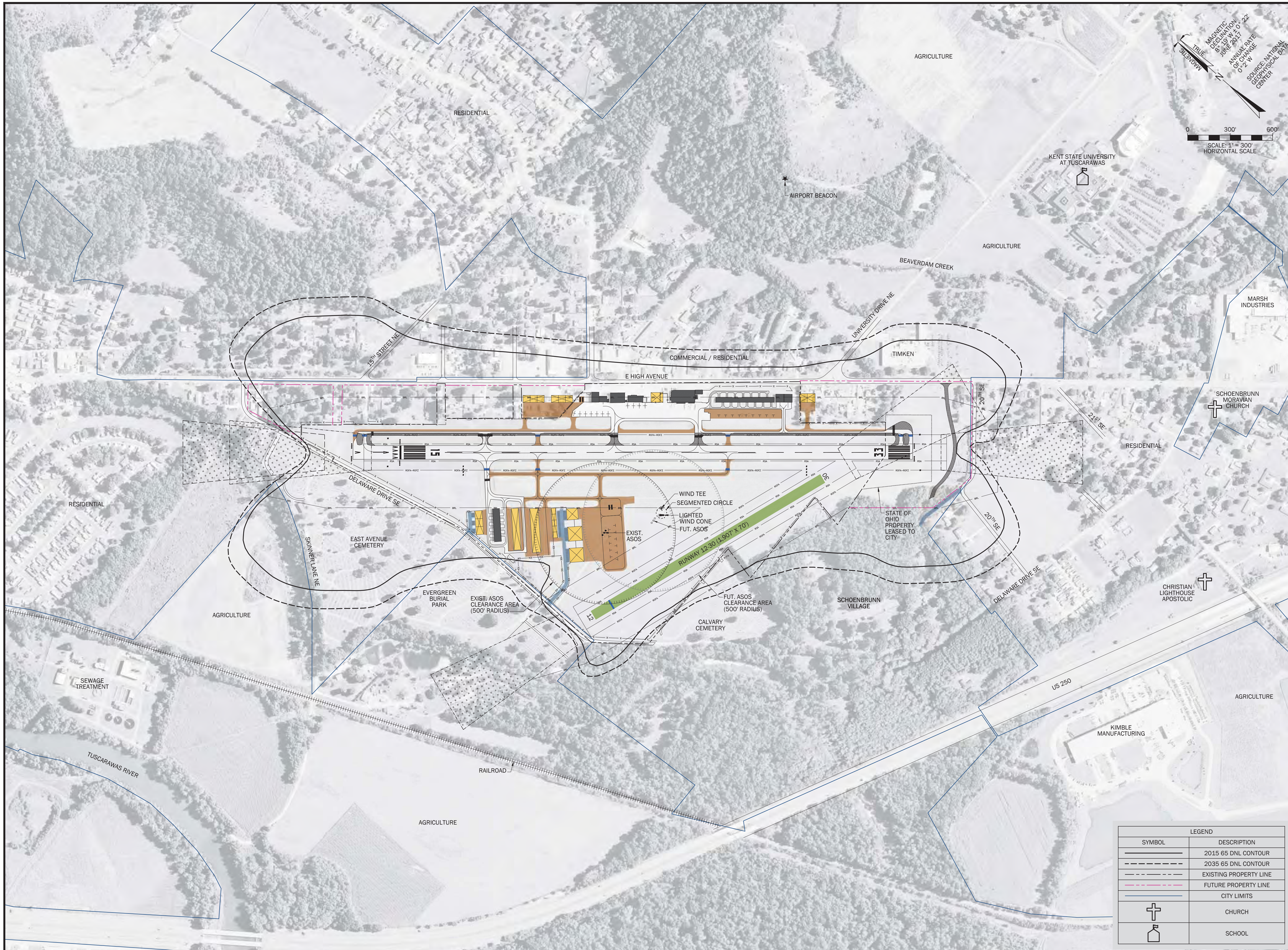
DRAWING NAME:
TERMINAL AREA DRAWING

FAA AIP #: 3-39-0060-012-2015

DIVISION: PLANNING

DATE: MARCH 2018

DRAWING NUMBER: 9



LEGEND

SYMBOL	DESCRIPTION
	2015 65 DNL CONTOUR
	2035 65 DNL CONTOUR
	EXISTING PROPERTY LINE
	FUTURE PROPERTY LINE
	CITY LIMITS
	CHURCH
	SCHOOL

HARRY CLEVER FIELD AIRPORT
NEW PHILADELPHIA, OHIO

Michael Baker INTERNATIONAL

DESIGNER:	CHECKED BY:
APN	MJK
TECHNICIAN:	PROJECT NUMBER:
APN	148056

NOTES:

GENERAL NOTES:

1. EXISTING BASE MAPPING, ELEVATIONS, AND COORDINATES WERE OBTAINED FROM A SURVEY, FLOWN ON 9/22/15.
2. THERE IS NOT CURRENTLY A LOCAL ZONING ORDINANCE IN PLACE TO PROTECT THE AIRSPACE SURROUNDING THE AIRPORT. HOWEVER, THE OHIO AIRPORT PROTECTION ACT REQUIRES THAT SPECIFIC PROPOSED DEVELOPMENTS IN THE VICINITY OF THE AIRPORT BE COORDINATED WITH THE FAA IN ACCORDANCE WITH FAR PART 77.

REVISIONS

NO.	DESCRIPTION	DATE	BY

PROJECT NAME:
AIRPORT MASTER PLAN UPDATE

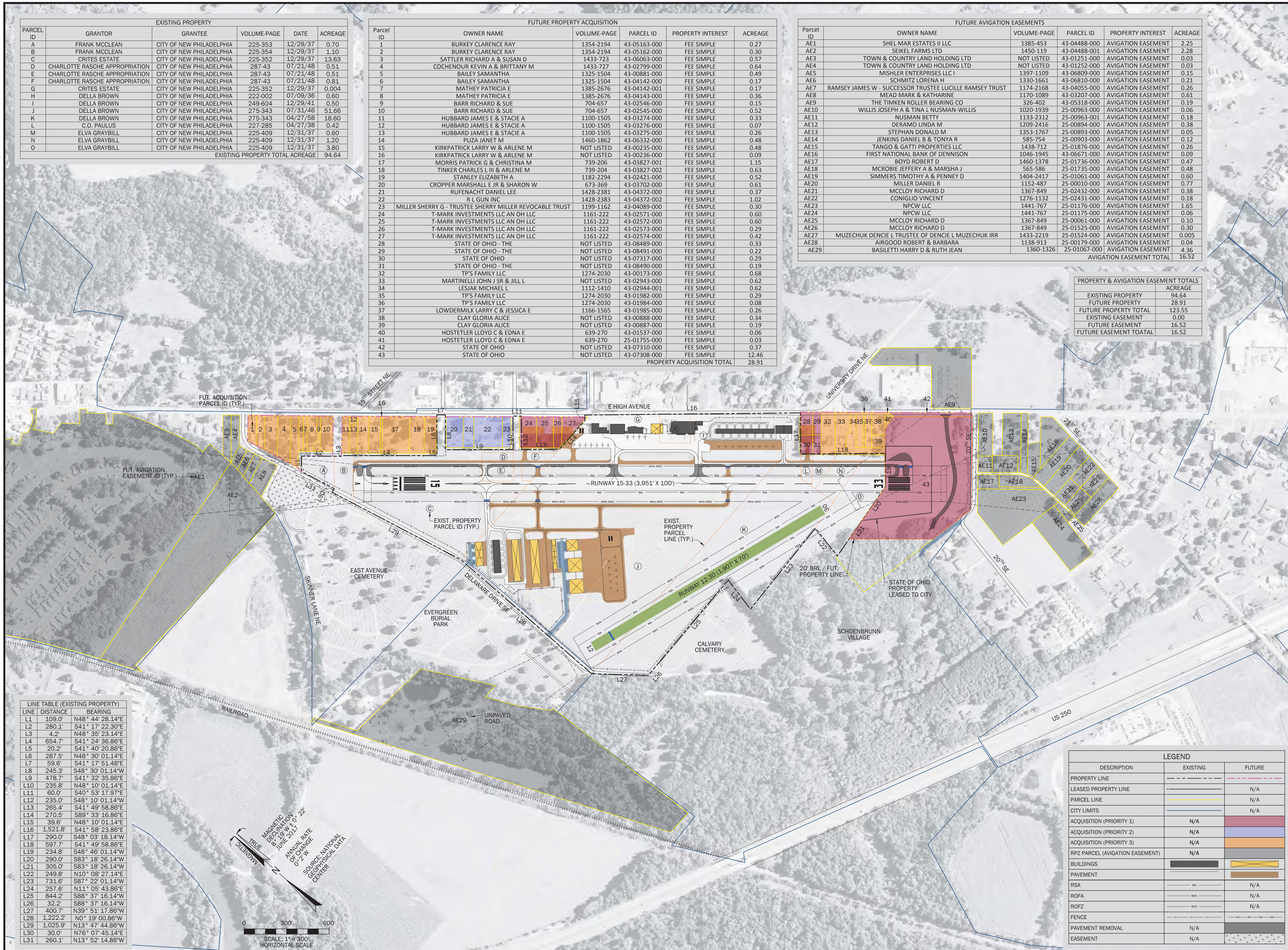
DRAWING NAME:
LAND USE DRAWING

FAA AIP #: 3-39-0060-012-2015

DIVISION: PLANNING

DATE:	DRAWING NUMBER:
MARCH 2018	10

Y:\Planning\PHD-Harry Clever Field Airport\PHD Master Plan Update - 148056 (9-23-2015)\Drawings\ALP Set\10_(PHD)_Land Use.dwg Modified: Mar 21, 2018 - 1:39pm Plotted: Mar 23, 2018 - 10:54am smsentelle



EXISTING PROPERTY					
PARCEL ID	GRANTOR	GRANTEE	VOLUME-PAGE	DATE	ACREAGE
A	FRANK MCCLEAN	CITY OF NEW PHILADELPHIA	225-353	12/29/37	0.70
B	FRANK MCCLEAN	CITY OF NEW PHILADELPHIA	225-354	12/29/37	1.10
C	CRITES ESTATE	CITY OF NEW PHILADELPHIA	225-352	12/29/37	13.63
D	CHARLOTTE RASCHE APPROPRIATION	CITY OF NEW PHILADELPHIA	287-43	07/21/48	0.51
E	CHARLOTTE RASCHE APPROPRIATION	CITY OF NEW PHILADELPHIA	287-43	07/21/48	0.51
F	CHARLOTTE RASCHE APPROPRIATION	CITY OF NEW PHILADELPHIA	287-43	07/21/48	0.81
G	CRITES ESTATE	CITY OF NEW PHILADELPHIA	225-352	12/29/37	0.004
H	DELLA BROWN	CITY OF NEW PHILADELPHIA	222-002	07/09/36	0.60
I	DELLA BROWN	CITY OF NEW PHILADELPHIA	249-604	12/29/41	0.50
J	DELLA BROWN	CITY OF NEW PHILADELPHIA	275-343	07/31/46	51.66
K	DELLA BROWN	CITY OF NEW PHILADELPHIA	275-343	04/27/58	18.60
L	C.O. PAULUS	CITY OF NEW PHILADELPHIA	227-285	04/27/38	0.42
M	ELVA GRAYBILL	CITY OF NEW PHILADELPHIA	225-409	12/31/37	0.60
N	ELVA GRAYBILL	CITY OF NEW PHILADELPHIA	225-409	12/31/37	1.20
O	ELVA GRAYBILL	CITY OF NEW PHILADELPHIA	225-409	12/31/37	3.80
				EXISTING PROPERTY TOTAL ACREAGE	94.64

FUTURE PROPERTY ACQUISITION					
Parcel ID	OWNER NAME	VOLUME-PAGE	PARCEL ID	PROPERTY INTEREST	ACREAGE
1	BURKEY CLARENCE RAY	1354-2194	43-05163-000	FEE SIMPLE	0.27
2	BURKEY CLARENCE RAY	1354-2194	43-05162-000	FEE SIMPLE	0.30
3	SATTLER RICHARD A & SUSAN D	1433-723	43-06063-000	FEE SIMPLE	0.57
4	COCHENOUR KEVIN A & BRITTANY M	1433-727	43-02799-000	FEE SIMPLE	0.64
5	BAILEY SAMANTHA	1325-1504	43-00881-000	FEE SIMPLE	0.49
6	BAILEY SAMANTHA	1325-1504	43-04142-000	FEE SIMPLE	0.17
7	MATHEY PATRICIA E	1385-2676	43-04142-001	FEE SIMPLE	0.17
8	MATHEY PATRICIA E	1385-2676	43-04143-000	FEE SIMPLE	0.36
9	BARR RICHARD & SUE	704-657	43-02546-000	FEE SIMPLE	0.15
10	BARR RICHARD & SUE	704-657	43-02545-000	FEE SIMPLE	0.52
11	HUBBARD JAMES E & STACIE A	1100-1505	43-03274-000	FEE SIMPLE	0.33
12	HUBBARD JAMES E & STACIE A	1100-1505	43-03276-000	FEE SIMPLE	0.07
13	HUBBARD JAMES E & STACIE A	1100-1505	43-03275-000	FEE SIMPLE	0.26
14	PUZA JANET M	1460-1862	43-06332-000	FEE SIMPLE	0.48
15	KIRKPATRICK LARRY W & ARLENE M	NOT LISTED	43-00235-000	FEE SIMPLE	0.48
16	KIRKPATRICK LARRY W & ARLENE M	NOT LISTED	43-00236-000	FEE SIMPLE	0.09
17	MORRIS PATRICK G & CHRISTINA M	739-206	43-03827-001	FEE SIMPLE	1.15
18	TINKER CHARLES L III & ARLENE M	739-204	43-03827-002	FEE SIMPLE	0.63
19	STANLEY ELIZABETH A	1182-2294	43-02421-000	FEE SIMPLE	0.52
20	CROPPER MARSHALL E JR & SHARON W	673-369	43-03702-000	FEE SIMPLE	0.61
21	RUFENACHT DANIEL LEE	1428-2381	43-04372-000	FEE SIMPLE	0.37
22	R L GUN INC	1428-2383	43-04372-002	FEE SIMPLE	1.02
23	MILLER SHERRY G - TRUSTEE SHERRY MILLER REVOCABLE TRUST	1199-1162	43-04089-000	FEE SIMPLE	0.30
24	T-MARK INVESTMENTS LLC AN OH LLC	1161-222	43-02571-000	FEE SIMPLE	0.60
25	T-MARK INVESTMENTS LLC AN OH LLC	1161-222	43-02572-000	FEE SIMPLE	0.60
26	T-MARK INVESTMENTS LLC AN OH LLC	1161-222	43-02573-000	FEE SIMPLE	0.29
27	T-MARK INVESTMENTS LLC AN OH LLC	1161-222	43-02574-000	FEE SIMPLE	0.42
28	STATE OF OHIO - THE	NOT LISTED	43-08489-000	FEE SIMPLE	0.33
29	STATE OF OHIO - THE	NOT LISTED	43-08491-000	FEE SIMPLE	0.22
30	STATE OF OHIO	NOT LISTED	43-07317-000	FEE SIMPLE	0.29
31	STATE OF OHIO - THE	NOT LISTED	43-08490-000	FEE SIMPLE	0.19
32	TP'S FAMILY LLC	1274-2030	43-00173-000	FEE SIMPLE	0.68
33	MARTINELLI JOHN J SR & JILL L	NOT LISTED	43-02943-000	FEE SIMPLE	0.62
34	LESJAK MICHAEL L	1112-1410	43-02944-001	FEE SIMPLE	0.62
35	TP'S FAMILY LLC	1274-2030	43-01982-000	FEE SIMPLE	0.29
36	TP'S FAMILY LLC	1274-2030	43-01984-000	FEE SIMPLE	0.08
37	LOWDERMILK LARRY C & JESSICA E	1166-1565	43-01985-000	FEE SIMPLE	0.26
38	CLAY GLORIA ALICE	NOT LISTED	43-00888-000	FEE SIMPLE	0.34
39	CLAY GLORIA ALICE	NOT LISTED	43-00887-000	FEE SIMPLE	0.19
40	HOSTETLER LLOYD C & EDNA E	639-270	43-01537-000	FEE SIMPLE	0.06
41	HOSTETLER LLOYD C & EDNA E	639-270	25-01755-000	FEE SIMPLE	0.03
42	STATE OF OHIO	NOT LISTED	43-07310-000	FEE SIMPLE	0.37
43	STATE OF OHIO	NOT LISTED	43-07308-000	FEE SIMPLE	12.46
				PROPERTY ACQUISITION TOTAL	28.91

FUTURE AVIGATION EASEMENTS					
Parcel ID	OWNER NAME	VOLUME-PAGE	PARCEL ID	PROPERTY INTEREST	ACREAGE
AE1	SHEL MAR ESTATES II LLC	1385-453	43-04488-000	AVIGATION EASEMENT	2.25
AE2	SEIKEL FARMS LTD	1450-119	43-04488-001	AVIGATION EASEMENT	2.28
AE3	TOWN & COUNTRY LAND HOLDING LTD	NOT LISTED	43-01251-000	AVIGATION EASEMENT	0.03
AE4	TOWN & COUNTRY LAND HOLDING LTD	NOT LISTED	43-01252-000	AVIGATION EASEMENT	0.03
AE5	MISHLER ENTERPRISES LLC I	1397-1109	43-06809-000	AVIGATION EASEMENT	0.15
AE6	SCHMITZ LORENA H	1330-1661	43-06810-000	AVIGATION EASEMENT	0.21
AE7	RAMSEY JAMES W - SUCCESSOR TRUSTEE LUCILLE RAMSEY TRUST	1174-2168	43-04055-000	AVIGATION EASEMENT	0.26
AE8	MEAD MARK & KATHARINE	1170-1089	43-03207-000	AVIGATION EASEMENT	0.61
AE9	THE TIMKEN ROLLER BEARING CO	326-402	43-05318-000	AVIGATION EASEMENT	0.19
AE10	WILLIS JOSEPH A & TINA L NUSMAN-WILLIS	1020-1939	25-00963-000	AVIGATION EASEMENT	0.06
AE11	NUSMAN BETTY	1133-2312	25-00963-001	AVIGATION EASEMENT	0.18
AE12	DERAMO LINDA M	1209-2416	25-00894-000	AVIGATION EASEMENT	0.38
AE13	STEPHAN DONALD M	1353-1767	25-00893-000	AVIGATION EASEMENT	0.05
AE14	JENKINS DANIEL B & TONYA R	585-754	25-00903-000	AVIGATION EASEMENT	0.12
AE15	TANGO & GATTI PROPERTIES LLC	1438-712	25-01876-000	AVIGATION EASEMENT	0.26
AE16	FIRST NATIONAL BANK OF DENNISON	1046-1945	43-06671-000	AVIGATION EASEMENT	0.09
AE17	BOYD ROBERT D	1460-1378	25-01736-000	AVIGATION EASEMENT	0.47
AE18	MCROBIE JEFFERY A & MARSHA J	565-586	25-01735-000	AVIGATION EASEMENT	0.48
AE19	SIMMERS TIMOTHY A & PENNEY D	1404-2417	25-01061-000	AVIGATION EASEMENT	0.60
AE20	MILLER DANIEL R	1152-487	25-00010-000	AVIGATION EASEMENT	0.77
AE21	MCCLOY RICHARD D	1367-849	25-02432-000	AVIGATION EASEMENT	0.38
AE22	CONIGLIO VINCENT	1276-1132	25-02431-000	AVIGATION EASEMENT	0.18
AE23	NPCW LLC	1441-767	25-01176-000	AVIGATION EASEMENT	1.65
AE24	NPCW LLC	1441-767	25-01175-000	AVIGATION EASEMENT	0.06
AE25	MCCLOY RICHARD D	1367-849	25-00061-000	AVIGATION EASEMENT	0.10
AE26	MCCLOY RICHARD D	1367-849	25-01525-000	AVIGATION EASEMENT	0.30
AE27	MUZECHUK DENCIE L TRUSTEE OF DENCIE L MUZECHUK IRR	1433-2219	25-01524-000	AVIGATION EASEMENT	0.005
AE28	AIRGOOD ROBERT & BARBARA	1138-913	25-00179-000	AVIGATION EASEMENT	0.04
AE29	BASILETTI HARRY D & RUTH JEAN	1360-1326	25-01067-000	AVIGATION EASEMENT	4.36
				AVIGATION EASEMENT TOTAL	16.52

PROPERTY & AVIGATION EASEMENT TOTALS	
	ACREAGE
EXISTING PROPERTY	94.64
FUTURE PROPERTY	28.91
FUTURE PROPERTY TOTAL	123.55
EXISTING EASEMENT	0.00
FUTURE EASEMENT	16.52
FUTURE EASEMENT TOATAL	16.52

LINE TABLE (EXISTING PROPERTY)		
LINE	DISTANCE	BEARING
L1	109.0'	N48° 44' 28.14"E
L2	280.1'	S41° 17' 22.30"E
L3	4.2'	N48° 35' 23.14"E
L4	654.7'	S41° 24' 36.86"E
L5	20.2'	S41° 40' 20.86"E
L6	287.5'	N48° 30' 01.14"E
L7	59.6'	S41° 17' 51.48"E
L8	245.3'	S48° 30' 01.14"W
L9	478.7'	S41° 32' 35.86"E
L10	235.8'	N48° 10' 01.14"E
L11	60.0'	S40° 53' 17.97"E
L12	235.0'	S48° 10' 01.14"W
L13	265.4'	S41° 49' 58.86"E
L14	270.5'	S89° 33' 16.86"E
L15	39.6'	N48° 10' 01.14"E
L16	1,521.8'	S41° 58' 23.86"E
L17	290.0'	S48° 03' 18.14"W
L18	597.7'	S41° 49' 58.86"E
L19	234.8'	S48° 46' 01.14"W
L20	290.0'	S83° 18' 26.14"W
L21	305.0'	S83° 18' 26.14"W
L22	249.8'	N10° 08' 27.14"E
L23	731.6'	S87° 22' 01.14"W
L24	257.6'	N11° 05' 43.86"E
L25	844.2'	S88° 37' 16.14"W
L26	32.2'	S88° 37' 16.14"W
L27	400.7'	N39° 51' 17.86"W
L28	1,222.2'	N0° 19' 00.86"W
L29	1,025.9'	N13° 47' 44.86"W
L30	30.0'	N76° 07' 45.14"E
L31	260.1'	N13° 52' 14.86"W

LEGEND		
DESCRIPTION	EXISTING	FUTURE
PROPERTY LINE		
LEASED PROPERTY LINE		N/A
PARCEL LINE		N/A
CITY LIMITS		N/A
ACQUISITION (PRIORITY 1)	N/A	
ACQUISITION (PRIORITY 2)	N/A	
ACQUISITION (PRIORITY 3)	N/A	
RPZ PARCEL (AVIGATION EASEMENT)	N/A	
BUILDINGS		
PAVEMENT		
RSA	RSA	N/A
ROFA	ROFA	N/A
ROFZ	ROFZ	N/A
FENCE		
PAVEMENT REMOVAL	N/A	
EASEMENT	N/A	

NEW PHILADELPHIA OHIO

HARRY CLEVER FIELD AIRPORT
NEW PHILADELPHIA, OHIO

Michael Baker
INTERNATIONAL

DESIGNER: APN	CHECKED BY: MJK
TECHNICIAN: APN	PROJECT NUMBER: 148056

NOTES:

GENERAL NOTES:

1. EXISTING BASE MAPPING, ELEVATIONS, AND COORDINATES WERE OBTAINED FROM A SURVEY, FLOWN ON 9/22/15.
2. THE INFORMATION ON THIS DRAWING WAS DERIVED FROM A 2003 PROPERTY MAP AND PARCEL DATA FROM THE TUSCARAWAS COUNTY COUNTY PROPERTY APPRAISER. INFORMATION FROM THE PREVIOUS PROPERTY MAP COULD NOT BE VERIFIED AS PART OF THIS EFFORT. AN EXHIBIT 'A' PROPERTY MAP UPDATE IS RECOMMENDED.

REVISIONS			
NO.	DESCRIPTION	DATE	BY

PROJECT NAME:

AIRPORT MASTER PLAN UPDATE

DRAWING NAME:

AIRPORT PROPERTY MAP

FAA AIP #: 3-39-0060-012-2015

DIVISION: PLANNING

DATE: MARCH 2018	DRAWING NUMBER: 11