SECTION 2 - INVENTORY OF EXISTING CONDITIONS

The first step of the Master Plan process is formulating the inventory of existing conditions. The inventory of existing conditions provides a solid understanding of the physical facilities that will ultimately form the basis for the demand/capacity analysis. It also provides insight into the history and development of the Airport over the years including its physical evolution, changes to the operating characteristics and role in the region and National Airspace System.

This inventory of existing conditions is organized into the following sections:

- Airport Setting
- Physical Image Analysis
- Meteorological Conditions
- Airfield Facilities
- Airspace
- Terminal Area
- Landside and Ground Access
- Support/Ancillary Facilities
- Utilities
- Environmental Overview

The methodologies employed in documenting the existing conditions were based in part on the FAA *Airport Master Plans Advisory Circular 150/5070-6B.*

2.1 Airport Setting

2.1.1 Chronology of Airport History

The Board of Wayne County Road Commissioners created DTW in September of 1928 after Wayne County Voters approved a $2 million bond issue in 1927 to finance land acquisition and construction of the Airport, initially called the Wayne County Airport. The Wayne County Airport, with one landing strip, was opened to the public in September of 1929. Early Airport operations were coordinated and conducted out of the North Hangar, Building 278, which was completed in 1928.

1930's and 1940's

Wayne County Airport's first "Official"[1] landing was initiated by the Thompson Aeronautical Corporation, the predecessor of what is presently the largest airline in the world, American Airlines, on February 22, 1930. The Airport continued to serve general aviation operations until 1931, when the Airport became a military base for the Michigan Air National Guard. In 1939, the Airway Station, Building 348, was completed as a new administration building in an effort to accommodate Airport operations and provide more office space.

In 1941, when the U.S. entered World War II, control of Wayne County Airport was assumed by the U.S. Army Air Command as a staging base for the transport of heavy bombers to Europe. While using the Airport, the U.S. Army constructed a new hangar and support buildings and widened and extended runways to accommodate the U.S. Army's aircraft operations.

In 1944, authorization was granted to the Airport by the Wayne County Board of Supervisors to expand the Airport planning area to 3.5 square miles to accommodate the growing demand for airline service, and at that time commercial activity was transferred to Willow Run Airport. In 1947, the Airport resumed control, renamed the Airport the Detroit-Wayne Major Airport, and expanded the Airport property to four square miles by the end of 1948 to allow for extension of the existing runways.

1950's and 1960's

In 1950, the Airport added Runway 3L-21R (now known as 4R-22L) along with a new air traffic control tower and administration building. In 1952, a new cargo building was completed and leased to Flying Tiger Line, Meteor Air Transport and Slick Airways. In 1957, construction began on a $10.4 million expansion program which included the development of a new terminal (L.C. Smith Terminal), a 10,500-foot runway, a hotel and a restaurant. **Figure 1** shows the Airport in 1956. One year later, Detroit-Wayne Major Airport was renamed Detroit Metropolitan Wayne County Airport (DTW). By 1959, American, Allegheny, Northwest, Pan Am, British Overseas and Delta Airlines had moved back to DTW from Willow Run Airport.[2]

[1] http://www.metroAirport.com
[2] http://www.metroAirport.com

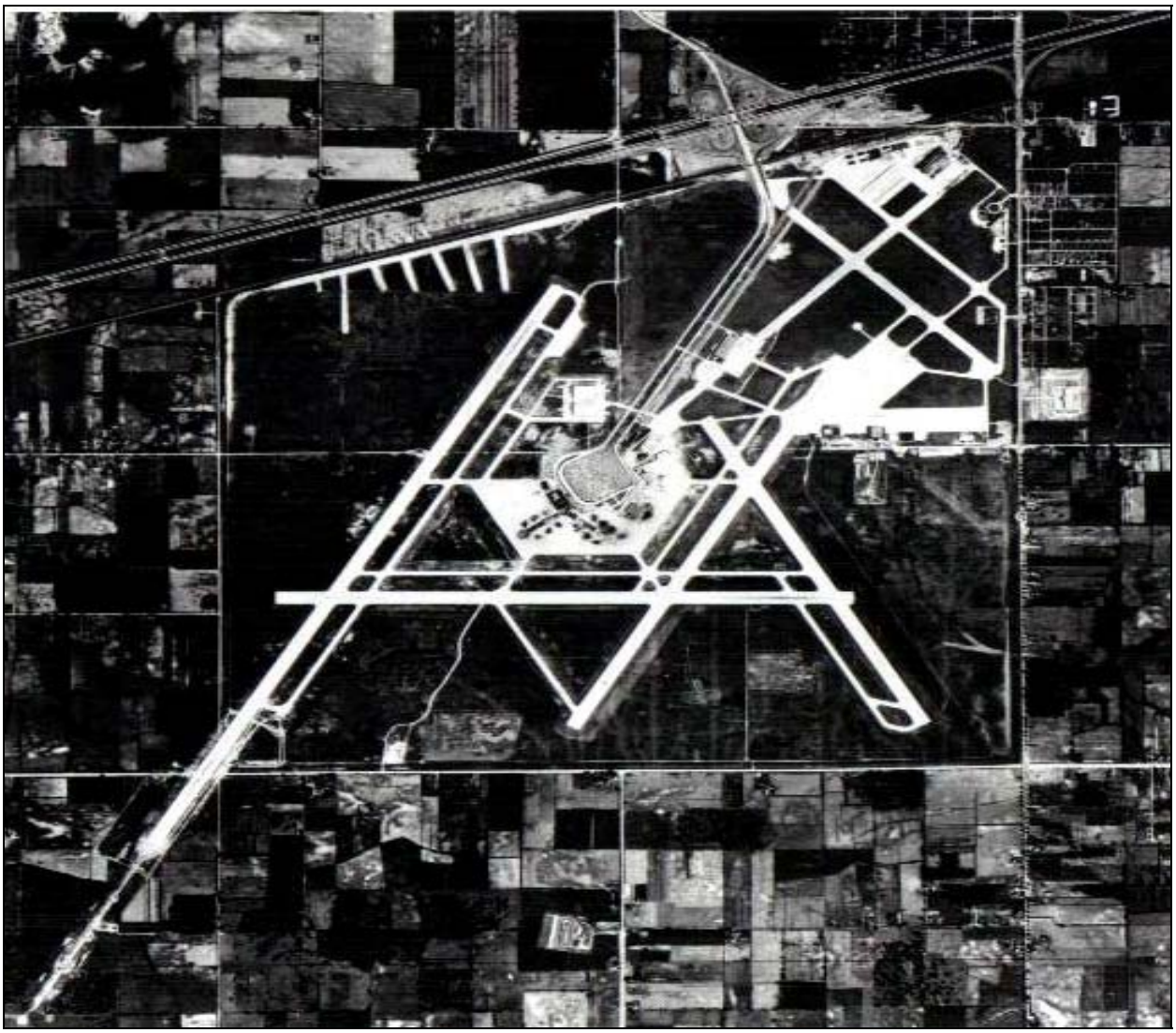


Figure 1: 1956 Aerial

In 1963 the Airport again expanded its aviation facilities, completing 20 T-Hangars and resurfacing the North Hangar Apron and Michigan National Air Guard apron. In the same year, a lighted taxiway to Runway 21L was constructed, along with the completion of a hangar for the Great Lakes Steel Corporation. In 1965, construction was completed on several structures including a new Airport Power Plant, the Michigan Bell Telephone Building, a United Airlines Cargo Building, an In-flight Kitchen, Hertz Car Rental Service Building, Texaco Service Station, Zantop Cargo Building and an addition to the American Airlines Air Freight Building.

In 1966, the North Terminal was opened (later named the James M. Davey Terminal). By this time, Metro Airport operations consisted of 13 passenger airlines, three air cargo carriers and two air taxi operators.

1970's and 1980's

In 1970, the Airport's automated radar terminal system became fully operational, allowing controllers to obtain information such as identification, altitude and aircraft speed. **Figure 2** represents the Airport in 1970. By 1972, the Michael Berry International Terminal was completed. Airfield lighting improvements and improvements to taxiways were subsequently completed, as well as expansion of the L.C. Smith Terminal and addition of new parking facilities. In 1976, the last of the three planned parallel runways (Runway 3R-21L) was completed.

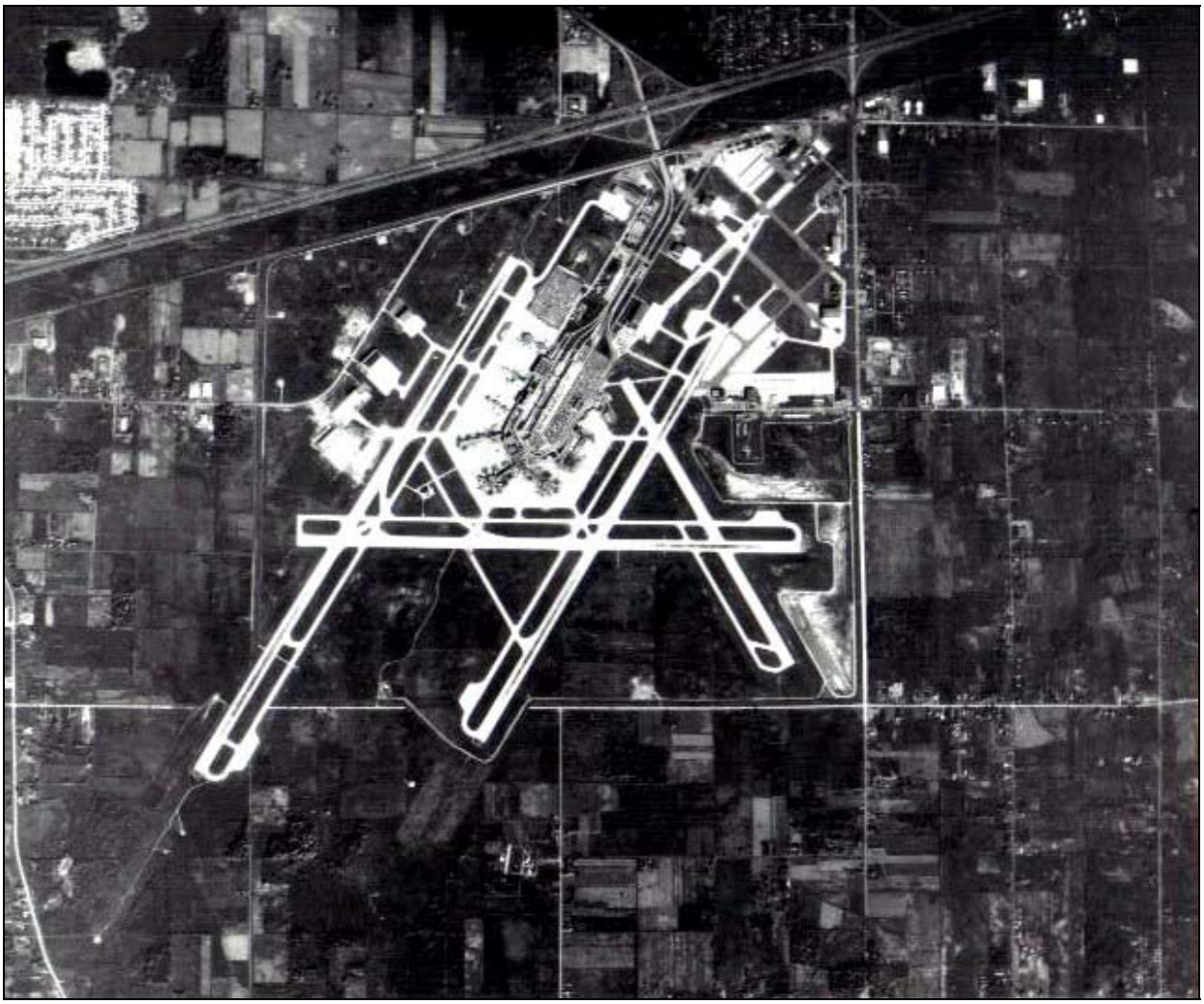


Figure 2: 1970 Aerial

In 1984, Republic Airlines established a hub operation out of the Davey Terminal at the Airport, greatly increasing air traffic. This set the stage for DTW to become a major hub airport in the U.S., thus changing the landscape for future development and enplanements. Republic's passenger enplanements grew dramatically as a result of the developing hub. In an effort to cope with the rapid growth, Airport Management developed a program of capital improvements, including a second crosswind runway, new air traffic control tower, runway extension, and terminal improvements. Wayne County financed these improvements and renovations associated with Republic's continued

expansion at the Airport. In 1986, Republic merged with Northwest Orient becoming Northwest Airlines. The new airline added flights to cities like Toronto, Nashville, New Orleans, Grand Cayman, Greenville/Spartanburg, Baltimore, Green Bay, Houston, Cincinnati and Birmingham; and Trans-pacific operations with non-stop flights to Tokyo. Overnight, a connecting hub designed largely around narrowbody aircraft and domestic service became a hub for large, widebody aircraft with overseas flights. As Northwest Airlines continued the expansion started by Republic Airlines, Wayne County issued a Master Plan Update in 1986 to address long-range development plans.

1990's

In 1991, United Parcel Service (UPS) opened its Detroit Gateway Hangar and ramp, while Northwest Airlines completed a $9.6 million expansion to its flight kitchen. **Figure 3** illustrates the Airport as of 1991. In 1993, a second Crosswind Runway, 9R-27L, was completed.

Figure 3: 1991 Aerial

By February 2002 the majority of the previous Master Plan was complete, including a second crosswind runway (Runway 9R-27L), a fourth parallel runway (Runway 4L-22R), south access road, a new Aircraft Rescue and Fire Fighting (ARFF) station, expansion of a fuel farm, an air traffic control tower and the new $1.2 billion state-of-the-art Edward H. McNamara Terminal/Northwest World Gateway. This terminal offered 97 gates, more than 80 shops and restaurants, an indoor Express Tram, international and domestic connections in the same facility, and an 11,500-space parking garage. The Westin Detroit Metropolitan Airport, a luxury 400-room hotel opened adjacent to the McNamara Terminal on December 17, 2002.

Current

In 2004 DTW was ranked 11th in North America and 17th in the World for enplanements, according to Airports Council International. In the Spring of 2004, Phase II of the McNamara Terminal expansion program began. Nine jet-compatible gates were added to Concourse B (for a total of 17) and 16 Regional Jet (RJ)-compatible gates were added to Concourse C (for a total of 41) along with baggage handling systems, moving walkways, escalators, etc. The project was completed in July 2006 with a grand total of 122 gates for the McNamara Terminal. Additionally, the Wayne County Airport Authority (WCAA) Board approved the design of a 26-gate terminal (the North Terminal) to replace the Davey and Smith Terminals, which is scheduled to open in the Fall of 2008. In 2005, DTW served approximately 35,187,517 passengers with nearly eight percent of these being international passengers. **Figure 4** illustrates the Airport in 2005.

Figure 4: 2005 Aerial

2.1.2 Airport Location

DTW is the busiest airport in the State of Michigan. Located in Wayne County, DTW is situated on the southwestern edge of the Detroit metropolitan region in the City of Romulus approximately 18 miles from Downtown Detroit. The Airport is primarily situated on approximately 4,900 acres of land generally bounded by I-94, Middlebelt Road, Eureka Road and the West Periphery Road entirely within the City of Romulus. The Airport owns a total of approximately 7,500 acres of land including the primary 4,900 acres as well as additional land to the north and south of the airport which has been purchased for noise mitigation purposes, for compliance with FAA regulations regarding Runway Protection Zones, and to support development of the south access roadway. The 7,500 acres of Airport owned property also includes approximately 1,100 acres known as Crosswinds Marsh. This property was purchased by the Airport in order to mitigate wetlands disturbed during development of Runway 9R-27L, the McNamara Terminal and Runway 4L-22R in the 1990's. **Figure 5** illustrates DTW in relation to the City of Detroit and other surrounding cities in the Southeast Michigan region.

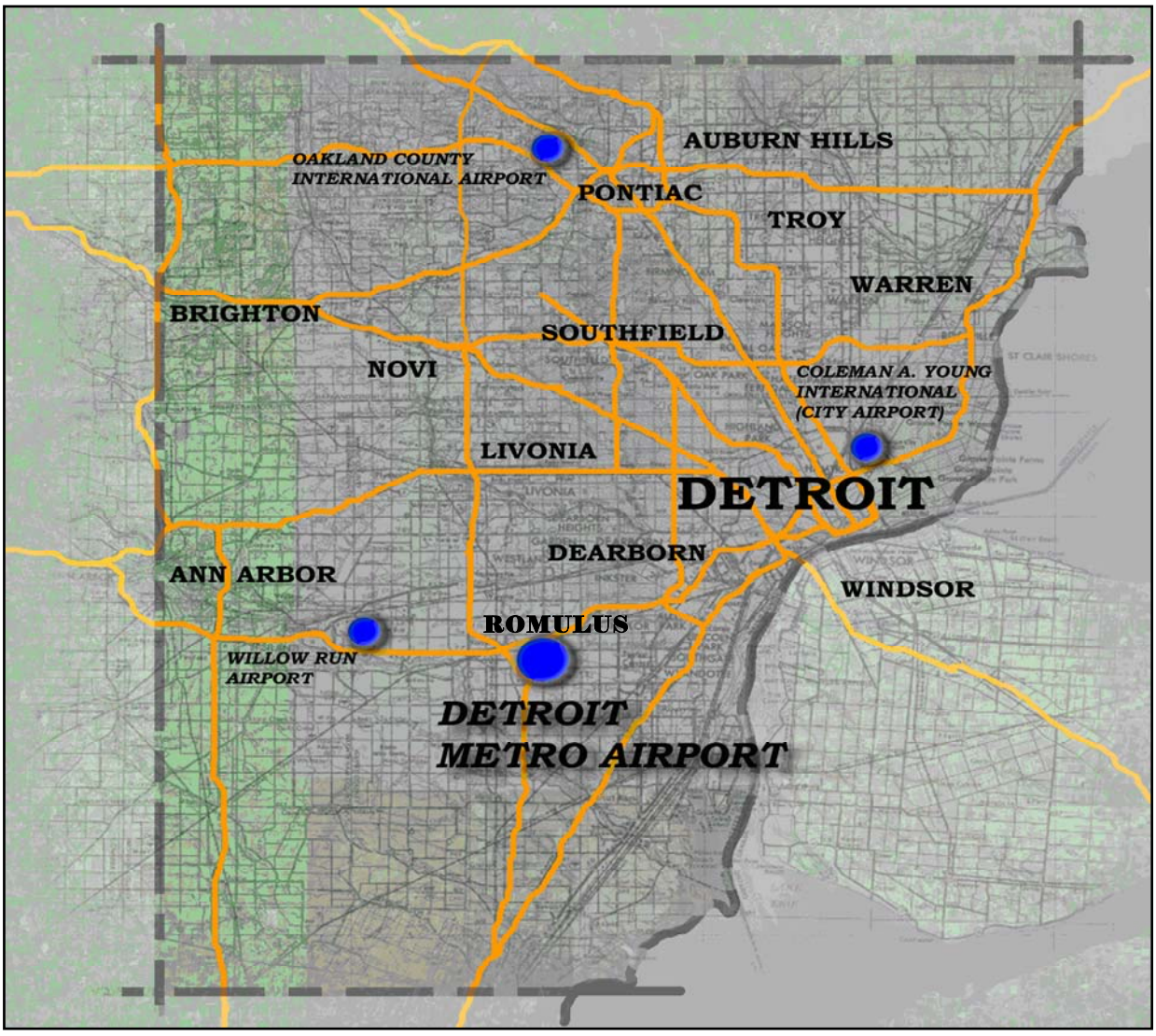


Figure 5: Southeast Michigan Regional Map

2.1.3 Land Use

The primary Airport property is defined by I-94 to the north, Wayne Road/West Periphery Road to the west, Eureka Road to the south, and Middlebelt Road to the east. Currently, surrounding land use is mixed, but generally land use density is low to the south and east near Middlebelt and Eureka Roads with scattered industrial, commercial, residential and remnant agricultural fields in this area. To the north of I-94, land use density increases, with the concentration of uses focused along Middlebelt, Merriman and Wayne Roads. Land uses to the north and northeast are predominantly commercial and industrial, including Airport service oriented businesses such as car parking and hotels. To the northwest along Wayne Road, there is a relatively low density of land use with some residential, commercial, and institutional uses. However, there are several new suburban tract developments along Wayne Road indicative of future development trends.

The primary Airport property is zoned for Airport use. The areas immediately adjacent to the Airport are predominantly zoned as industrial, comingled with residential and commercial districts. Outlying areas are predominantly zoned as residential, office, or business.

According to The City of Romulus Master Plan (October 2004), much of the surrounding area identified for future use is industrial or office use. Three large proposed developments near the Airport include the Metro Center Plan, Central City Plan, and the Southern Gateway Plan (Pinnacle Aeropark). The area for the Metro Center Plan is defined generally in the area north of I-94 with Wayne Road to the west and Merriman Road to the east. "The Metro Center Plan includes regional commercial and office research uses that will attract residents, workers, and visitors from a large service area beyond the boundaries of the City of Romulus." The Central City Plan is "bounded by I-94 to the north, Grant Road to the south, Wayne Road to the east and I-275/I94 interchange to the west. Uses planned for this area include single and multiple family residential, offices, and accessory commercial services which ties into the Five Points District of the City of Romulus." The Southern Gateway Plan is located "between the CSX railroad, to the west, Pennsylvania Road to the south, Vining Road to the east, and Eureka Road to the north." The Southern Gateway Plan has been renamed the Pinnacle Aeropark due to the development plans announced by the City of Romulus and Wayne County. Pinnacle Aeropark is ultimately a 1,200-acre mixed-use technology park located south of Detroit Metro Airport straddling the City of Romulus and Huron Township.

2.1.4 Airport Ownership and Management

The WCAA was established under Senate Bill 690, which was signed into law on March 26, 2002 and became effective April 24, 2002. The WCAA is responsible for the management and operation of DTW and Willow Run Airport (YIP) including the power to plan, promote, extend, maintain, acquire, purchase, construct, improve, repair, enlarge and operate both Airports.

The Authority is managed by an independent, seven-member Board of Directors. Four members are appointed by the Wayne County Executive; two members are appointed by the Governor; and one member is appointed by the Wayne County Commission. Terms of the appointments range from two to eight years.

2.2 Physical Image

2.2.1 Introduction

The current context in which the Airport exists can provide opportunities for expanding and improving the image of the Airport and surrounding area. Often, visitors get their first impression of a city when they arrive at the airport. It is important for an area's image to be appealing to visitors as well as residents. Recent improvements to landscaping and entrance signs have begun to build upon the Airport's improved image. These improvements are based on recommendations in a report titled *Detroit Metropolitan Wayne County Airport Aesthetic Enhancement Program* (2003).

2.2.2 Airport Entrances and Gateways

The Airport is accessible by several major highways and local roads. Once travelers reach the Airport, there are multiple locations by which they can enter the Airport. Travelers are greeted at the Airport by an Airport entrance sign at the North entrance as depicted in **Figure 6**.

Figure 6: DTW welcome sign

Key locations along the interstate and roadways include gateways and corridors. **Figure 7** illustrates airport signage upon entering DTW, directing traffic to its intended destination. Gateways are major decision or entry points to districts or road corridors. Major decision points exist along each corridor and alert travelers of their proximity to the Airport and the City of Romulus. These gateways serve as key locations and provide opportunities to positively influence travelers' impressions of the Airport and surrounding areas. Major gateways were previously defined by the DTW *Aesthetic Enhancement Program*, while some additional gateways to the Airport and the City of Romulus are being defined in supplements to that study.

Figure 7: DTW signage

Corridors (areas along a roadway or interstate) are important first impressions for travelers into the Detroit Metropolitan area. They can provide an important partition for the street environment by aesthetically screening undesirable images, thus enabling a driver's attention to be focused on more important visual clues, such as wayfinding signage. Improved corridors will also help create a more positive image of the Airport and the surrounding Airport neighborhood.

Travel corridors used to arrive and depart from the Airport can be classified as primary or secondary corridors. Traffic volumes indicate that the Merriman/Rogell Drive entrance is the number one access point into the Airport and therefore is the "front door." Most of the users of this entrance are arriving via I-94 from the east and west and, to a lesser extent, from Merriman to the north. The conglomeration of services including extended parking lots, hotels, and rental car operations along I-94 help to maintain Merriman/Rogell Drive as the most widely used entrance by all Airport passengers.

The southern entrance off Eureka Road is the second most heavily used entrance to the Airport because of its direct access to the new McNamara Terminal. This entrance is primarily used by travelers coming from I-275 or I-94 from the west. Current signage along I-275 directs travelers needing to access rental car facilities to use I-94 eastbound.

2.2.3 Primary and Secondary Corridors

The primary access corridors to the Airport defined by level of use are I-94 and I-275 and to a lesser extent, Eureka Road. Approaching the Airport from the east on I-94, most travelers would exit at Merriman/Middlebelt and enter the facility from the Merriman entrance. Approaching from the west on I-94 and north or south on I-275, travelers would make a decision to either enter the facility from the north at Merriman or continue to Eureka off of I-275 and use the southern entrance.

These corridors collect the majority of the travelers arriving to the Airport from the north, south, west and east. Currently, the only noticeable influence of the Airport along these routes, except for new signage along Eureka, is a series of MDOT signs directing travelers to the Airport and car rental services. Landscape treatment along I-94 and I-275 is minimal, with standard lawn panels between roads. The most noticeable efforts have been focused on the I-94 and Merriman exit where planting and signage have been introduced in recent years. I-275's most noticeable feature is the series of low arching lights which, while built out of necessity, announce the proximity to the Airport.

The secondary corridors are I-75 via Eureka from the southeast, Middlebelt to Eureka from the south, and Middlebelt, Merriman, Wayne and Vining Roads from the north. Users of these corridors approaching from the north would likely be coming from one of the northern or western suburbs of Detroit and typically access these routes via Michigan Avenue. As development is more scattered to the south of the Airport, someone approaching the Airport from that direction would likely take Middlebelt Road, but usage is limited. Finally, travelers approaching from the southeast, may exit I-75 at Telegraph Road and take Eureka Road to the southern Airport entrance, which is the quickest route to the Airport from that direction.

Each of these corridors has minimal signage in assorted styles indicating Airport location and entrances. Approaching from I-75, there are currently no signs indicating the location of the Airport off Eureka Road. The visual character of Middlebelt Road and Merriman Road is very poor and lacks consistent landscaping. Improvements along these corridors, especially between I-94 and Ecorse Road, will greatly improve the image of the Airport due to the fact that most travelers exit off of the Merriman/Middlebelt exits. Eureka Road, especially between I-275 and Middlebelt Road, has the best visual character of all the corridors; however, development pressures to the south may disrupt the quality of the entrance experience if service-oriented development is allowed to occur as it did along Merriman to the north.

2.3 Meteorological Conditions

The direction and velocity of prevailing winds, as well as cloud ceiling and visibility conditions directly influence runway use and air traffic control rules and, subsequently, airfield capacity. Wind direction and velocity determine the magnitude of the crosswind and tailwind relative to a particular runway and, therefore, influences runway selection.

Weather is classified by the applicable air traffic control rules, which are determined by the prevailing ceiling and visibility. Visual Meteorological Conditions (VMC) exist when the ceiling is at least 1,000 feet above ground level and the visibility is at least three statute miles. Visual Flight Rules (VFR) generally applies under VMC and allows maximum operational capacity. Weather conditions below VMC standard are considered Instrument Meteorological Conditions (IMC) and, consequently, Instrument Flight Rules (IFR) must be applied.

2.3.1 Wind and Weather Conditions

The air traffic control procedures and runway operating configurations are dictated by the wind and weather conditions. During VMC, VFR is in effect. In VFR, aircraft separation requirements are at the minimum allowable for safe operation of the aircraft. VFR results in the highest airfield capacity. During IMC, IFR is in effect. In IFR, aircraft separation requirements increase (i.e. the distance between sequential arrivals, sequential departures or arrivals and departures increases, thereby increasing the time needed between these operations). As a result, the capacity of the airfield decreases compared to VFR because fewer aircraft are able to depart and land within the same amount of time. As meteorological conditions change from VMC to IMC and vice versa, marginal VFR is in effect. During marginal VFR, capacity is less than VFR but more than IFR.

The annual occurrence of VFR, MVFR and IFR weather conditions for DTW are shown in **Table 2.3-1**[3]. As indicated, DTW operates in MVFR and IFR a significant amount of time.

Table 2.3-1 Annual Occurrence of Weather Conditions

Category	Ceiling	Visibility	Annual Occurrence
VFR	> 3,000'	> 5 miles	78%
MVFR	≤ 3,000' ≥ 1,000'	≤ 5 miles ≥ 3 miles	14%
IFR	< 1,000'	< 3 miles	8%

Source: NOAA National Climatic Data Center (NCDC), National Weather Service hourly surface observations, 10-year averaged data (1995-2004), Station #72537

Table 2.3-2 presents the annual occurrence of weather for DTW grouped by ceiling and visibility conditions. As the weather conditions dictate the runway operating configurations, the percentage occurrence for each weather category directly correlates to the percentage of time each runway configuration is in use. Air Traffic Control (ATC) categories represent when the airfield will operate in VFR and IFR, which is usually sooner than when conditions dictate for operational purposes. Category "A" is the condition in which the ATC operates in VFR, and when conditions reach those described in Category "B" or worse, the ATC begins operating under IFR.

[3] CH2M HILL Technical Memorandum, DTW Weather Analysis, ALP Update/Wind Rose Data, October 2005.

As indicated, DTW operates in IFR conditions about one-third of the time. Because IFR conditions occur so frequently at DTW, and because airfield capacity is reduced during IFR conditions, IFR capacity represents the critical airfield capacity for the Airport. To avoid significant delays during IFR conditions, the carriers, especially the hub carrier, will consider IFR capacity as the limiting airfield capacity.

Table 2.3-2 Annual Occurrence of Weather Categories – ATC Weather Categories

Category	Ceiling	Visibility	Annual Occurrence
A	> 5,000'	≥ 5 miles	67%
B	< 5000' ≥ 500'	≤ 5 miles ≥ 1.5 miles	30%
C	< 500' ≥ 200'	< 1.5 miles ≥ 0.5 miles	2%
D	< 200'	< 0.5 miles	< 1%

Source: NOAA National Climatic Data Center (NCDC), National Weather Service hourly surface observations, 10-year averaged data (1995-2004), Station #72537

2.4 Airfield Facilities

2.4.1 Runways

The airfield is designed to accommodate Aircraft Design Group (ADG) V, with the Boeing 747-400 being the critical aircraft. **Exhibit 2.4-1** illustrates an airfield map highlighting runways, taxiways and aprons as well as the physical characteristics of each runway. The existing airfield configuration consists of six runways. There are four primary north-south runways: Runway 4L-22R is 10,000 feet in length and 150 feet in width, Runway 4R-22L is 12,001 feet in length and 200 feet in width, Runway 3L-21R is 8,500 feet in length and 200 feet in width, and 3R-21L is 10,000 feet in length and 150 feet in width. The Airport also has two crosswind (east-west) runways: Runway 9R-27L is 8,500 feet in length and 150 feet in width, and Runway 9L-27R is 8,700 feet in length and 200 feet in width.

The surfaces for Runway 4R-22L, Runway 3R-21L, Runway 4L-22R and Runway 9R-27L are grooved concrete. Runway 3L-21R and Runway 9L-27R are constructed of grooved asphalt and concrete surfaces. The load-bearing capacity for all runways is 100,000 lbs for single wheel, 185,000 lbs for double wheel, 350,000 lbs for double tandem wheels and 750,000 lbs for dual double tandem wheels, except Runway 4R-22L, Runway 9L-27R, Runway 3L-21R and Runway 9R-27L, which are rated only to 350,000 lbs for double tandem wheels.

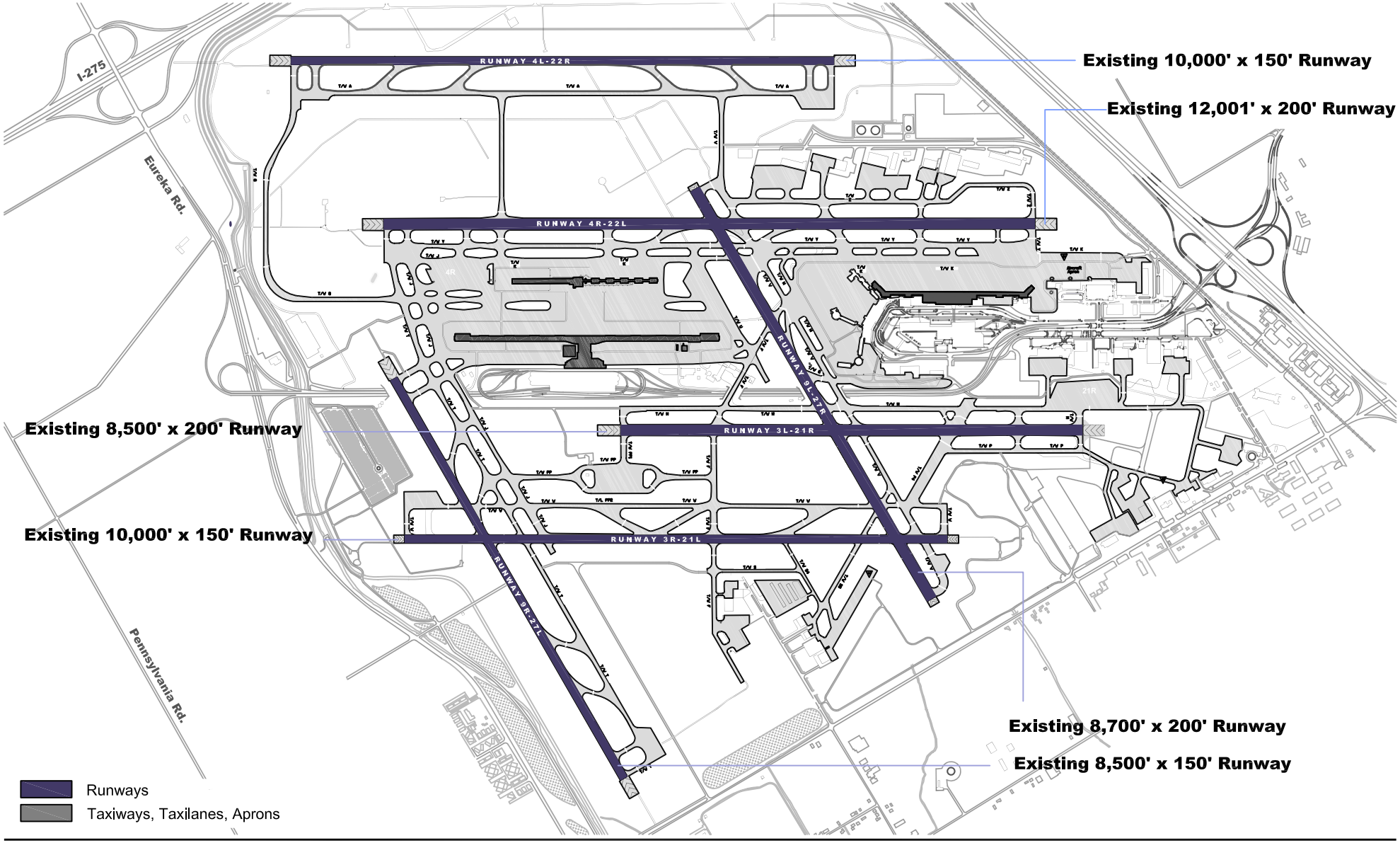
2.4.2 Taxiways

The taxiways system at DTW provides aircraft access between the runways and the passenger terminal complex, general and corporate aviation areas, airfreight terminals and other aircraft parking areas. All runways have a parallel taxiway with a separation that varies but is at least 400 feet from runway centerline. The taxiways at the Airport are all at least 75 feet wide and all have 500-feet-wide safety areas that support ADG V aircraft movement.

The Airport is designed to meet the FAA requirement for separation for ADG V aircraft. All of the taxiways are considered movement areas controlled by the ATCT ground control. Taxilanes and apron areas are considered non-movement areas. Together, these areas make up the airfield pavement of DTW. **Exhibit 2.4-2** displays DTW's airfield pavement.

2.4.3 Safety Areas

Advisory Circular 150/5300-13, *Airport Design* establishes design standards for the various airfield safety areas. These areas have been established to protect the movement of aircraft on the airfield and property on the ground. This allows for the safe and efficient movement of aircraft on all surfaces. **Exhibit 2.4-3** illustrates the various runway safety areas at DTW.



PREPARED BY: JACOBSEN/DANIELS ASSOCIATES

Detroit Metropolitan
Wayne County Airport

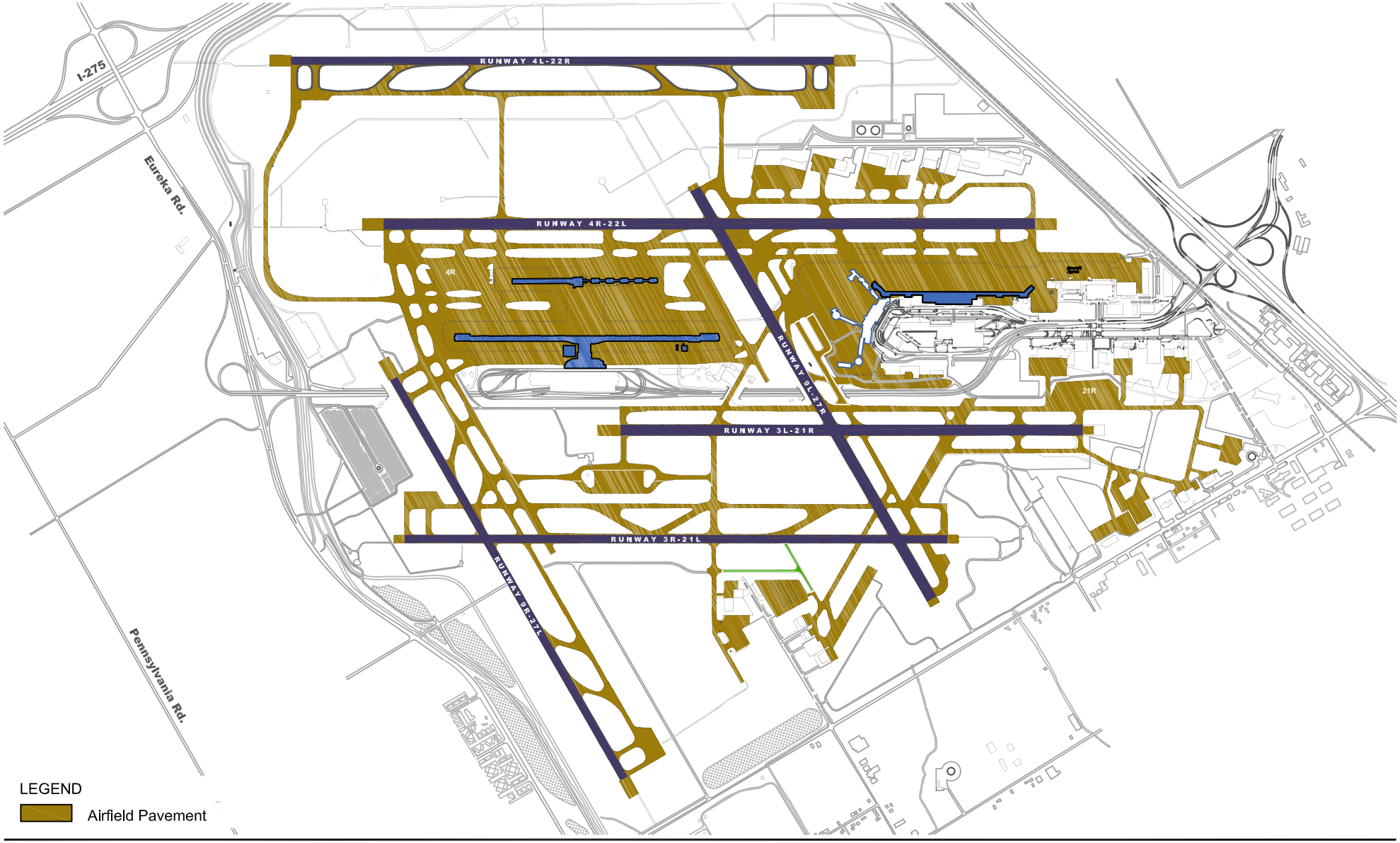
DTW Airfield Map

0 2500' 5000'
GRAPHIC SCALE IN FEET

DETROIT METRO • WILLOW RUN
WAYNE COUNTY AIRPORT AUTHORITY

jda

EXHIBIT
2.4-1



PREPARED BY: JACOBSEN/DANIELS ASSOCIATES

Detroit Metropolitan
Wayne County Airport

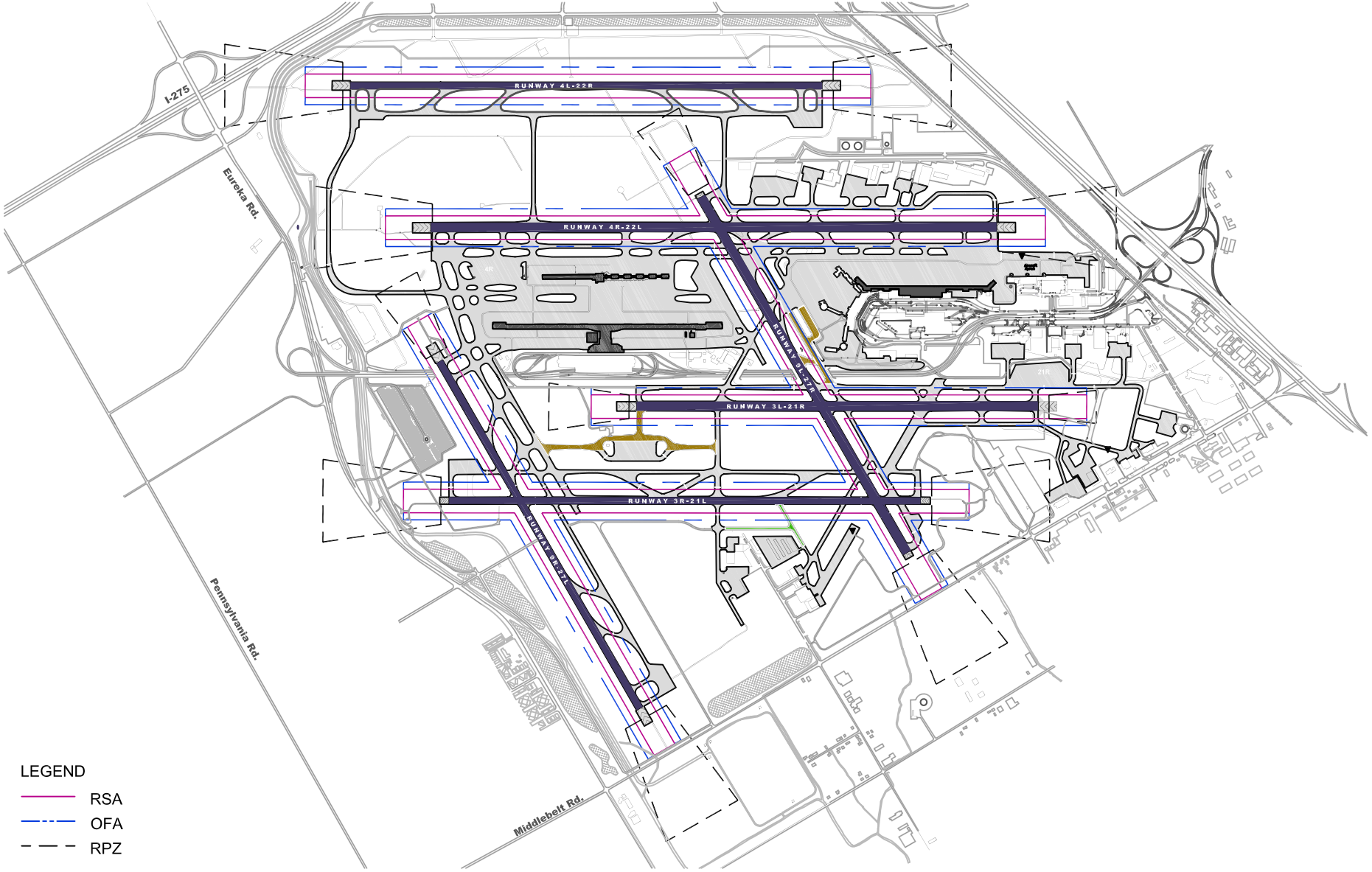
DTW Airfield Pavement

DETROIT METRO • WILLOW RUN
WAYNE COUNTY AIRPORT AUTHORITY

0 2500' 5000'
GRAPHIC SCALE IN FEET

jda

EXHIBIT
2.4-2



PREPARED BY: CH2MHILL

Detroit Metropolitan
Wayne County Airport

DTW Runway Safety Areas

0 3000' 6000'
GRAPHIC SCALE IN FEET

DETROIT METRO • WILLOW RUN
WAYNE COUNTY AIRPORT AUTHORITY

jda

EXHIBIT
2.4-3

- Runway Safety Area (RSA) - The Runway Safety Area is a defined rectangular surface area surrounding the runway that is cleared to reduce the risk of damage to airplanes in the event of an overshoot, undershoot or excursion from the runway. The RSA aids in improving accessibility for Air Rescue and Fire Fighting (ARFF) facilities during emergency events. To serve these functions, FAA criteria requires a safety area to be cleared of any obstacles, drained to prevent water accumulation and free of objects except those required for NAVAIDS.

- Object Free Area (OFA) - The Object Free Area (OFA) is a two-dimensional rectangular area surrounding the runway and taxiway areas that is clear of objects except for those that are essential to air navigation. Objects that are nonessential for either air navigation or aircraft ground maneuvering are not permitted within the OFA.

- Obstacle Free Zone (OFZ) - The runway Obstacle Free Zone (OFZ) is a defined three-dimensional rectangular-shaped volume of airspace along the centerline of the runway. The OFZ clearance standards prohibit any taxiing and parked aircraft or other objects, except for essential NAVAIDS or fixed function objects, from penetrating the OFZ airspace. The runway OFZ extends 200 feet beyond each end of the runway, while the widths vary depending on the fleet mix of the airport. An inner approach OFZ is provided for runways that are equipped with an approach lighting system. The inner approach OFZ begins 200 feet from the runway threshold at runway elevation and extends 200 feet beyond the last light unit in the approach lighting system. In addition, an inner transition OFZ is provided for runways equipped with a precision instrument approach procedures.

- Runway Protection Zone **(**RPZ) - The Runway Protection Zone (RPZ) is a two-dimensional trapezoidal area at ground level underlying the innermost portion of the approach surface. The RPZ dimension for a particular runway end is a function of the type of aircraft and approach visibility minimum associated with that runway end. The FAA highly recommends that airport operators keep RPZs clear of incompatible land use. Typically, a single RPZ is associated at either end of the runway. However, runways with a displaced threshold may require separate approach and departure RPZs.

2.4.4 Deicing Facilities

DTW currently has 23 deicing slots at four locations. Northwest Airlines operates and utilizes three of the four pads, which are 3L, 4R and 22L (operated by Airlink) deice pads, leaving the 21R deicing pad for all other airlines and users of DTW. When the deice pads are at capacity, aircraft are deiced at the gate.

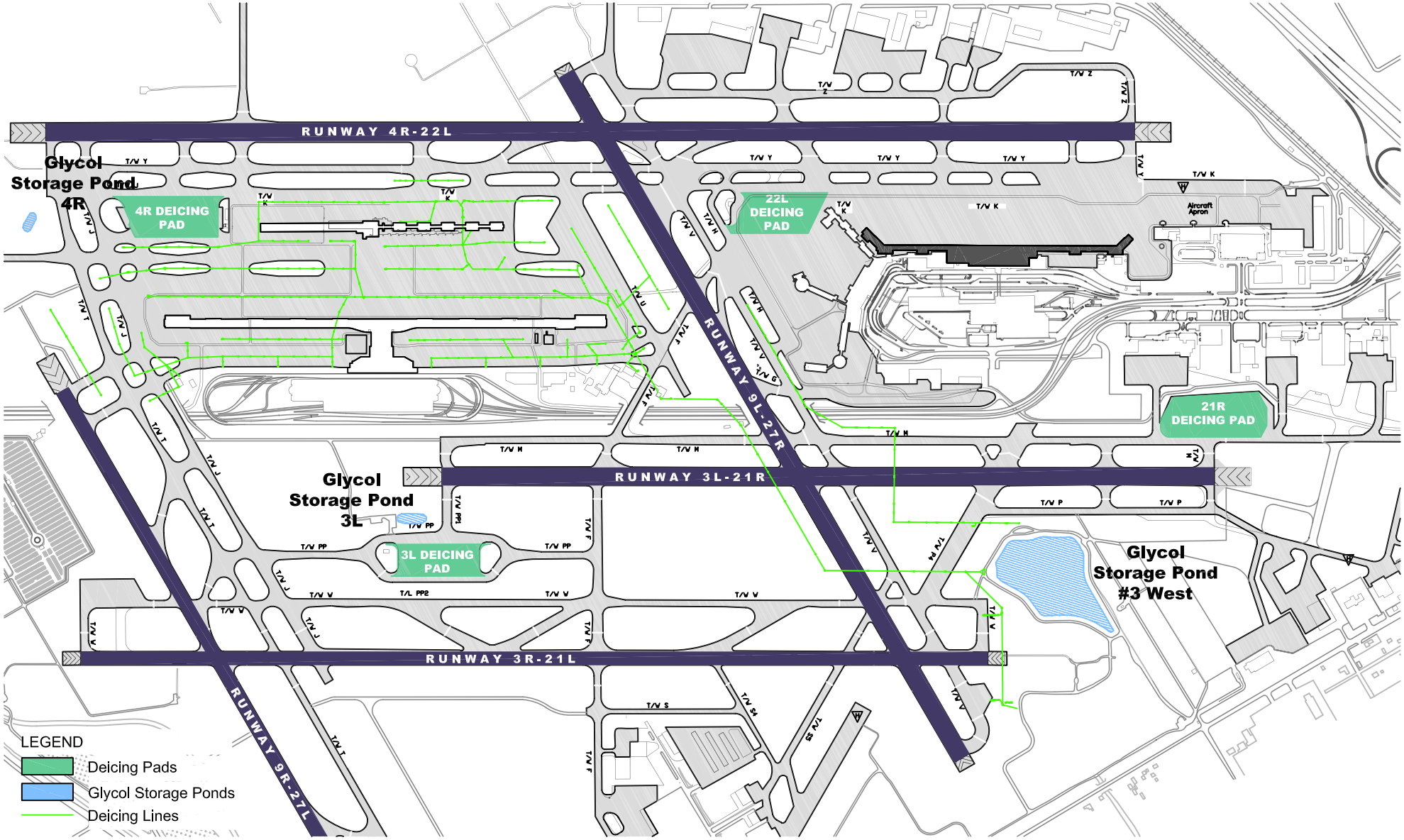
The Airport currently uses glycol-based fluids, primarily propylene glycol, for deicing aircraft. The deice pads at DTW are equipped with confined drainage systems which collect used glycol. To increase environmental safety, the 4R and 3L pads have state-of-the-art dual collection systems which isolate the high-concentrate deicing fluid runoff that can be recycled from the low-concentrate runoff that is typically directed to the Airport's stormwater collection system. The high-concentrate runoff passes through grates in the pavement surface to drainage lines that lead to underground storage tanks near the deice pads. When these tanks are full, an independent recycling company

pumps the glycol into tanker trucks and removes it from the Airport property. The 22L and 21R pads are vacuumed by Ground Recovery Vehicles (GRV) and removed from the Airport. Glycol that is not collected is routed to glycol recovery Pond 3W.

There are three glycol storage ponds on the Airport and are listed below:

- Glycol Storage Pond #3W is located between the thresholds of Runway 21L and 21R. The pond has the storage capacity of 69 million gallons. Approximately 10 million gallons of additional capacity is currently being added to this pond.
- Glycol Storage Pond 3L is located southeast of Runway 3L threshold.
- Runway 4R Deicing Storage Pond is located east of Runway 4R threshold.

Exhibit 2.4-4 illustrates the locations of the deice pads, deicing lines and glycol recovery ponds at DTW.



PREPARED BY: JACOBSEN/DANIELS ASSOCIATES

Detroit Metropolitan
Wayne County Airport

DETROIT METRO • WILLOW RUN
WAYNE COUNTY AIRPORT AUTHORITY

Deice Pad Facilities

0 1500' 3000'
GRAPHIC SCALE IN FEET

jda

EXHIBIT
2.4-4

2.5 Airspace

2.5.1 Detroit Regional Airspace

Several airports, including DTW, share Detroit regional airspace illustrated in **Figure 8.** These airports handle multiple types of operations. All serve general aviation, as well as sky taxi, Part 135 Charter, 121 scheduled operations, and cargo. These airports are considered major airports in the southeastern Michigan region.

Ypsilanti Willow Run (YIP) - Located in Ypsilanti, Michigan, approximately eight nautical miles to the west of DTW, this airport has multiple runways. Runway 5L/23R is 7,526 feet long and 150 feet wide; it is equipped with a RNAV approach for 23R. Runway 9L/27R is 7,294 feet long and 160 feet wide. 5R is equipped with an ILS and NDB (Non-Directional radio Beacon); 23L is equipped with an ILS and RNAV (GPS) approach. Runway 14/32 is 6,914 feet long and 160 feet wide. Runway 5L/23R is 6,655 feet long and 160 feet wide; 23R is equipped with an RNAV approach. Runway 9R/27L is 6,511 feet long and 160 feet wide; 9R is equipped with a RNAV approach.

Toledo Express (TOL) - Located in Toledo, Ohio, approximately 43 nautical miles south of DTW, this airport has two runways. Runway 7/25 is 10,600 feet long and 150 feet wide, and it is equipped with an ILS, RNAV, TACAN and LOC. Runway 16/34 is equipped with an RNAV and a VOR/DME approach.

Detroit City Airport (DET) - Located in the city of Detroit, Michigan, approximately 19 nautical miles north/northeast of DTW, this airport has two runways. Runway 15/33 is 5,090 feet long and 100 feet wide, and it is equipped with ILS approaches for both 15 and 35. Runway 33 and 15 are equipped with a VOR and RNAV approach.

Oakland County International (PTK) – Located in Waterford, Michigan, approximately 27.3 nautical miles north of DTW, this airport has three runways. Runway 9R/27L is 6,200 feet long and 150 feet wide, and it is equipped with an ILS for runway 9R, a LOC back course for 27L and VOR/RNAV approaches at each end. Runway 9L/27R is 5,000 feet long and 100 feet wide; it is not equipped for instrument approaches. Runway 18/36 is 1,856 feet long and 50 feet wide and it is not equipped for instrument approaches.

Flint (FNT) - Located in Flint, Michigan, approximately 48 nautical miles north of DTW, this airport has three runways. Runway 18/36 is 7,849 feet long and 150 feet wide, it is equipped with VOR and RNAV approaches. Runway 9/27 is 7,201 feet long and 150 feet wide; it is equipped with ILS, RNAV and VOR approaches. Runway 5/23 is 3,923 feet long and 150 feet wide; it is not capable of instrument approaches.

Windsor (CYQG) - Located in Windsor, Ontario, approximately 18 nautical miles east of DTW, this airport has two runways. Runway 9/27 is 9,000 feet long and 200 feet wide. Runway 12/30 is 5,150 feet long and 150 feet wide.

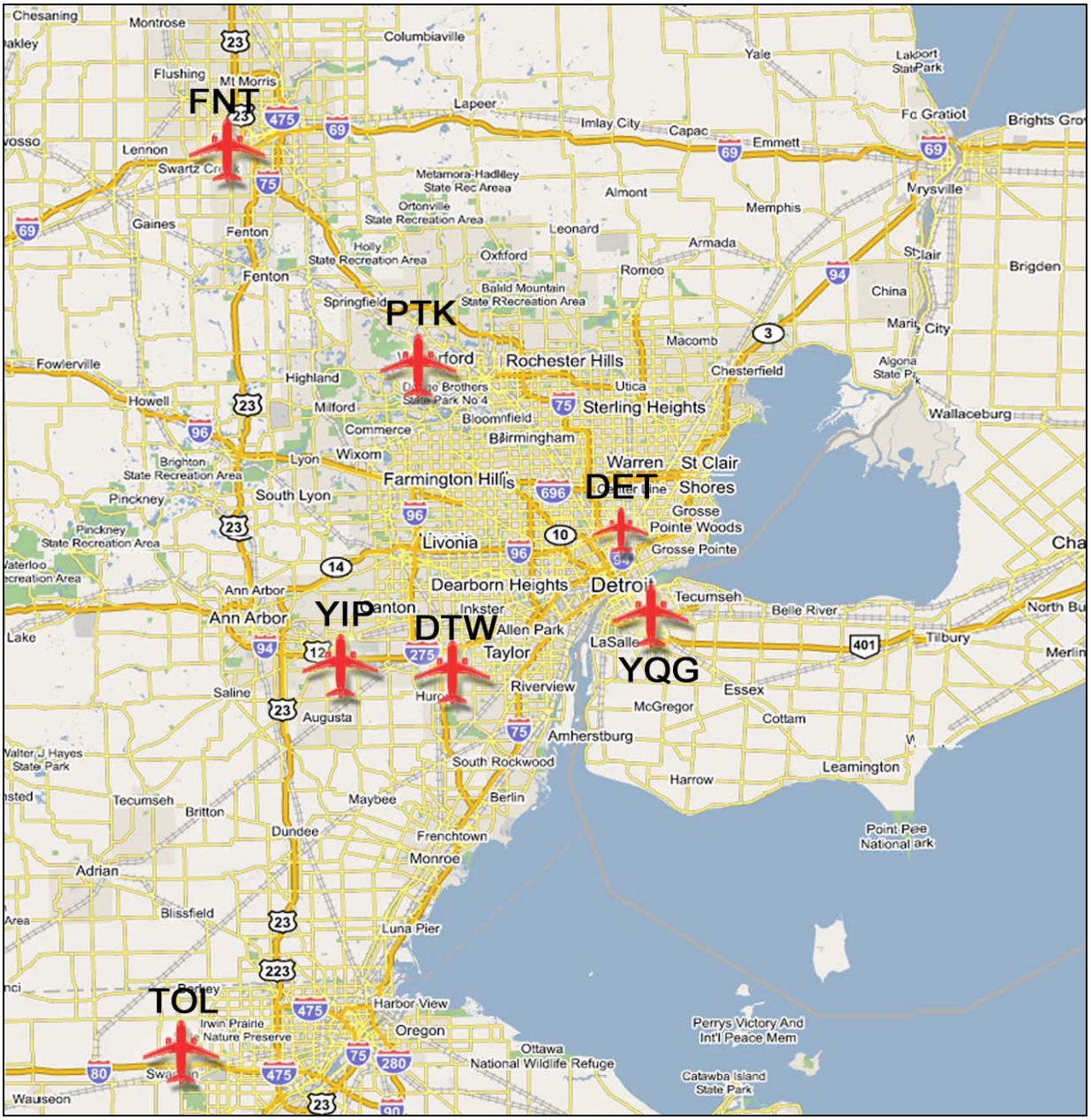


Figure 8: Detroit Regional Airspace

2.5.2 DTW Airspace

The airspace within the United States, including at DTW, is under the jurisdiction of the FAA. The FAA has established the National Airspace System (NAS) to ensure a safe and efficient airspace environment for civil, commercial and military aviation. Airspace is divided into two categories, controlled and uncontrolled. Controlled airspace requires communication with an Air Traffic Control Tower (ATCT) located in that airspace, while uncontrolled airspace requires no communication with ATCT. DTW is a controlled airspace facility. There are also different airspace classifications, ranging from Class A to Class E. Each type of airspace carries its own set of regulations and governing operations. **Figure 9** illustrates the FAA airspace structure. The Terminal Control Area (TCA) Airspace, which is often characterized as an upside down wedding cake, consists of controlled airspace extending upward from the surface to various altitudes.

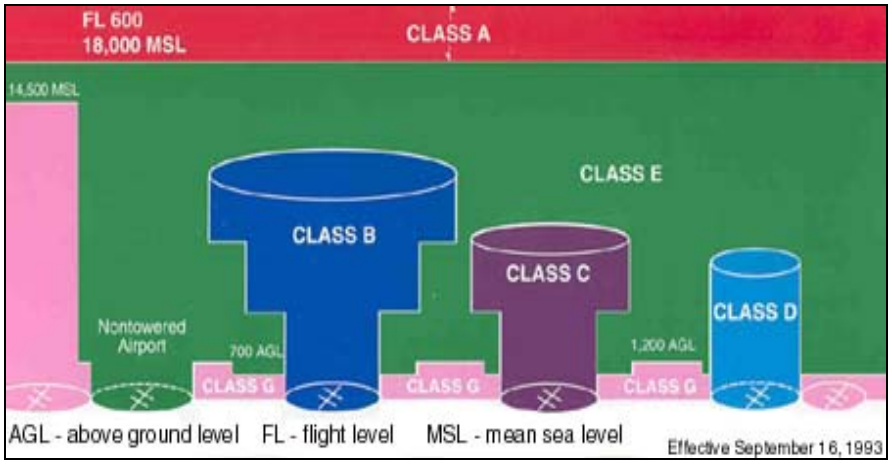


Figure 9: U.S. Airspace Classes (*Courtesy of www.faa.gov)*

DTW serves as a Class B airspace facility in accordance with the FAA designations. Class B airspace surrounds many of the busiest airports around the world with extensive commercial traffic. Air traffic in the vicinity of the Airport is monitored using the regional ASR-9 radar unit (Airport Surveillance Radar). This airspace is also known as controlled airspace, as it requires ATCT clearance prior to entry/departure in addition to special equipment required in the aircraft. This equipment typically includes a 4096 code transponder with automatic pressure altitude reporting equipment and two-way radio communication capabilities. All position changes not directed by the ATCT must be approved before completed to ensure proper aircraft separation within DTW's airspace.

Figure 10 depicts DTW's airspace. All ground movement at DTW is controlled by the ground control portion of the ATCT. The Airport is divided into the following ground control areas: Southeast, Northeast, Northwest, and Southwest. Each area is assigned its own radio frequency for communication. All aircraft and Airport vehicles must contact ground control prior to movement on the airfield surface. Ground movements are coordinated to prevent congestion and costly delays.

Figure 10: DTW Airspace Map
Courtesy of AeroPlanner.com

Aircraft arrive at DTW through published instrument approach procedures and are routed to their arrival runway. The general arrival procedures can be differentiated into specific instrument approaches issued by the FAA. These approaches enable an aircraft to land at DTW during inclement weather. **Figure 11** illustrates a typical approach into DTW.

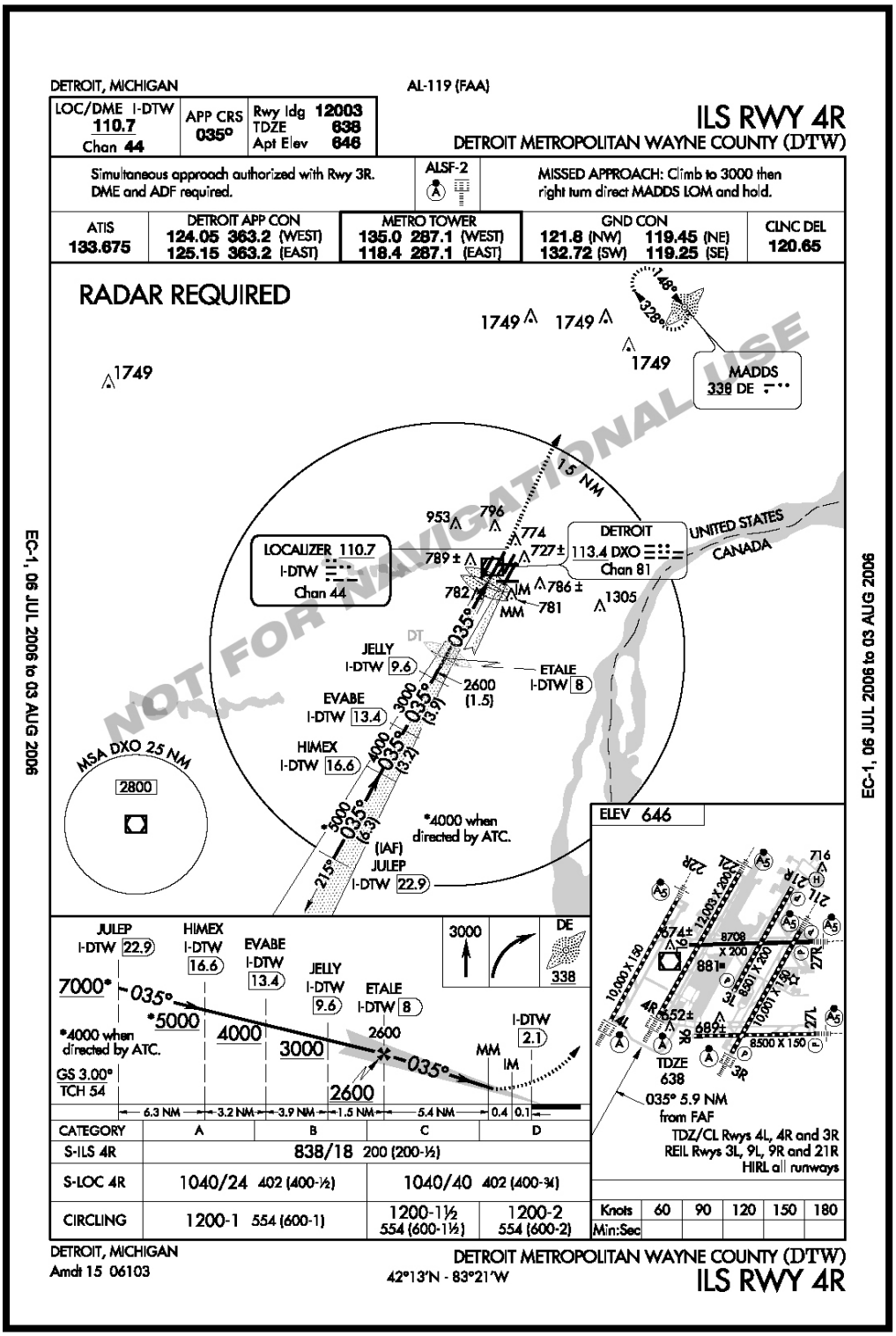


Figure 11: Instrument Approach

2.5.3 Air Traffic Control

The FAA Air Traffic Control Tower (ATCT), located near the north end of the McNamara Terminal operates 24 hours per day. The Terminal Radar Approach Control (TRACON) facility, which is responsible for DTW and other regional airports, is located within the ATCT building. Aircraft that operate within a Terminal Control Area (TCA) must be in contact at all times with the tower controllers for all movements. This ensures that safe distances between aircraft are maintained in the air as well as on the ground. Aircraft operating in Class B airspace must have clearance to enter the airspace.

The FAA is responsible for the safe and efficient use of the national airspace. This airspace is divided into three specific types: en-route, terminal and tower. When an aircraft departs an airport, air traffic controllers working in an airport traffic control tower handle its movement. When the aircraft is approximately one to five miles away from the airport, the aircraft is handed off to controllers working the TRACON located at DTW. These controllers are responsible for the airspace extending out 20 nautical miles from the Airport in all directions. The aircraft then enters the third type of airspace and becomes the responsibility of en-route controllers working in one of 22 domestic Air Route Traffic Control Centers (ARTCC) located throughout the United States. The en-route controllers retain control until the aircraft nears its intended destination. The air-traffic control process is then reversed for landings. Detroit Metropolitan Wayne County Airport is contained within the Cleveland ARTCC jurisdiction, which has an airspace size of approximately 70,000 square miles.

2.5.4 IFR Operations

Air carriers and many turbojet general aviation and military aircraft operating to or from the Airport under IFR, are reassigned coded flight routes and procedures, referred to as Standard Instrument Departure (SIDS) procedures and Standard Arrival Routes (STARS).

Navigation of IFR aircraft within the Detroit TRACON airspace is generally provided by routes to achieve efficient sequencing, spacing and separation between aircraft. Therefore, actual aircraft flight tracks, particularly those close to the Airport, will not conform exactly to the SIDS and STARS depicted.

In general, however, IFR arrival aircraft are cleared to the Airport by the Cleveland ARTCC via these STARS while descending from en-route altitudes. These aircraft arrivals are transferred via radar from the ARTCC to the Detroit TRACON at various "gates" or fixes. The “gates” and “fixes” are established using various navigational aides (NAVAIDS). A common arrival procedure will use intersecting radials from VOR stations as well as DME (Distance Measuring Equipment) to guide an aircraft into the arrival procedure. Each STARS procedure includes a textual description, similar to driving directions, which guide the aircraft to its destination airport. In other words, there are established arrival routes that aircraft utilize and pilots are in contact with a sequence of controllers as they approach the Airport.

The TRACON assumes responsibility for guiding arriving aircraft to their final approach course at the destination airport and for separating them from each other. Lower performance aircraft, and some commuter/air-taxi aircraft, operate at lower altitudes below or clear of the jet aircraft routes.

These lower performance aircraft are "laced" into arrival routes close to the Airport to minimize the effects of speed differentials. When arriving aircraft are in the vicinity of their destination airport the TRACON gives descent instructions until they are approximately 3,000 feet above the destination airport and approximately seven nautical miles from the runway threshold on the final approach. TRACON then clears the aircraft for the final approach and instructs the pilot to contact the destination airport's tower.

Similarly, departing IFR aircraft are guided and separated from other aircraft by the Detroit TRACON through its delegated airspace. Shortly after departure, when the aircraft is airborne, the tower clears the aircraft to contact the TRACON for departure control. The TRACON then directs departing aircraft toward the departure fixes. Again, low performance aircraft are turned immediately after take-off to separate them from the jet departure stream and to keep them at lower altitudes. As soon as departing aircraft either pass the departure fix or climb out of the TRACON airspace, they are transferred to ARTCC for en-route control.

Unless visual (VFR) separation is in effect, TRACON provides all IFR aircraft with a radar separation of at least three nautical miles longitudinally, or 1,000 feet vertically within their terminal airspace. Additional longitudinal separation may be provided for various combinations of aircraft sizes to avoid wake turbulence.

2.5.5 Runway Instrumentation

The availability of runway instrumentation enables efficient operations to continue during poor weather conditions (IMC). Runway instrumentation refers to multiple approach systems. The main approach system used at DTW is the Instrument Landing System (ILS). An ILS consists of a glide scope (vertical guidance) and a localizer (horizontal guidance). This system guides aircraft to the runway by emitting radio signals for vertical and horizontal guidance. This system allows the aircraft to track the radio signal down to the runway surface.

Another system used is the Very High-Frequency Omnirange Radio (VOR). This type of system emits a radio signal on all 360 magnetic headings. Aircraft can track any one of these signals. By following a published approach, these magnetic radio signals can be followed to the runway, albeit with less precision than an ILS.

Another approach system is the Area Navigation (RNAV). This approach system uses Global Positioning System (GPS) satellites to guide an aircraft to the runway. The RNAV is quickly growing in popularity and application throughout the world. The RNAV is the most precise approach system in the world, allowing aircraft to land at airports in weather conditions that could not be accommodated using an ILS or VOR system.

Runway lighting at DTW plays a crucial role in instrument approaches. Runway lighting allows pilots to determine runway edges, ends and length of runway remaining. Approach light systems provide information on aircraft glide slope (the angle at which an aircraft is descending) as well as acting as a lighted path to the runway. When combined, these two components allow for safe and efficient aircraft operations.

2.5.6 Navigational Aids

DTW is equipped with many navigational aides, allowing for IFR operations. Runways 4R-22L, 4L-22R, and 3R-21L are equipped with Instrument Landing Systems (ILS) which include a Localizer (LOC) and Glide Slope (GS) at each runway end. Runway 3L-21R is equipped with a Precision Approach Path Indicators (PAPI). Runway end 27R and 27L are each equipped with an ILS. In addition Very High-Frequency Omnidirectional Radio with Distance Measuring Equipment (VOR/DME) is located on the airfield.

Additional navigational aides within the vicinity of DTW include the Detroit VOR-DME (113.4 DXO), located on the field; The Carleton Very High-Frequency Omnidirectional Radio Tactical Air Navigation (VORTAC) (115.70 CRL) located 11 NM south of the Airport; the Salem VORTAC (114.30 SVM) located 16 NM north of the Airport; the Windsor VOR-DME (13.80 EYQG) located 23 NM east of the Airport; and the Pontiac VORTAC, (111.00 HRK), located 30 NM north of the Airport. Non-Directional Radio Beacon (NDB) facilities located within proximity of the Airport include: Grosse Ile (419 RYS) located eleven NM southeast of the Airport; Berz (215 UIZ) located 32 NM northeast of the Airport; Howell (243 OZW), located northwest of the Airport; and Adrian (278 ADG), located 38 NM southwest of the Airport.

2.5.7 Arrival and Departure Procedures

The following paragraphs discuss arrival, departure and airfield circulation associated with DTW.

- *Arrivals*: Aircraft entering the TRACON airspace from the POLAR ONE and SPICA TWO arrival gates and the tower en-route structure from AYLMER, BUFFALO, ERIE, GRAND RAPIDS, MUSKEGON and SAGINAW are typically assigned landing runways 3L/R or 4L/R and 21L/R or 22L/R. The MIZAR THREE arrival guides aircraft into the TRACON from DAYTON, FORT WAYNE and LITCHFIELD transitions. Once at the RAZIM DME, located 24 nautical miles from DTW, aircraft are vectored to their final approach course via radar to the active runway(s). The GEMNI ONE arrival transitions aircraft arriving from BECKLY, CUGTA, MONTEBELLO and SINDE. After reaching the GLOZE intersection, located eight nautical miles southeast of DTW, aircraft receive radar vectors to their final approach course to the active runway(s). The WEEDA ONE arrival guides aircraft to DTW from the HENDERSON VOR located south of DTW. After arriving at the SVM VORTAC, aircraft receive radar vectors to the final approach course of the active runway.

- *Departures*: Aircraft departing DTW's airspace use specified routes. These routes are known as SIDs (Standard Instrument Departures). These routes use navigational aides to expedite aircraft from the airspace. Depending on the direction of flight, each departing aircraft is assigned a specific SID. DTW's SIDs include ERRTH ONE, FORT WAYNE ONE, MAARS ONE, MOONN ONE, PALACE TWO, RICHMOND ONE, ROSEWOOD ONE, and ST. CLAIR TWO. SIDs use VOR cross radials as well as DME measurements to specify departure routes. Aircraft follow these routes until DTW controllers transition aircraft to their next controlling agency.

2.6 Terminal Area

DTW currently has two existing passenger terminal buildings: McNamara Terminal and the North Terminal. The North Terminal replaced the aging Smith and Berry Terminals when it opened in September 2008.

2.6.1 Edward H. McNamara Terminal

The McNamara Terminal, located on the south portion of the Airport, has a total of 122 gates and consists of approximately 2,000,000 square feet of building space. The terminal houses Northwest Airlines, Continental Airlines, Continental Express, Air France, Lufthansa, Royal Jordanian, Comair, Delta Airlines, British Airways, KLM, Mesaba Airlines and Pinnacle Airlines in three concourses: A, B and C. Concourses B and C are separated from the main terminal and Concourse A by the terminal apron area and are accessed via an underground walkway. **Exhibit 2.6-1** illustrates the McNamara Terminal area and apron.

2.6.2 Smith and Berry Terminal

The Smith Terminal, located on the north portion of the Airport, consists of 31 aircraft gates and approximately 600,000 square feet of building space. The terminal accommodates Southwest Airlines, Air Canada, American Airlines, American Eagle, America West Airlines, Spirit, United Airlines, United Express, Air Tran, Frontier Airlines, and US Airways Express in three concourses: A, B and C. **Exhibit 2.6-2** illustrates the Smith Terminal and apron area.

The Berry Terminal serves some international arrivals and international departures such as USA 300, Champion Air, TransMeridian, and Ryan Air as well as most charter operations. **Exhibit 2.6-3** depicts the Berry Terminal and apron area.

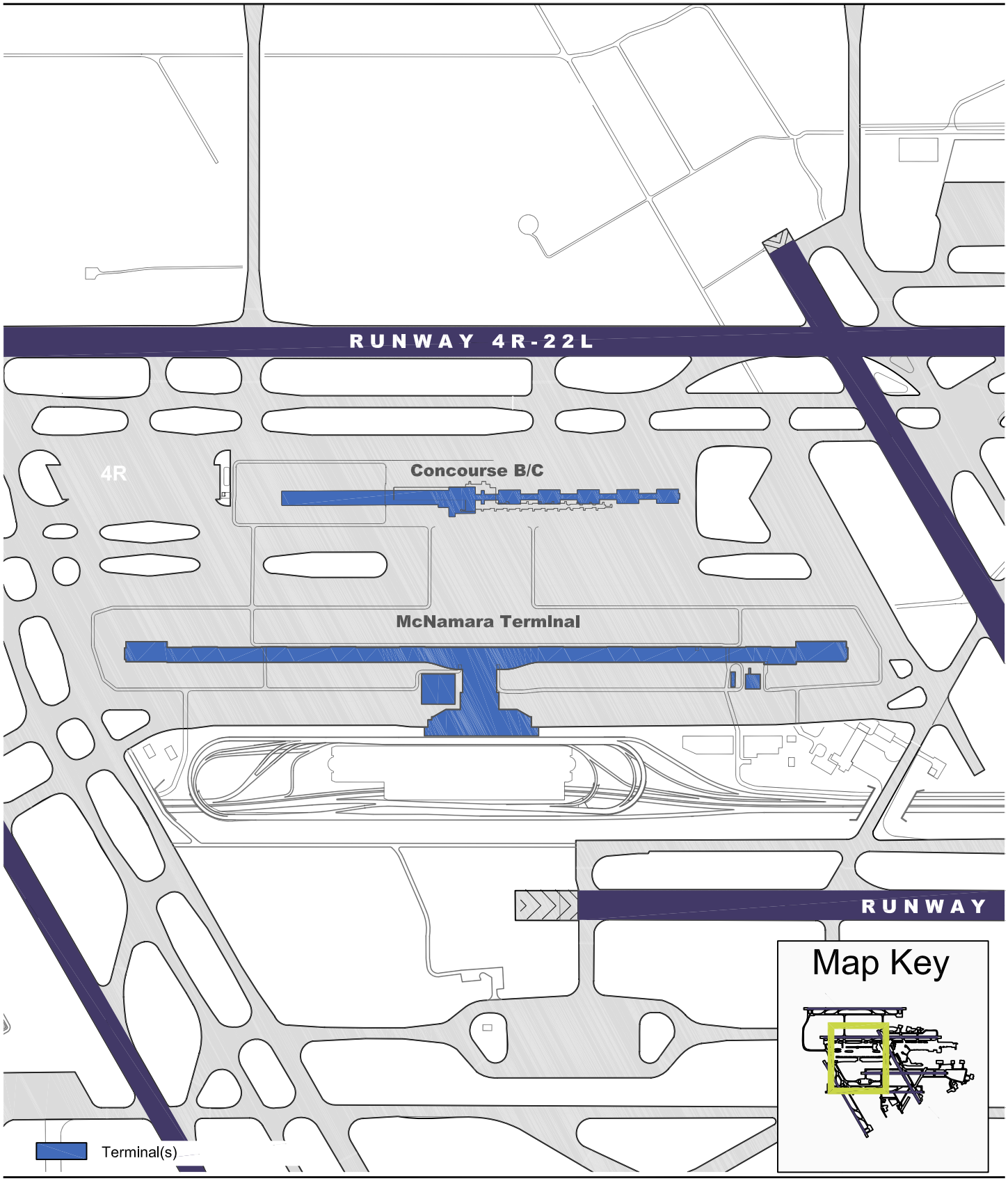
2.6.3 New North Terminal

The North Terminal consists of 26 aircraft gates and approximately 734,000 square feet of building space. Airlines that were located in the Smith and Berry Terminals relocated to the terminal. In addition, several airlines from the McNamara relocated, including: Air France, Lufthansa, Royal Jordanian and British Airways. The move left only Northwest Airlines and its Sky Team Alliance members in the McNamara Terminal. **Exhibit 2.6-4** shows the configuration of the North Terminal.

2.6.4 Terminal Apron Area Pavement

Typical, apron pavement at the Airport is a 42-inch cross-section, consisting of a six-inch diameter sub-grade under drain, 16 inches of crushed aggregate base course, nine inches of bituminous base course, and 17 inches of non-reinforced concrete pavement (4,000 psi compressive strength). Typical joint spacing is 12.5 feet longitudinal by 15 feet transverse. The total Terminal Apron Area i.e. the pavement surrounding the terminal building that is used for aircraft parking, movement and staging of equipment) is approximately 25,133,923.01 square feet.[4]

[4] Pavement Maintenance/Management Study, July 2005



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Detroit Metropolitan
Wayne County Airport

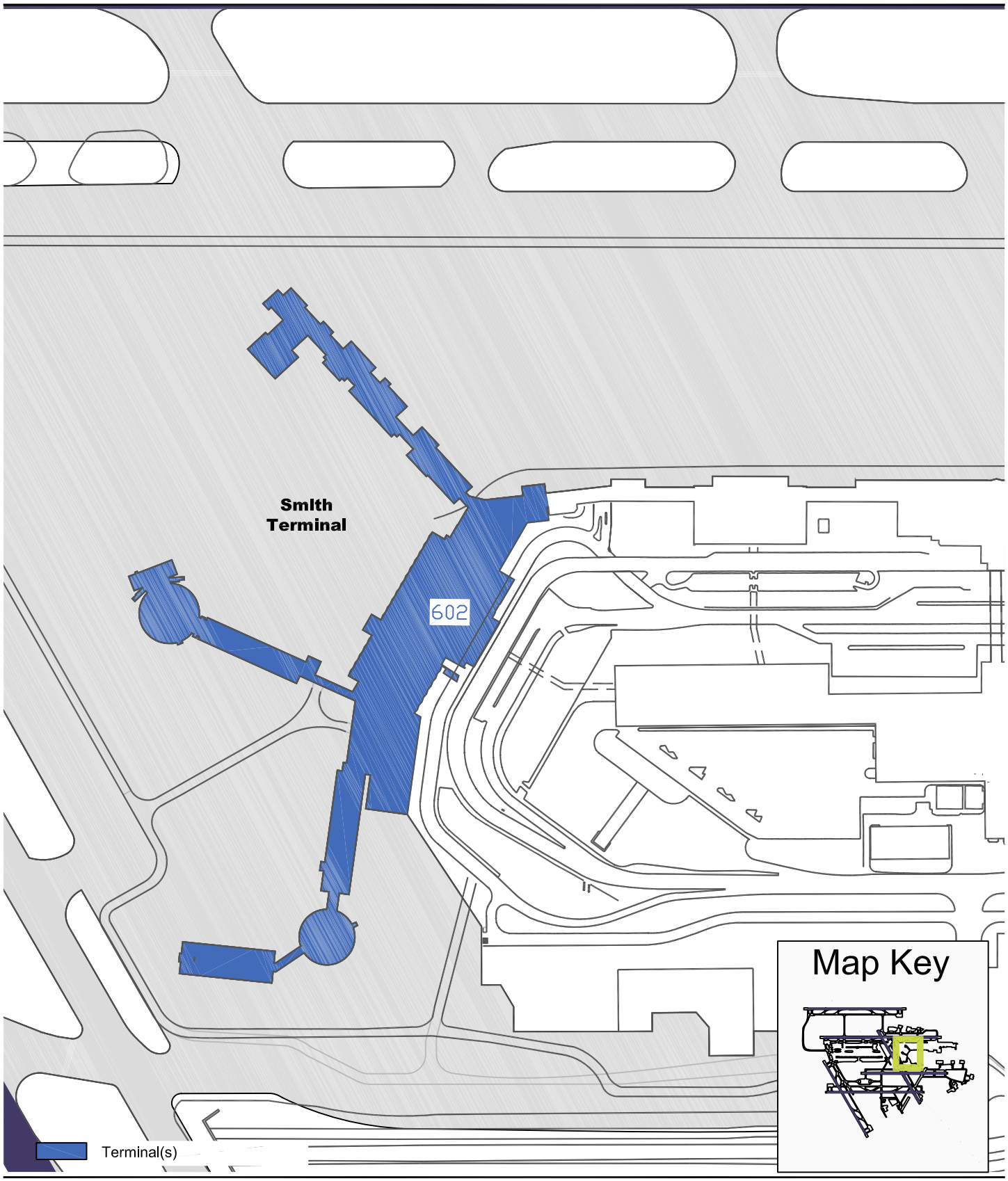
McNamara Terminal and Apron

DETROIT METRO • WILLOW RUN
WAYNE COUNTY AIRPORT AUTHORITY

0 900' 1,800'
GRAPHIC SCALE IN FEET

jda

EXHIBIT
2.6-1



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Detroit Metropolitan
Wayne County Airport

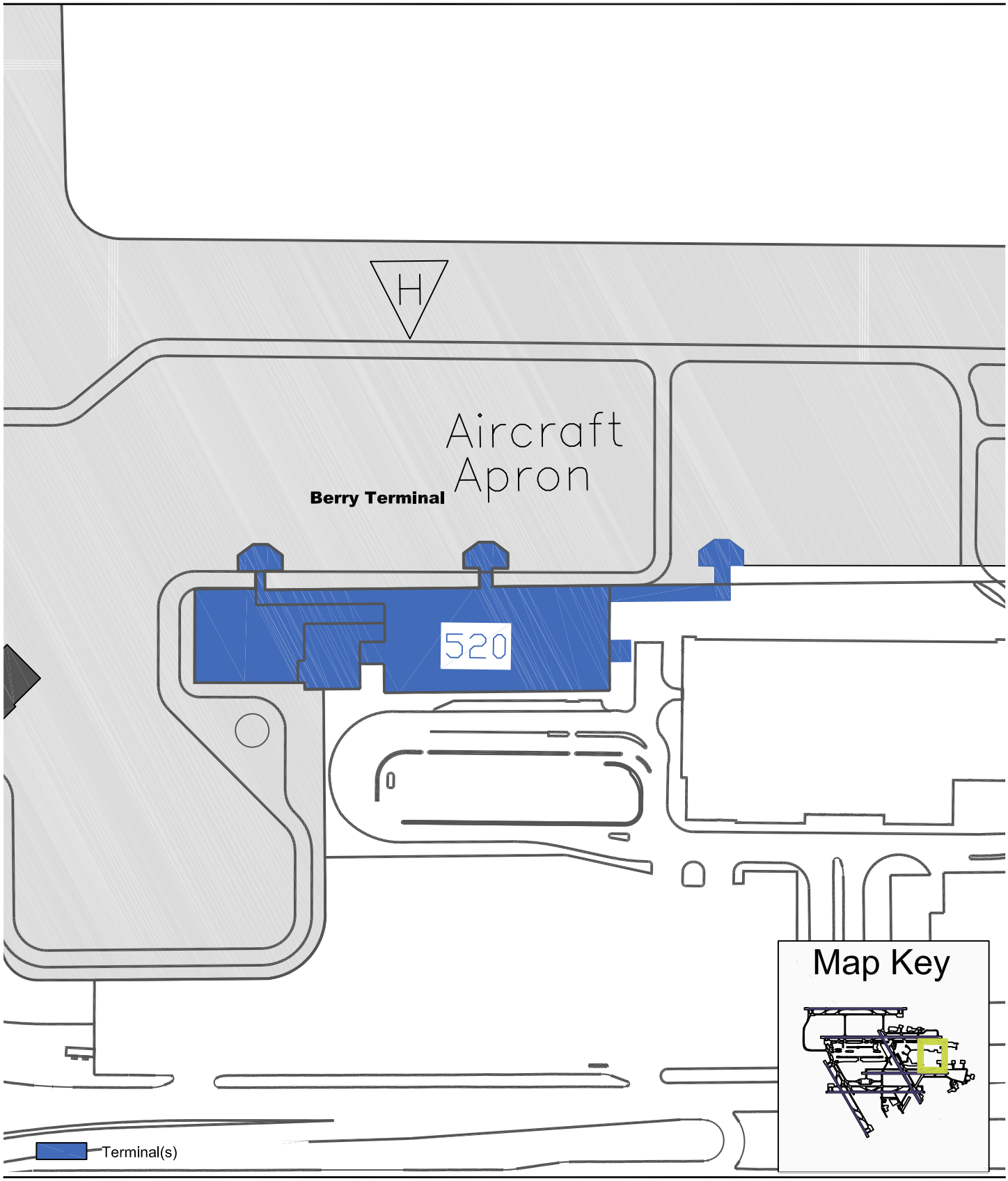
DETROIT METRO • WILLOW RUN
WAYNE COUNTY AIRPORT AUTHORITY

Smith Terminal and Apron

0 350' 700'
GRAPHIC SCALE IN FEET

jda

EXHIBIT
2.6-2



PREPARED BY: JACOBSEN/DANIELS ASSOCIATES

Detroit Metropolitan
Wayne County Airport

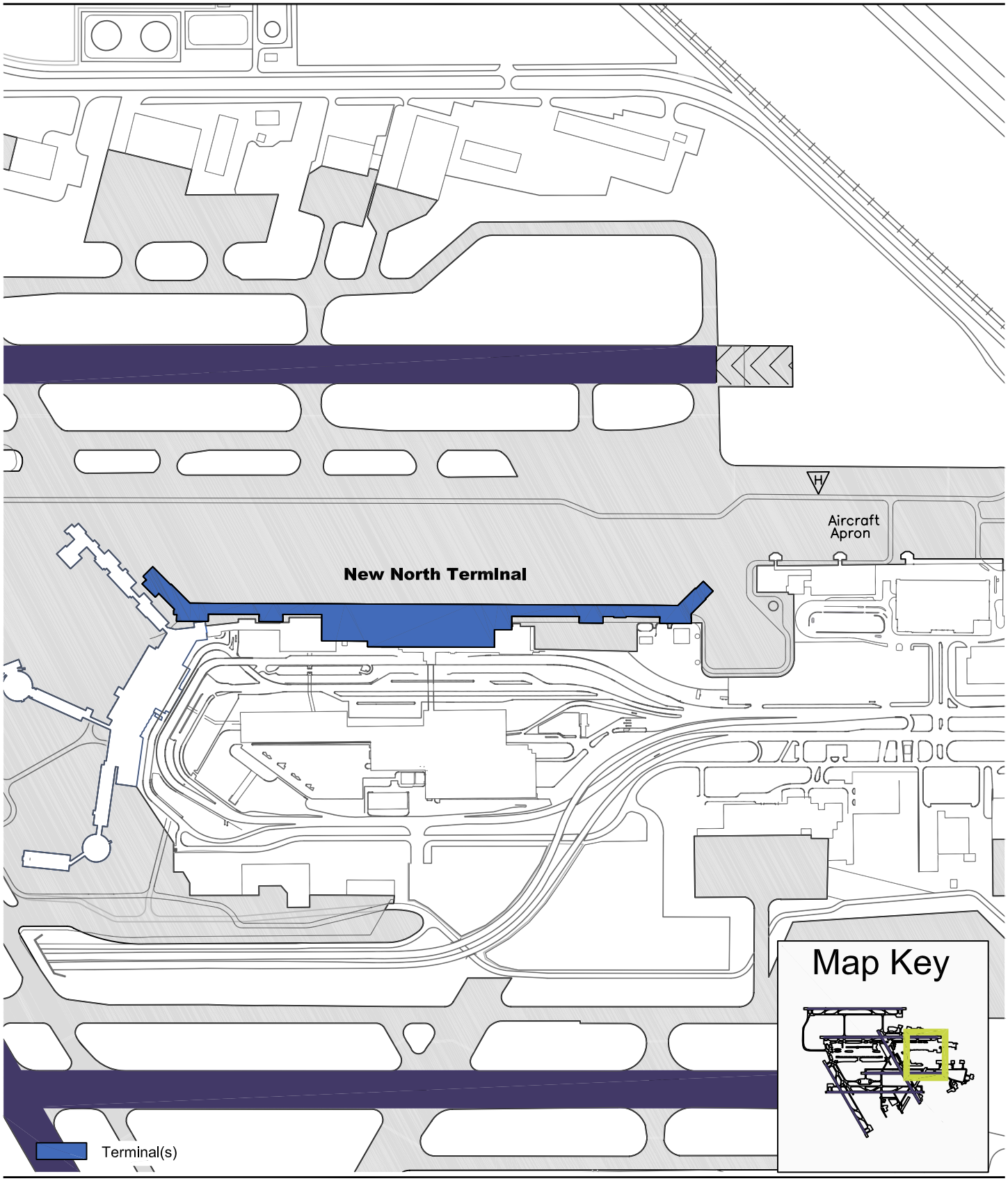
DETROIT METRO • WILLOW RUN
WAYNE COUNTY AIRPORT AUTHORITY

Berry Terminal and Apron

0 200' 400'
GRAPHIC SCALE IN FEET

jda

EXHIBIT
2.6-3



PREPARED BY: JACOBSEN/DANIELS ASSOCIATES

Detroit Metropolitan
Wayne County Airport

New North Terminal Layout

0 700' 1,400'
GRAPHIC SCALE IN FEET

DETROIT METRO • WILLOW RUN
WAYNE COUNTY AIRPORT AUTHORITY

jda

EXHIBIT
2.6-4

2.7 Landside and Ground Access Facilities

2.7.1 Airport Access and Circulation

DTW is accessible from both Interstate 94 (I-94) and Interstate 275 (I-275). From I-94, Exit 198 merges onto Rogell Drive, which continues southbound into the Airport. Alternatively, users can access the Airports east and west peripheries via Middlebelt Road and Vining Road respectively. From I-275, Exit 15 provides access to the Airport from the south via Eureka Road and the southern Airport Entrance onto John Dingell Drive.

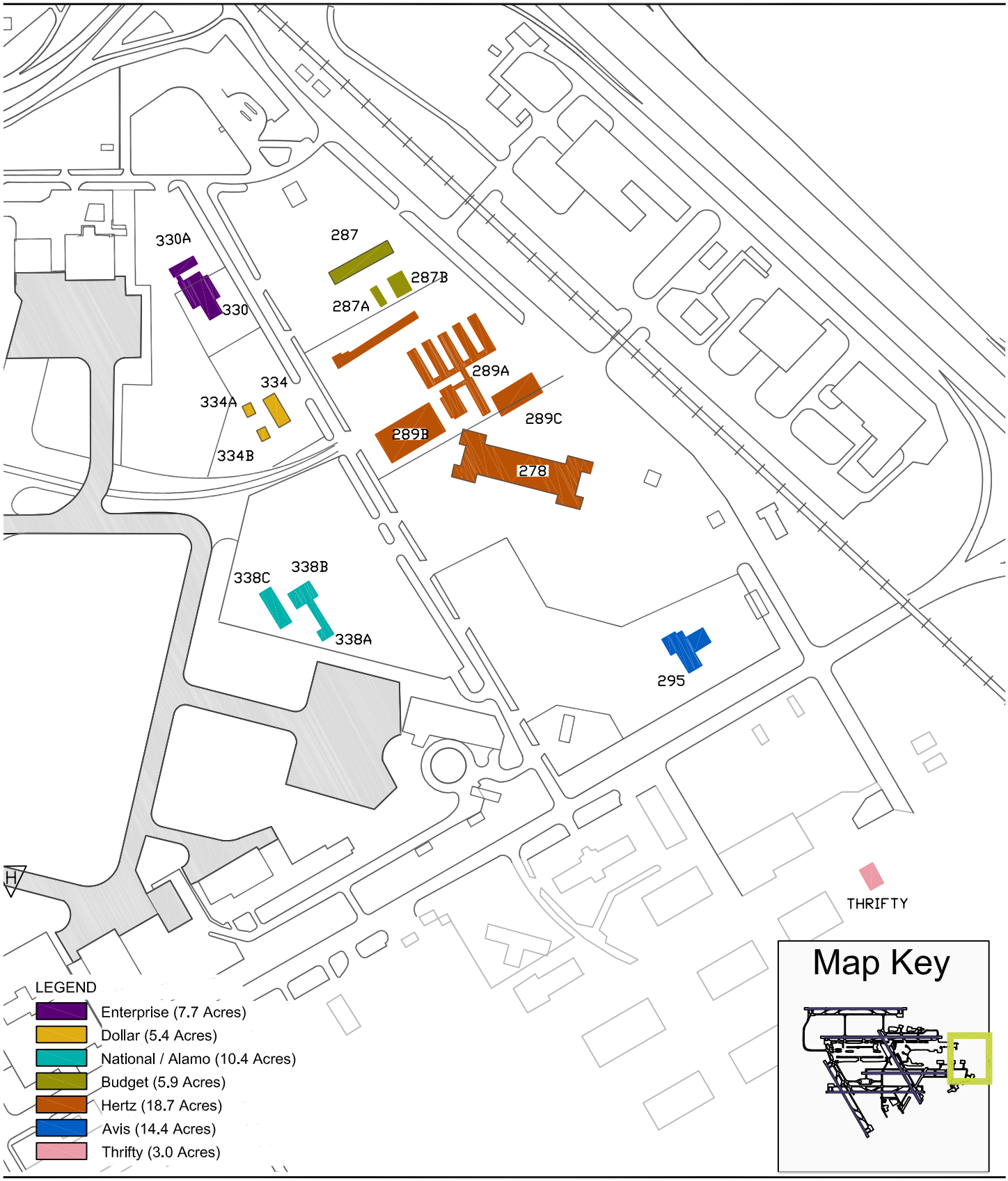
Traveling south on Rogell Drive, a traffic light at Rogell Drive and Burton Drive provides access to the East Service Drive (Berry Terminal, Northwest Airlines maintenance hangars, flight kitchen and US Post Office) and West Service Drive (Economy parking, rental car facilities, common use cargo and other tenant hangars). Rogell Drive then continues to the Smith Terminal (future North Terminal) and Blue Deck. Prior to the Smith Terminal, the left lanes of Rogell Drive merge into (southbound) John Dingell Drive, which leads to the McNamara Terminal, McNamara Terminal Parking Garage and the southern Airport entrance/Eureka Road.

2.7.2 Intra-Terminal Circulation

A free "Intra-Terminal" shuttle service is available for passengers/employees traveling between the Terminals. Access to the shuttle service is available from the Ground Transportation Center in the McNamara parking garage, at the arrivals curb at the Smith Terminal and in front of the Berry Terminal. Upon the opening of the new North Terminal, the Intra-Terminal shuttle will likely be located in the new Ground Transportation Center.

2.7.3 Rental Car Operations

Currently, seven rental car agencies provide service to passengers at DTW. Six of the rental car agencies that provide service to passengers are located on-Airport, with one agency located off-Airport. Alamo, Avis, Budget, Dollar, Enterprise, and Hertz and National rental car agencies provide 24-hour service on-Airport with locations along Lucas Drive on the north side of the Airport. The off-Airport rental car agency, Thrifty Car Rental, is located in Romulus on Wick Road. **Exhibit 2.7-1** illustrates the site locations for the rental car facilities.



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Detroit Metropolitan
Wayne County Airport

Rental Car Locations

DETROIT METRO • WILLOW RUN
WAYNE COUNTY AIRPORT AUTHORITY

0 500' 1,000'
GRAPHIC SCALE IN FEET

jda

EXHIBIT
2.7-1

2.7.4 Ground Transportation

Ground transportation providers are located at each of the three terminals adjacent to the curb. These areas offer passengers convenient access to all forms of ground transportation available at the Airport in a central location. At the McNamara, ground transportation functions are housed in the Ground Transportation Center in the parking garage. At the Smith and Berry Terminals, they are located on the commercial vehicle curbs adjacent to the terminal. The new North Terminal will include a Ground Transportation Center similar in function to the McNamara Terminal.

Ground transportation options available today include:

- Taxi Service
- Luxury Sedan Service
- On-Airport Parking Shuttles
- Courtesy Shuttles (Rental Car Companies, Hotel Shuttles, Off-Airport Parking)
- Scheduled Service Vans
- Pre-Arranged Services (Limousine, Charter Bus)

2.7.5 Public Transportation

The Suburban Mobility Authority for Regional Transportation (SMART) buses stop regularly at the outer roadway on the Lower (Arrivals) Level at the Smith Terminal near the ground transportation offices, providing access to passengers. The two routes available directly from the Airport are Route #125—Fort Street (to downtown), which stops approximately every 30 minutes and Route #285—Middlebelt Road (to Bloomfield/Northern suburbs), which stops approximately every hour. Amtrak has train stations located 13 miles away in Dearborn and 32 miles away in Ann Arbor and the Greyhound bus station is located 7 miles away at Wayne, MI. Access to both the Amtrak and Greyhound stations is provided by SMART buses.

The Southeast Michigan Council of Governments (SEMCOG) maintains a 25-year long-range vision for transportation in the region. It serves as a guide for developing a transportation system that is accessible, safe, and reliable and contributes to a higher quality of life for the region's citizens. A component of this vision is the Ann Arbor-Detroit Regional Rail Project.

The project will provide regional rail service in the Ann Arbor - Detroit corridor using existing infrastructure whenever possible. The current concept is to provide commuter rail service in the Detroit-Ann Arbor corridor with stops in Ann Arbor, Ypsilanti, Detroit Metropolitan Airport, Dearborn, and Detroit. The project requires adding new station stops in Ypsilanti and at Detroit Metro Airport.

The project is being managed by SEMCOG along with partners that include representatives of all communities in the corridor, Wayne and Washtenaw County officials, state and federal

representatives, the Michigan Department of Transportation, the local transit operators (AATA, DDOT, and SMART), Amtrak, representatives of Norfolk Southern (NS) and Canadian National (CN) Railroads, and members of the business community.

2.7.6 Public Parking Facilities Inventory

DTW currently offers approximately 18,356 on-airport public parking spaces for its patrons. These spaces are located in a combination of garages and surface lots throughout the Airport and are divided between two cost revenue centers, one located near the McNamara Terminal core and the other near the Smith/Berry Terminal core. All McNamara parking spaces are located in a ten-level garage that was opened in 2002. The McNamara Garage contains 10,070 public spaces. The Smith/Berry parking facilities contain 6,079 available public spaces in the Big Blue Deck, a six-level garage and three surface lots. These lots include the Yellow Lot with 781 spaces, the Green Lot with 1,286 spaces and the Short-Term Lot with 140 spaces. There are also two surface lots currently being leased by tenants: the Red Lot and the Green Lot (#2). Together, these two lots contain approximately 1,457 spaces, but are not reflected in the total on-airport public parking spaces as they are not available for public parking.

On-Airport parking facilities are subdivided into economy, long-term, short-term and valet space products. **Exhibit 2.7-2** illustrates the locations of all on-airport parking, including currently closed lots. **Table 2.7-1** lists on-Airport parking capacities, as provided by the WCAA Parking Operations Management. DTW parking facilities offer a wide range of parking products at various price points and convenience levels that are suited to each traveler's individual needs. Valet Parking, which is currently only offered at the McNamara Garage, is the Airport's premium parking option. It is the most expensive on-Airport parking product with a daily rate of $28.00, and offers the most convenient parking option at the Airport. The Short-Term spaces accommodate meeter(s)/greeter(s) and offer the closest most convenient parking option. The Short-Term spaces have a $25.00 daily rate. The Long-Term spaces offers less expensive daily rates of $10.00 or $17.00 and are located within walking distance of the terminals. Economy spaces, which are currently located only in the Blue Deck, Yellow and Green Lots, require a longer walk or a shuttle bus ride to the terminals. The economy lots offer the lowest on-Airport daily flat rate of $8.00 for the Blue Deck and Yellow Lot. The Green Lot offers a daily flat rate of $10.00.

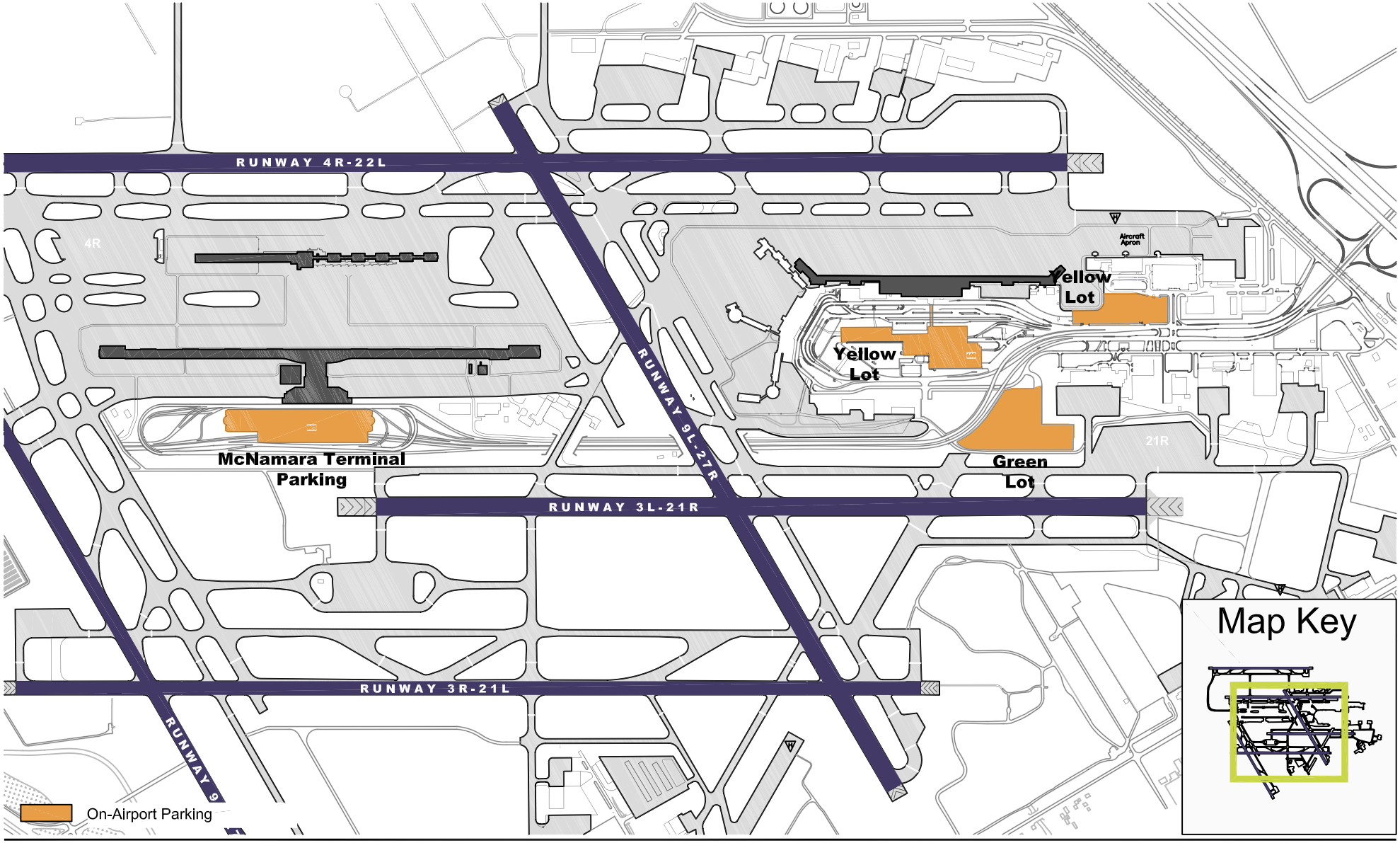
Table 2.7-1 Public Parking Facility Inventory

Parking Facility	Spaces
McNamara Parking Garage	10,070
Smith/Berry Terminals Garage (Blue Deck)	6,079
Green Lot	1,286
Yellow Lot	781
Smith Short Term Lot	140
TOTAL	18,356

Source: Wayne County Airport Authority, 2006.

2.7.7 Employee Parking

Employee parking at DTW currently consists of 8,180 parking spaces in five parking lots. The two main lots are located at the south and north ends of the Airport. The South lot is primarily for McNamara Terminal employees while the North lot serves primarily Smith/Berry Terminal employees. The North lot is situated adjacent to the Wayne County Airport Maintenance Facilities just off of West Airport Drive. This lot provides approximately 3,000 spaces. The South lot is located off of Eureka Road just east of the South Airport Entrance. This lot provides approximately 5,000 spaces to employees. Three additional lots, Lot 17, Lot 19 and Lot 20 are located to the east of the Smith Terminal. These lots provide approximately 180 spaces primarily for WCAA employees.



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Detroit Metropolitan
Wayne County Airport

DETROIT METRO • WILLOW RUN
WAYNE COUNTY AIRPORT AUTHORITY

On-Airport Parking Locations

0 1500' 3000'
GRAPHIC SCALE IN FEET

jda

EXHIBIT
2.7-2

2.8 Support/Ancillary Facilities

This section describes support and ancillary facilities that are not included in the description of terminal, airfield or landside facilities.

2.8.1 Air Cargo

DTW is the home of three exclusive air cargo tenants along with several airlines providing air cargo services at the Airport. The air cargo tenants are currently located in three general areas of the Airport. The Federal Express cargo facility and Miami Air Freight are located in the northwest section of the Airport along Taxiway Z. The United Parcel Service (UPS) cargo facility is located near the southern portion of the Airport between Runway ends 27R and 27L. United Air Freight, Northwest Cargo, Spirit Airlines Cargo, American Airlines Air Cargo, and Delta Air Cargo are located in the northern section of the Airport. **Exhibit 2.8-1** illustrates the locations for the air cargo tenants.

2.8.2 General Aviation

General Aviation (GA) and corporate aircraft hangars are located in various locations around the airfield, as shown in **Exhibit 2.8-2**. These facilities provide a range of services, including auto parking, aircraft storage, fueling, maintenance and similar functions for GA operators.

2.8.3 Fixed Based Operators

The primary Fixed Base Operator (FBO) at the Airport is Aircraft Service International Group (ASIG), which supplies aircraft fueling and towing, hangar and office rentals, ground handling, passenger services, maintenance, fuel purchasing, deicing and various other ground services for commercial and private aircraft operators. Other FBOs at the Airport include Corporate Flight and Metro Flight Service. Additionally the FBOs serve pilots, private aircraft owners, travelers and airlines with services such as rental cars, charters, lounges, catering, hotel reservations, weather briefing and flight planning services, and many other services. **Exhibit 2.8-3** displays the locations of the FBO's.

2.8.4 Fuel Facilities

DTW has one main fuel farm located on the northwest side of the Airport. This fuel farm holds more than 2,970,000 gallons[5] of fuel. **Exhibit 2.8-4** shows fuel facility locations. There is one remote fueling station located northwest of the end of Runway 21R. Fuel is pumped into fuel service vehicles and then is transported to service aircraft and Airport motor vehicles from the fuel farm. This farm also supplies the in-ground aircraft fuel hydrant system, providing service fuel for the McNamara Terminal. The New North Terminal will also contain a hydrant fuel system that will connect to the fuel farm.

[5] Master Plan Study, Wayne County Detroit Metropolitan Airport 1993

The Airport has several above ground and below ground storage tanks. Above ground tanks are used for storing diesel fuel for emergency generators, and new and used oil. Locations and sizes of above ground storage tanks are listed in **Table 2.8-1**. Underground storage tanks are used primarily for equipment and vehicle fluids. Locations and sizes of underground storage tanks are listed in **Table 2.8-2**[6].

Table 2.8-1 Above Ground Storage Tanks

Location	Size of Tank	Quantity and Type	Contents
Building 704	400 Gallons	5 single-walled steel tank	Motor oil, transmission fluid, hydraulic oil
Building 704	500 Gallons	1 double-walled steel tank	Waste oil
Building 704	55 Gallons	4 to 6 drums	Engine oil, transmission oil, hydraulic oil
Building 705	55 Gallons	1 to 2 drums	Engine oil
Building 705	55 Gallons	1 to 2 drums	Transmission oil
Building 611	55 Gallons	1 drum	Mineral spirits
Building 611	55 Gallons	1 drum	DT light oil
Building 611	55 Gallons	1 drum	Medium oil
Building 611	55 Gallons	1 drum	Gear oil
Building 611	55 Gallons	1 drum	Waste oil
Building 358	500 Gallons	1 double-walled steel tank	Diesel
Building 803	3,000 Gallons	1 secondarily contained steel tank	Diesel
Building 600	400 Gallons	1 double-walled steel tank	Diesel
Building 509	650 Gallons	1 double-walled steel tank	Diesel
Building 825	1,000 Gallons	2 double-walled steel tanks	Diesel
Trailer #1	1,250 Gallons	1 single-walled steel tank	Diesel
Trailer #2	750 Gallons	1 double-walled steel tank	Diesel
Trailer #3	750 Gallons	1 double-walled steel tank	Diesel
Trailer west of Building 705	1,000 Gallons	1 single-walled steel tank	Diesel

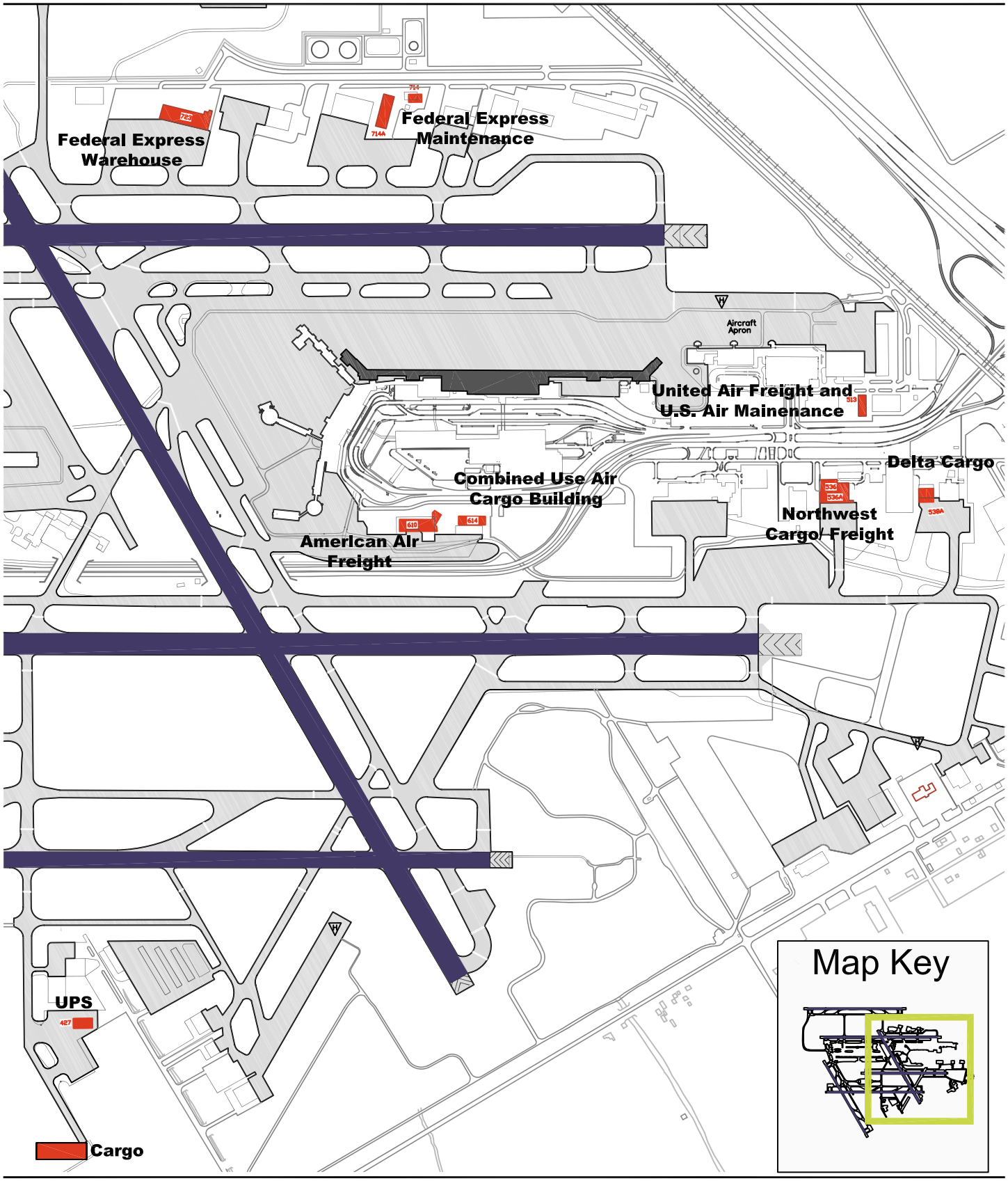
Source: C&S Engineers, 2007

Table 2.8-2 Underground Storage Tanks

Location	Size of Tank	Quantity and Type	Contents
Building 611	15,000 gallon	2	#2 Fuel oil
Building 611	35,000 gallon	2	#2 Fuel oil
Building 603	3,000 gallon	1	Diesel
Building 358	4,000 gallon	1	Gasoline
Building 802	12,000 gallon	1	Gasoline
Building 802	12,000 gallon	1	Diesel
Building 802	1,000 gallon	1	Diesel
Maintenance Complex	10,000 gallon	1	Gasoline
Maintenance Complex	10,000 gallon	1	Diesel
Building 472 (NWA)	30,000 gallon	2	Gasoline
Building 472 (NWA)	15,000 gallon	2	Diesel

Source: C&S Engineers, 2007

[6] Spill Prevention, Control and Countermeasures/ Pollution Incident Prevention Plan (SPCC/PIPP), Prepared for Detroit Metropolitan Airport, Wayne County Airport Authority, 11/15/2006.



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Detroit Metropolitan Wayne County Airport

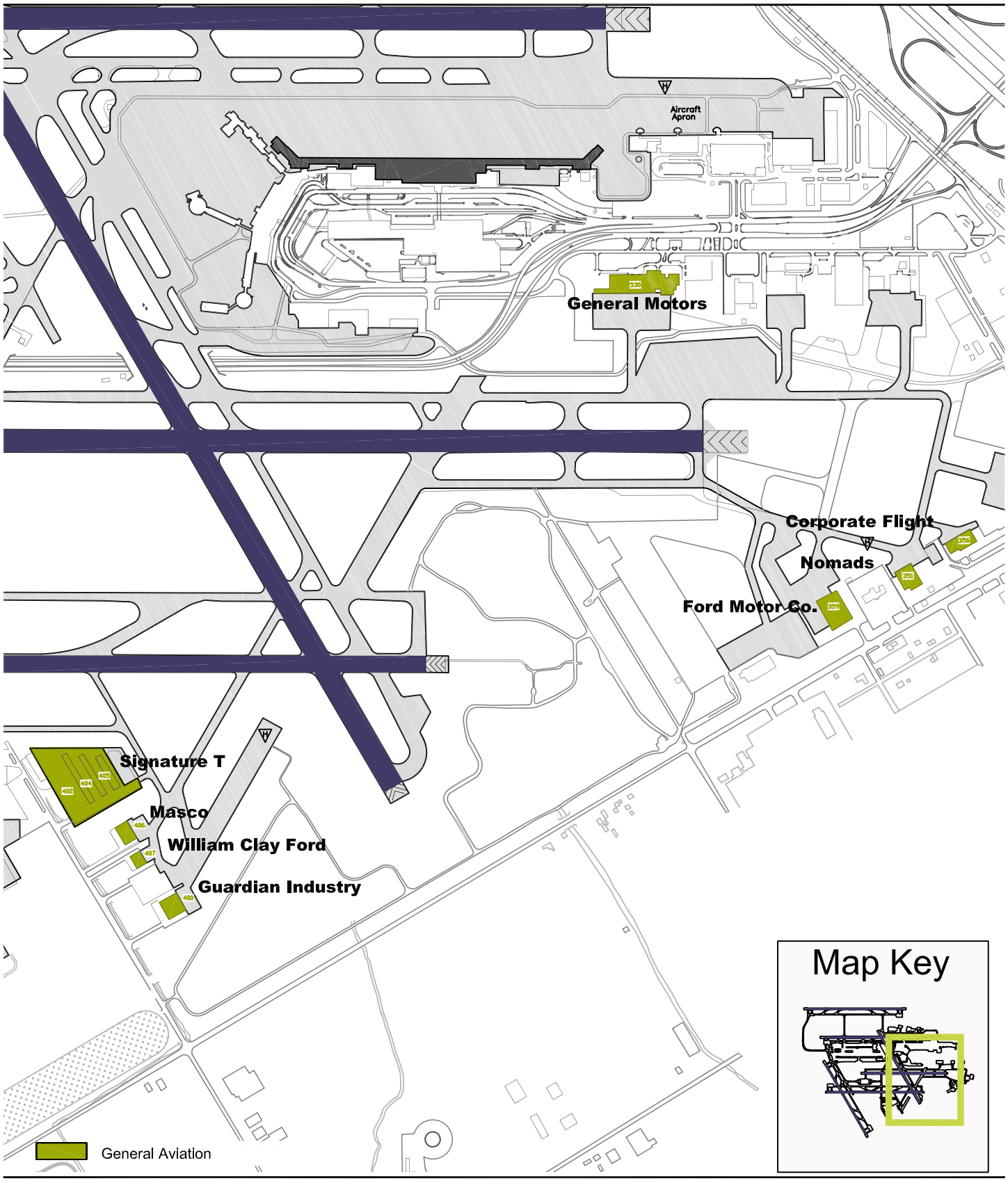
Air Cargo Tenant Locations

DETROIT METRO • WILLOW RUN
WAYNE COUNTY AIRPORT AUTHORITY

0 900' 1,800'
GRAPHIC SCALE IN FEET

jda

EXHIBIT 2.8-1



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Detroit Metropolitan
Wayne County Airport

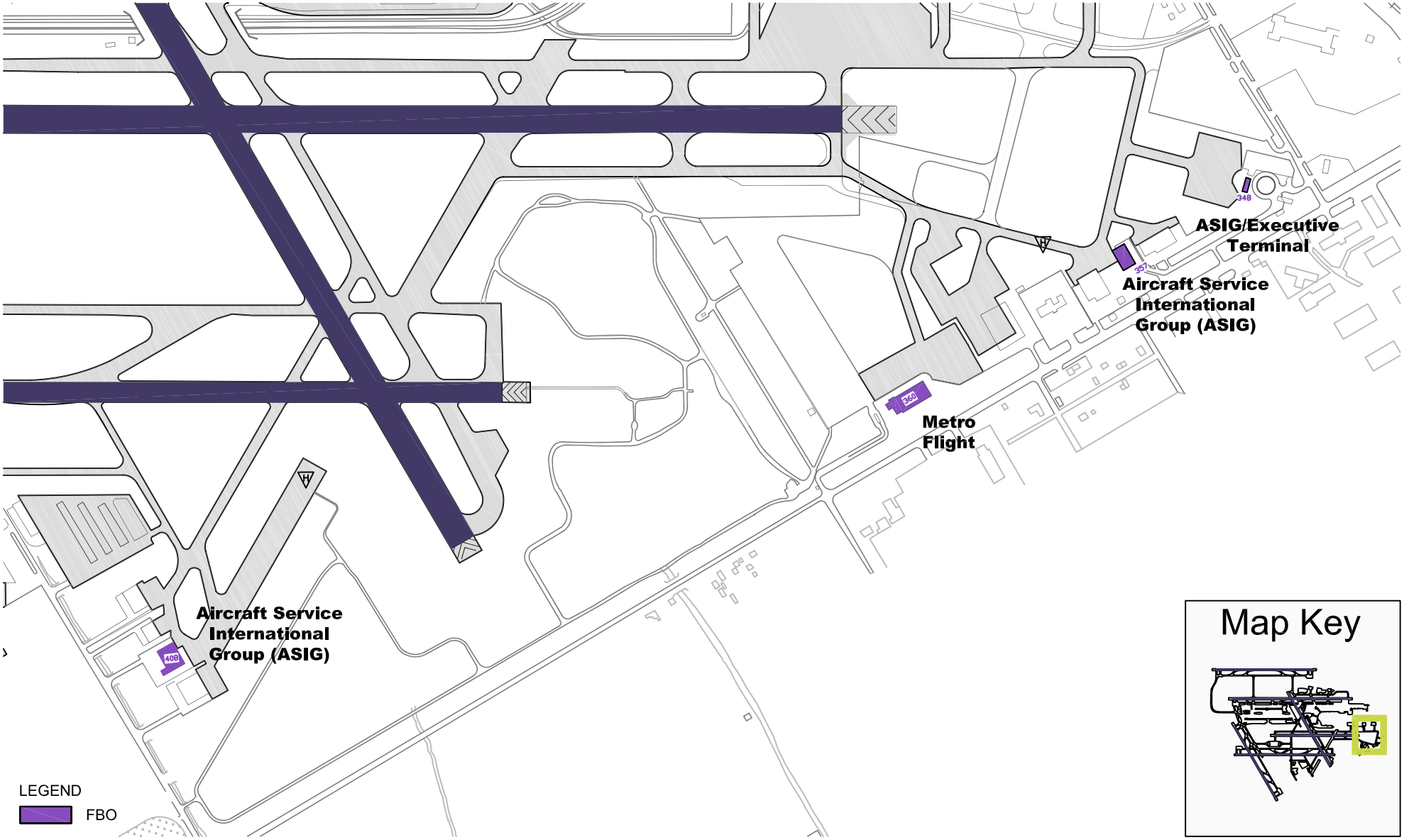
General Aviation Locations

DETROIT METRO • WILLOW RUN
WAYNE COUNTY AIRPORT AUTHORITY

0 1,200' 2,400'
GRAPHIC SCALE IN FEET

jda

EXHIBIT
2.8-2



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Detroit Metropolitan Wayne County Airport

Fixed Based Operator Locations

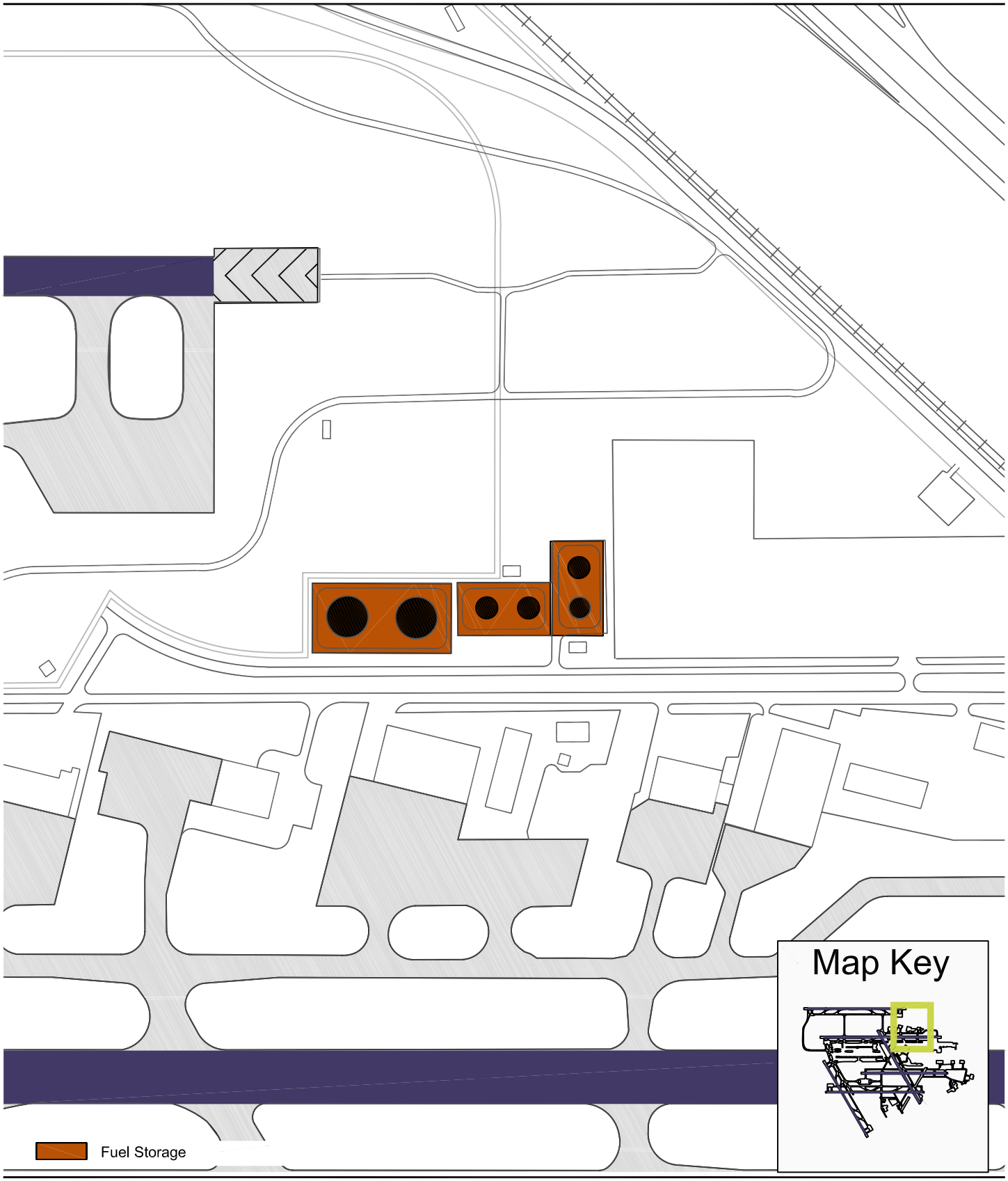
0 1000' 2000'

GRAPHIC SCALE IN FEET

DETROIT METRO • WILLOW RUN
WAYNE COUNTY AIRPORT AUTHORITY

jda

EXHIBIT
2.8-3



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Detroit Metropolitan
Wayne County Airport

Fuel Farm Facility Locations

DETROIT METRO • WILLOW RUN
WAYNE COUNTY AIRPORT AUTHORITY

0 500' 1,000'
GRAPHIC SCALE IN FEET

jda

EXHIBIT
2.8-4

2.8.5 Aircraft Rescue and Fire Fighting (ARFF) Facilities

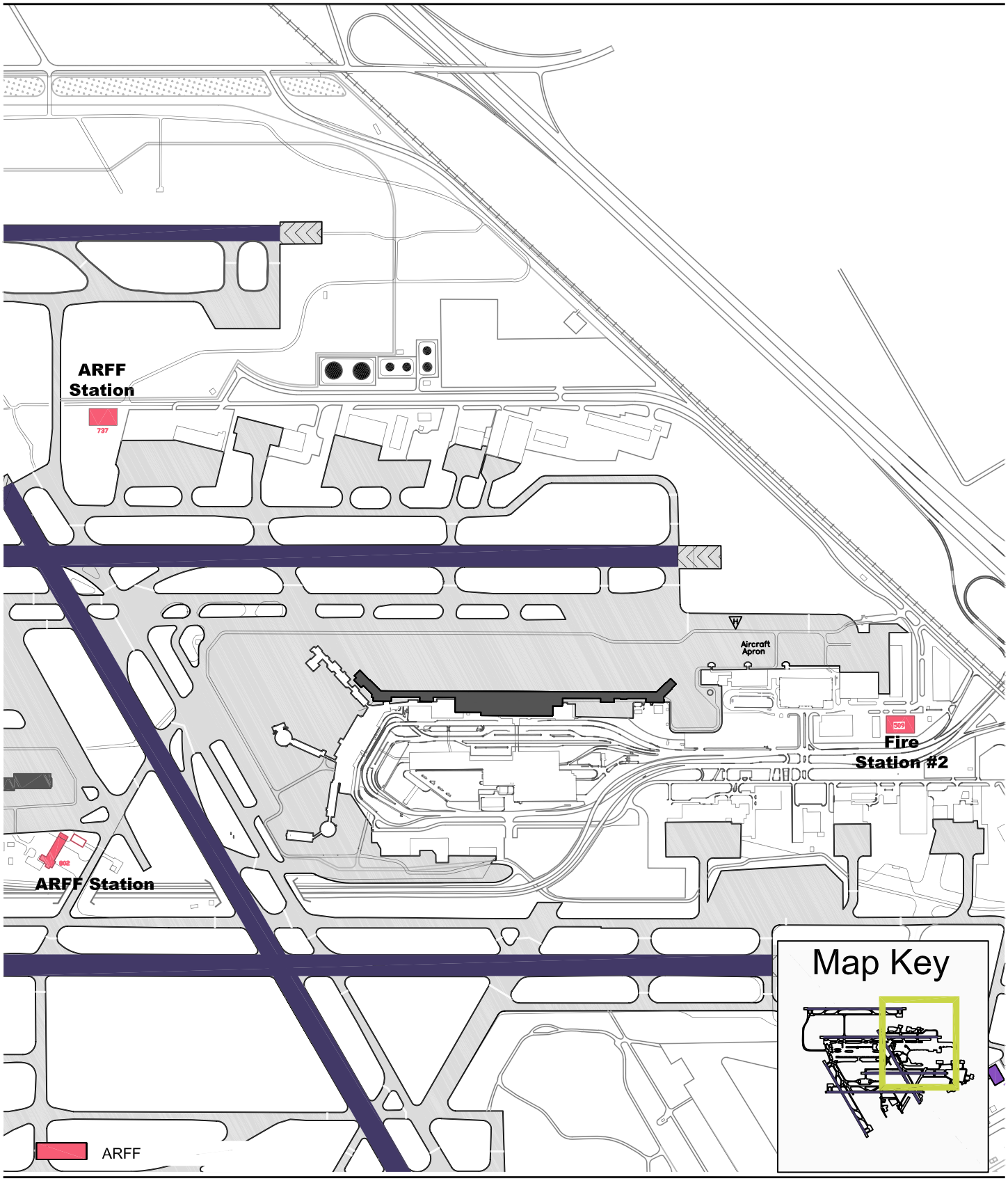
A central aircraft rescue and fire fighting (ARFF) facility is situated in the middle of the airfield between the Smith Terminal and the McNamara Terminal. A second smaller ARFF facility is located near Taxiway "V", adjacent to the FedEx cargo ramp. A landside station, serving the roadways and terminals is located along Rogell Drive to the north of Smith and Berry Terminals. The ARFF facilities are operated in accordance with FAA Index E. Index E is designated for airports that accommodate at least five daily departures by aircraft up to 200 feet in length. **Exhibit 2.8-5** depicts the locations of ARFF facilities.

2.8.6 Flight Kitchens

There is one on-airport flight kitchen facility (Building 505) currently being operated at DTW. This facility is located in the northern portion of the Airport and is operated by LSG Sky Chefs. Building 534, formerly operated by LSG Sky Chefs, is no longer being leased and is vacant. LSG Sky Chefs prepare meals for scheduled flights to service passengers and flight personnel. Gate Gourmet, is a second airline catering company is also providing service to the airlines; however, Gate Gourmet operates from off-airport facilities. **Exhibit 2.8-6** shows the location of LSG Sky Chefs.

2.8.7 United States Postal Service

The United States Postal Service (USPS) operates a 24-hour Airport Mail Facility on the northeast portion of the airfield. This facility is scheduled to be closed in the near future. In addition, Building 820 near the McNamara Terminal accommodates mail sorting and preparation for loading on the aircraft at that terminal. **Exhibit 2.8-7** depicts the location of the Airport Mail Facility.



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Detroit Metropolitan
Wayne County Airport

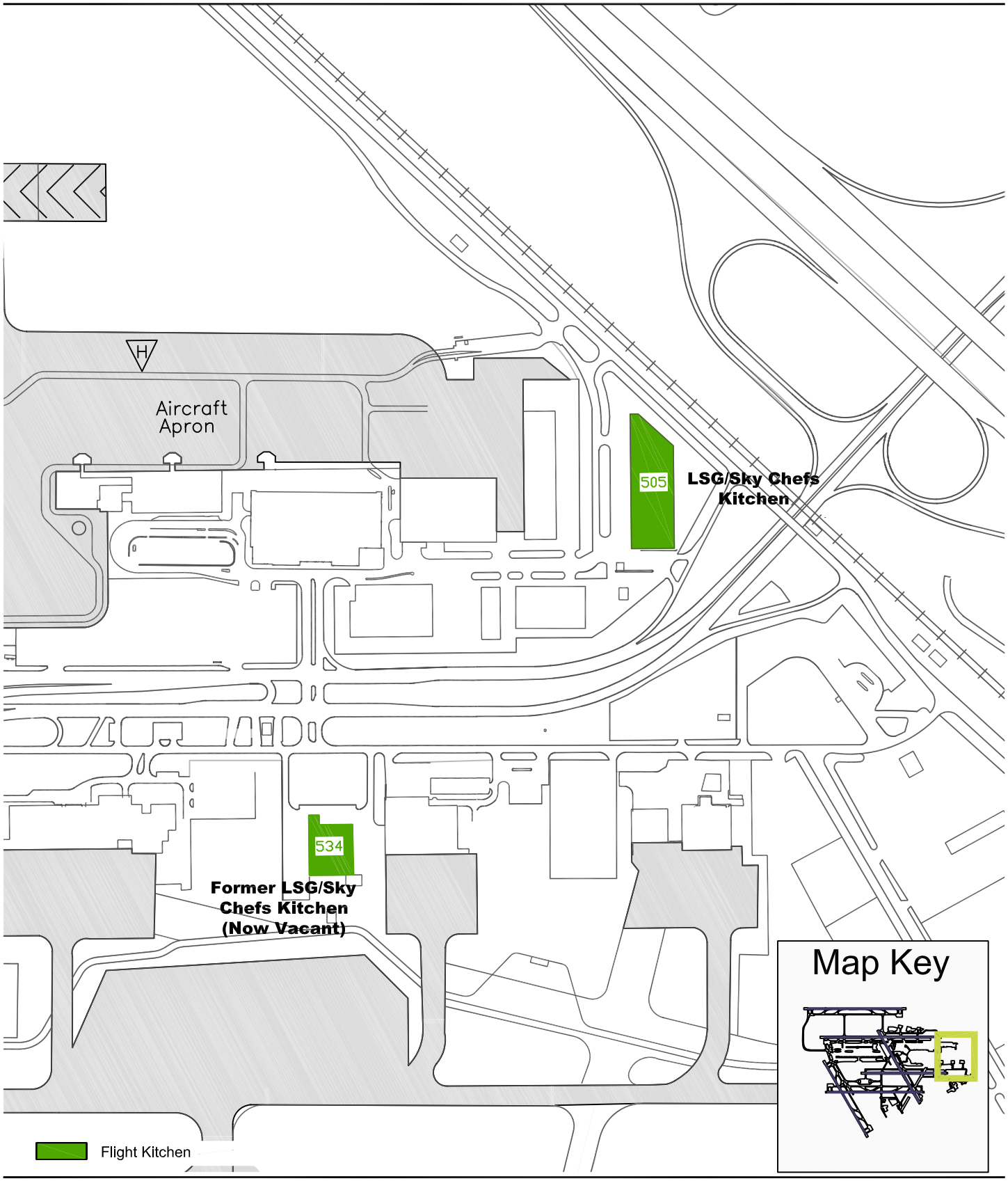
DETROIT METRO • WILLOW RUN
WAYNE COUNTY AIRPORT AUTHORITY

ARFF Facility Locations

0 2,500' 5,000'
GRAPHIC SCALE IN FEET

jda

EXHIBIT
2.8-5



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Detroit Metropolitan Wayne County Airport

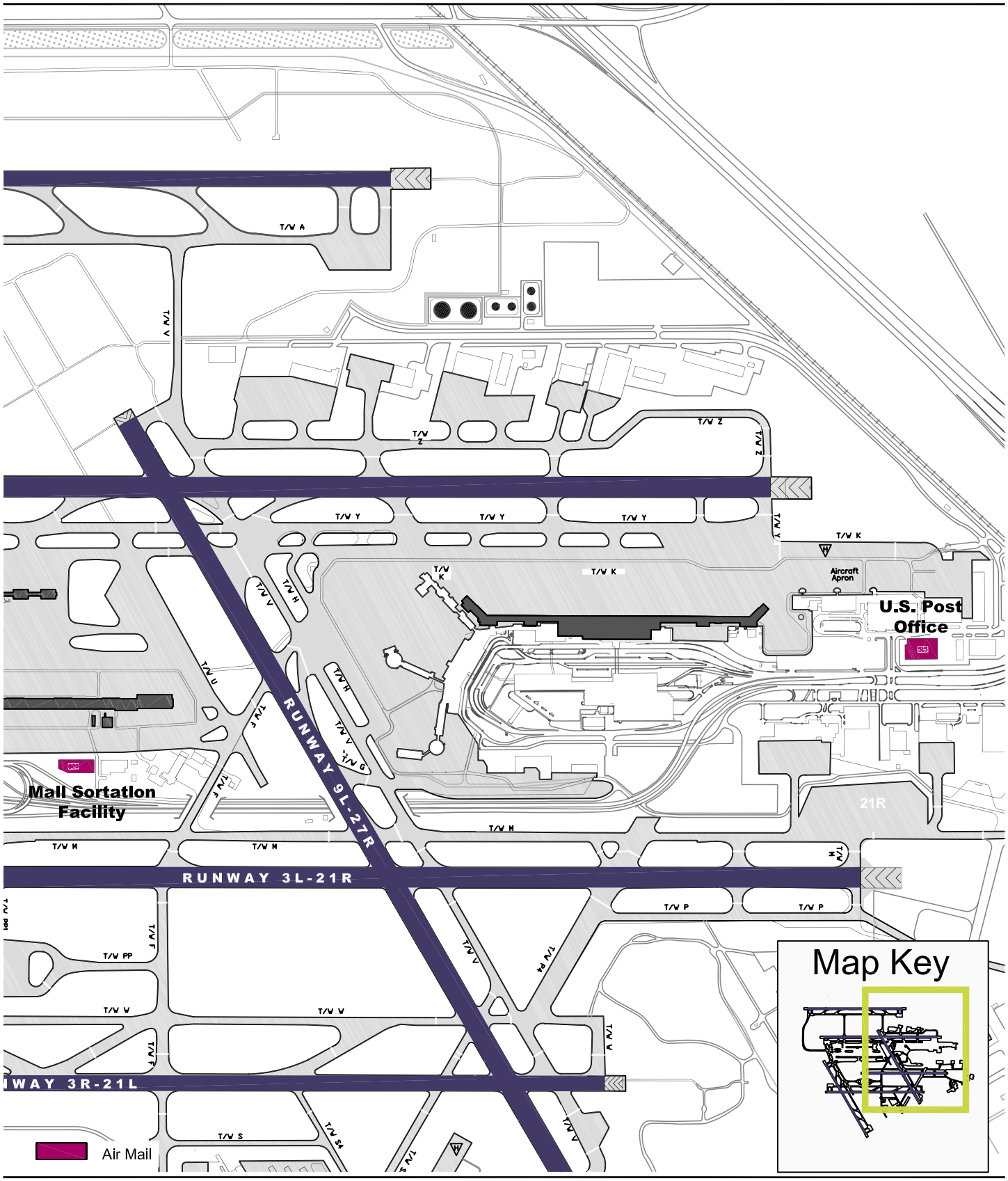
DETROIT METRO • WILLOW RUN
WAYNE COUNTY AIRPORT AUTHORITY

Flight Kitchen Facilities

0 2,500' 5,000'
GRAPHIC SCALE IN FEET

jda

EXHIBIT
2.8-6



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Detroit Metropolitan
Wayne County Airport

Air Mail Facilities

DETROIT METRO • WILLOW RUN
WAYNE COUNTY AIRPORT AUTHORITY

0 200' 400'
GRAPHIC SCALE IN FEET

jda

EXHIBIT
2.8-7

2.9 Utilities

The existing utility grid throughout the Airport includes sanitary sewer, natural gas, water, telecommunications, electric, and stormwater. The existing capacities for each utility were reviewed as part of this study based upon information obtained from the Airport utility CAD base mapping, record drawings, Airport personnel, and offsite utility providers.

2.9.1 Sanitary Sewer Capacity

There are six main sanitary sewer subsystems, each serving separate areas of the Airport, and are identified in **Table 2.9-1**. **Exhibit 2.9-1** illustrates the locations of each of the sanitary sewer subsystems.

Table 2.9-1 Sanitary Sewer Capacity

Sub System	Size	Location	Design Capacity*
#1	24”	McNamara	4,134,000 Gal/Day
#1 Outlet	42”	McNamara	12,504,000 Gal/Day
#2	15”	North Terminal	1,616,000 Gal/Day
#3	21”	North Terminal	3,237,000 Gal/Day
#4	15”	North Terminal	1,616,000 Gal/Day
#5	10”	North Terminal	749,000 Gal/Day
#4/#5 Outlet	24”	North Terminal	4,134,000 Gal/Day
#6	12”	North Terminal	1,079,000 Gal/Day

Source: C&S Engineers, 2006
*Design Capacity based on “*Recommended Standards for Wastewater Facilities*” (1990 Edition or later)

The first subsystem outlets to a 24- inch sanitary sewer pipe and provides service to the McNamara Terminal. Based on the recommended minimum slope of 0.08 feet per 100 feet as indicated by the “*Recommended Standards for Wastewater Facilities*” (1990 Edition) the design capacity of this line is approximately 4,134,000 gallons per day. The 24-inch sanitary sewer in turn outlets to a 42-inch sanitary sewer. Based on a recommended minimum slope of .037 feet per 100 feet the design capacity of this line is approximately 12,504,000 gallons per day.

The second subsystem outlets to a 15-inch sanitary sewer pipe and provides service to the area west of the North Terminal area. Based on the recommended minimum slope of 0.15 feet per 100 feet as indicated by the “*Recommended Standards for Wastewater Facilities*” (1990 Edition) the design capacity of this line is approximately 1,616,000 gallons per day.

The third subsystem outlets to a 21-inch sanitary sewer pipe and provides service to the North Terminal area. Based on the recommended minimum slope of 0.10 feet per 100 feet as indicated by the “*Recommended Standards for Wastewater Facilities*” (1990 Edition) the design capacity of this line is approximately 3,237,000 gallons per day.

The fourth subsystem outlets to a 15-inch sanitary sewer pipe and provides service to the area north of the North Terminal. Based on the recommended minimum slope of 0.15 feet per 100 feet as indicated by the “*Recommended Standards for Wastewater Facilities*” (1990 Edition) the design capacity of this line is approximately 1,616,000 gallons per day.

The fifth subsystem outlets to a 10-inch sanitary sewer pipe and provides service to the area east of the fourth subsystem. Based on the recommended minimum slope of 0.28 feet per 100 feet as indicated by the "*Recommended Standards for Wastewater Facilities"* (1990 Edition) the design capacity of this line is approximately 749,000 gallons per day.

The fourth and fifth subsystems outlet to a 24-inch sanitary sewer pipe. Based on the recommended minimum slope of 0.08 feet per 100 feet as indicated by the "*Recommended Standards for Wastewater Facilities*" (1990 Edition) the design capacity of this line is approximately 4,134,000 gallons per day.

The sixth subsystem outlets to a 12-inch sanitary sewer pipe and provides service to the area east of the North Terminal. Based on the recommended minimum slope of 0.22 feet per 100 feet as indicated by the "*Recommended Standards for Wastewater Facilities*" (1990 Edition) the design capacity of this line is approximately 1,079,000 gallons per day.

2.9.2 Natural Gas

Three main natural gas subsystems, provided by DTE Energy, each serving separate areas of the Airport, were identified and shown in **Exhibit 2.9-2**.

The first subsystem serves the McNamara Terminal, and consists of a three inch gas main. The second subsystem serves the area east of the McNamara Terminal and consists of a two inch gas main. The third subsystem serves the North Terminal area and the surrounding area and consists of an eight inch gas main.

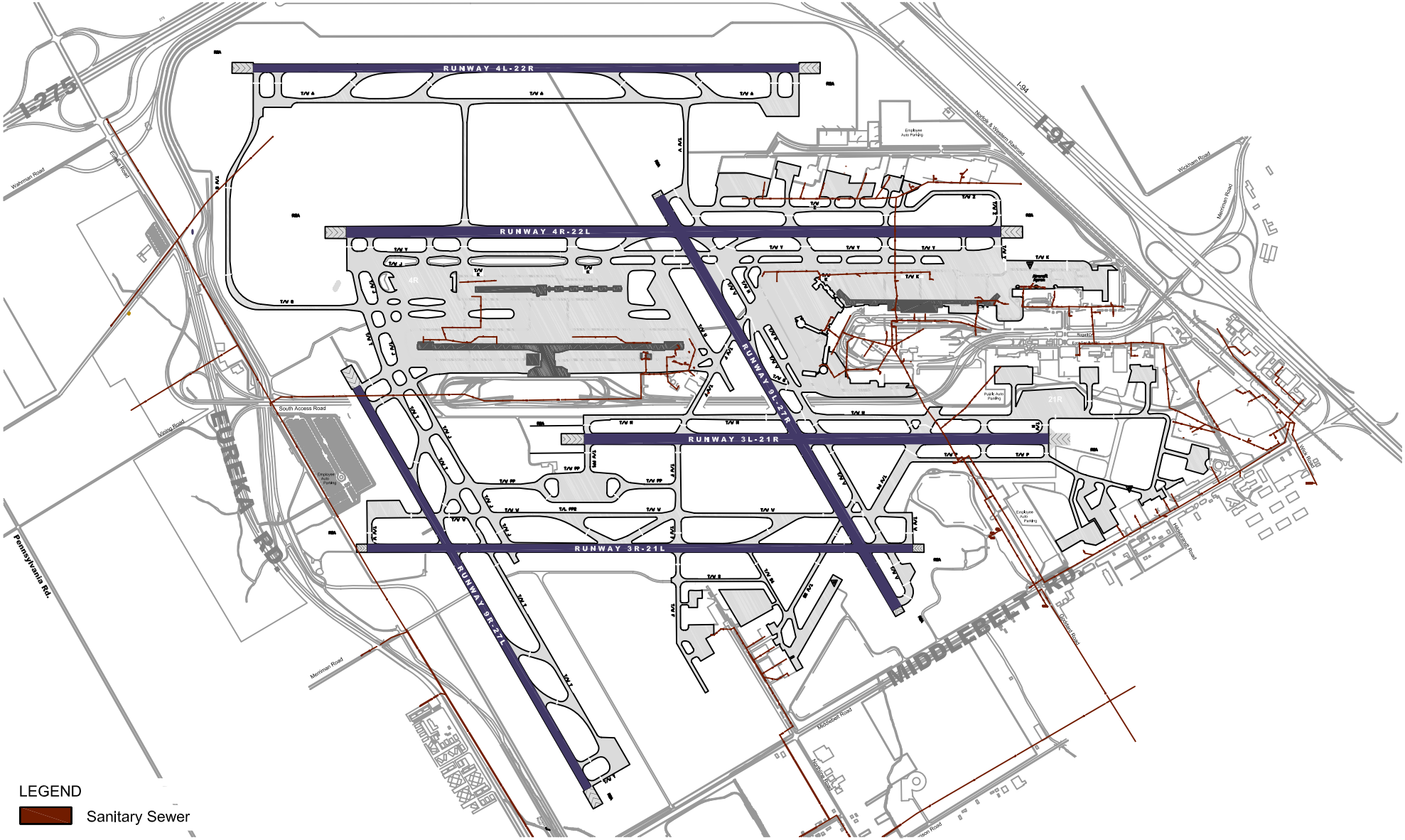
2.9.3 Water Main

Three main water subsystems, each serving separate areas of the Airport, have been identified and are shown in **Exhibit 2.9-3**.

The first subsystem serves the McNamara Terminal and the surrounding area, and consists of a 12-inch water main. The second subsystem serves the area east of the McNamara Terminal and consists of a 12-inch water main. The third subsystem serves the North Terminal and the surrounding area and consists of a 24-inch water main.

2.9.4 Telecommunications

Telephone service is provided by SBC/AT&T. The central office (CO) switch is located in Building 929 with utility service cables incoming underground from Eureka Road. There are two main routes for site distribution of the telephone services. The McNamara Terminal area services originate from Building 929 with routing underground and parallel to John Dingell Drive.



PREPARED BY: C & S ENGINEERS, INC.

Detroit Metropolitan
Wayne County Airport

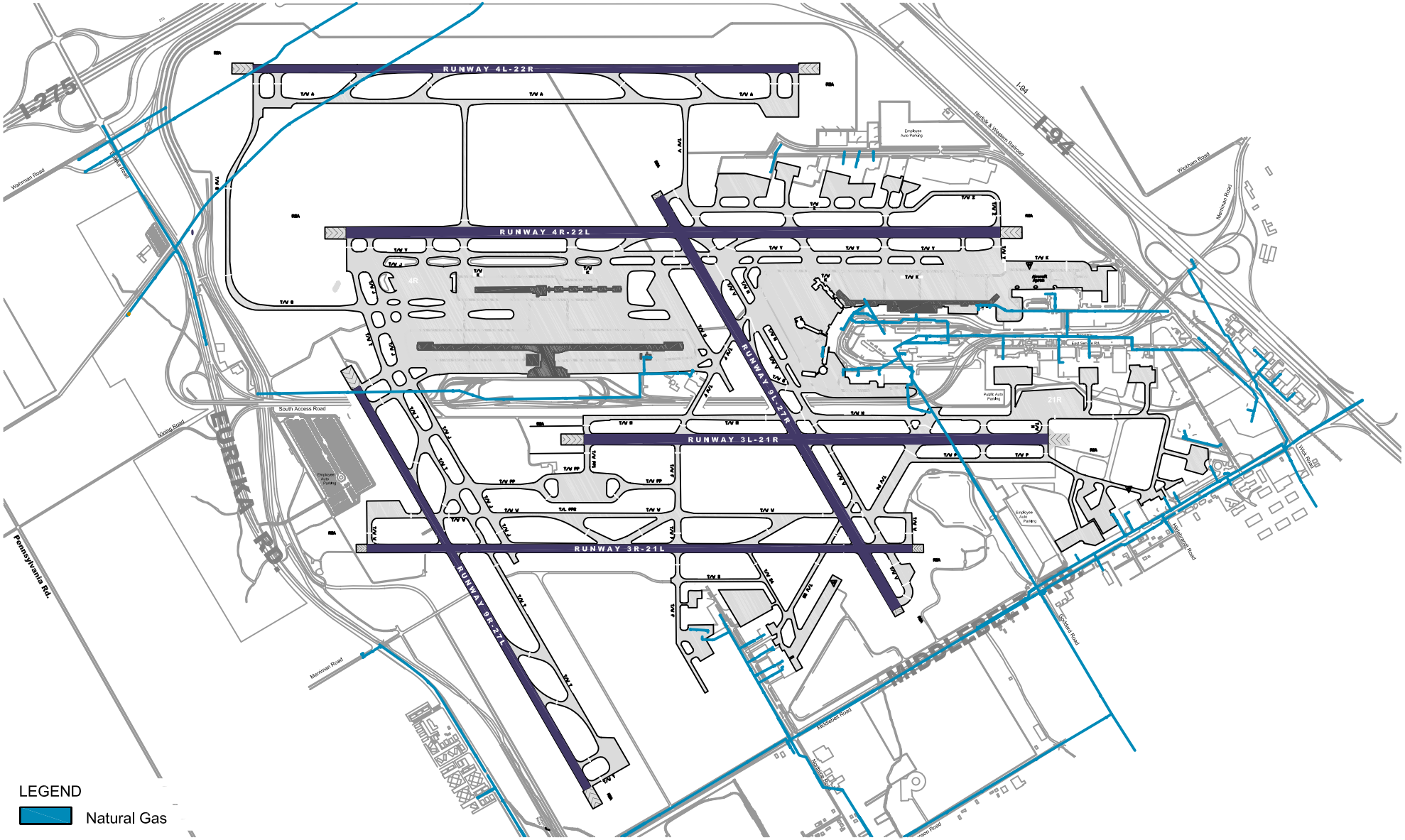
Sanitary Sewer Lines

DETROIT METRO • WILLOW RUN
WAYNE COUNTY AIRPORT AUTHORITY

0 2500' 5000'
GRAPHIC SCALE IN FEET

jda

EXHIBIT
2.9-1



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Detroit Metropolitan
Wayne County Airport

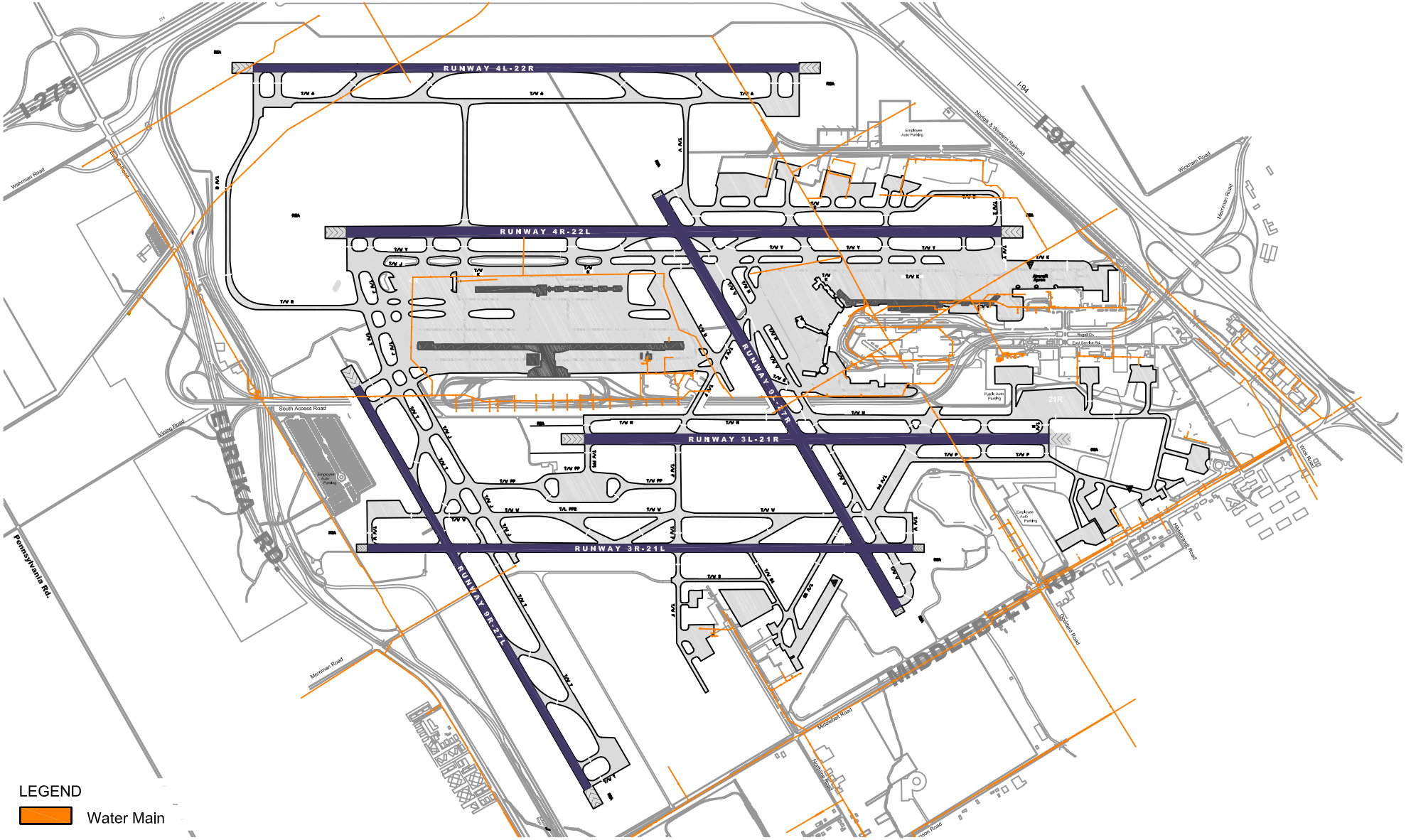
DETROIT METRO • WILLOW RUN
WAYNE COUNTY AIRPORT AUTHORITY

Natural Gas Lines

0 2500' 5000'
GRAPHIC SCALE IN FEET

jda

EXHIBIT
2.9-2



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Detroit Metropolitan
Wayne County Airport

DETROIT METRO • WILLOW RUN
WAYNE COUNTY AIRPORT AUTHORITY

Water Main

0 2500' 5000'
GRAPHIC SCALE IN FEET

jda

EXHIBIT
2.9-3

The North Terminal area services originate from Building 929 with routing underground and parallel to Runway 22L. This service demarks to Building 525 and from Building 525 continues routing underground to demark in Concourse A of the Smith Terminal Building. There are a number of additional telephone services provided by SBC/AT&T from perimeter locations throughout the northeast end of the Airport. The most notable is the underground distribution to maintenance buildings. These services demark to Building 703 with additional site distribution from Building 703 to Buildings 704 and 705. The premise (intra-building) telephone systems are maintained by the WCAA. **Exhibit 2.9-4** illustrates telecommunications utilities.

Internet services are provided by Sprint, LDMI Telecommunications, and IOC via three separate T1 line leases. The point of demark for the internet services is the "Computer Room" located within the IT offices on the lower level of Concourse A in the Smith Terminal. Additionally, high-speed broadband service is provided by Comcast to connect DTW to Willow Run Airport and to the Noise House located in northern Huron Township. The internet services, high-speed broadband service, and local-area-network (LAN) and maintenance are the responsibility of Department of Information Technology of the WCAA.

2.9.5 Electrical Systems

Electric service is supplied to the Airport by DTE Energy Company. The Airport has two distinct electric services; one incoming at 40 kilovolts (kV) which is reduced to 4.8kV at the Airport Power House (Building 611). An incoming line at 120kV reduced to down to 13.8kV at the McNamara Terminal power house. Both of these services are primary metered at 40kV and 120kV respectively. All power distribution to various locations and points of use is the responsibility of the WCAA. **Exhibit 2.9-5** shows the Airport Electrical systems.

The Power House Service receives service voltage at 40kV with three separate underground utility feeders incoming to Building 611 (Power House). The Airport service distribution equipment consists of high-voltage protective devices, three 10MVA step-down transformers (40kV to 4.8kV), and 4.8kV metal-clad switchgear line-ups. There are three 4.8kV distribution loops currently in service from the Power House Service. These originate from the 4.8kV metal-clad switchgear line-ups and distribute at 4.8kV to point-of-use 480V unit substations (main switches, step-down transformers, and low-voltage switchboards). Loop #1 serves the North Terminal. Loop #2 services the hangers and western support operations facilities. Loop #3 serves the northeast quadrant of the Airport primarily to the rent-a-car facilities on Lucas Drive.

The power house receives service voltage at 120kV with two separate underground utility feeders incoming to Building 821 (Central Power Plant) from the south end of the Airport routing parallel to Middlebelt Road. The Airport service distribution equipment consists of high-voltage protective devices, two 37.5MVA step-down transformers (120kV to 13.8kV), and 13.8kV metal-clad switchgear line-up with a bus tie capability.

There are 16 13.8kV radial feeders from the 13.8kV metal-clad switchgear line to point-of-use 480V unit substations. These provide services to the areas within and around the McNamara Terminal and Concourses A, B and C. Additionally, there are two 13.8kV radial feeders to two 500kVA step-down transformers (13.8kV to 4.16kV) for services to the HVAC chillers.

2.9.6 Stormwater Detention Ponds and Wastewater Treatment

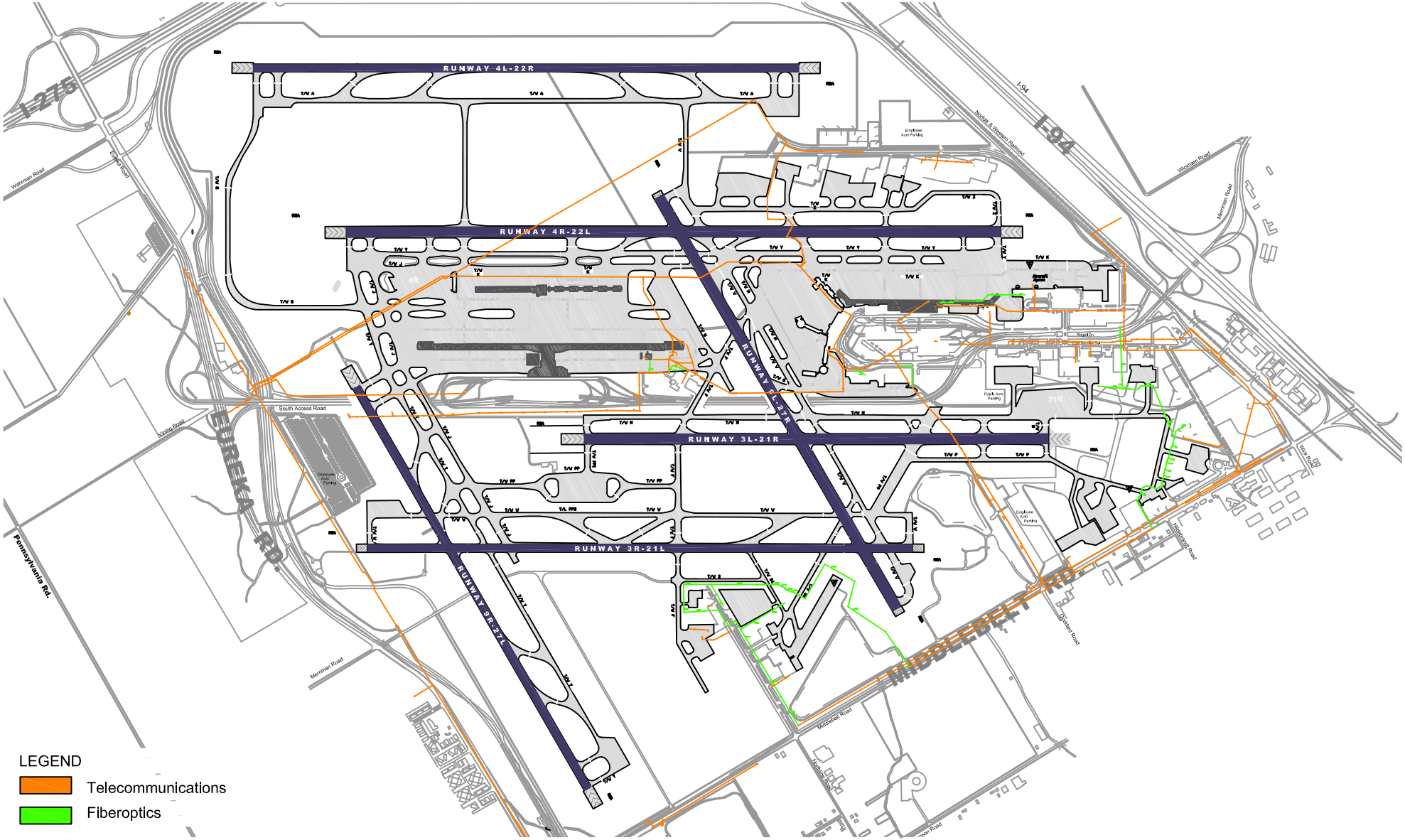
There are three stormwater detention ponds on the Airport.

- Stormwater Storage Pond #6 is located east of Middlebelt Road and south of Northline Road.
- Stormwater Storage Pond #3 East is located northeast of the threshold for Runway 21L.
- Stormwater Storage Pond #4 is located at the northwest corner of Northline and Middlebelt Roads.

Once the level of glycol decreases to an acceptable level, it is conveyed to Pond 3W for storage and eventual discharge into the stormwater system. If the level remains too high, the glycol solution is pumped to the Downriver Wastewater Treatment Facility (DWTF) in Wyandotte, Michigan where it is cleaned per Environmental Protection Agency (EPA) regulations.

To address a capacity issue at the DWTF, the Airport conducted a study to determine available alternatives for the disposal of the spent aircraft deicing fluids. The study concluded that the spent aircraft deicing fluids should be conveyed to the Detroit Water and Sewerage Department (DWSD). As of 2005, the Airport is designing and constructing a sanitary sewer connection to the DWSD. In addition, the Airport recycles higher strength aircraft deicing fluids in an effort to reduce costs and the environmental impact from deicing operations.

Exhibit 2.9-6 illustrates the location of stormwater ponds and lines.



PREPARED BY: C & S ENGINEERS, INC.

Detroit Metropolitan
Wayne County Airport

Telecommunications

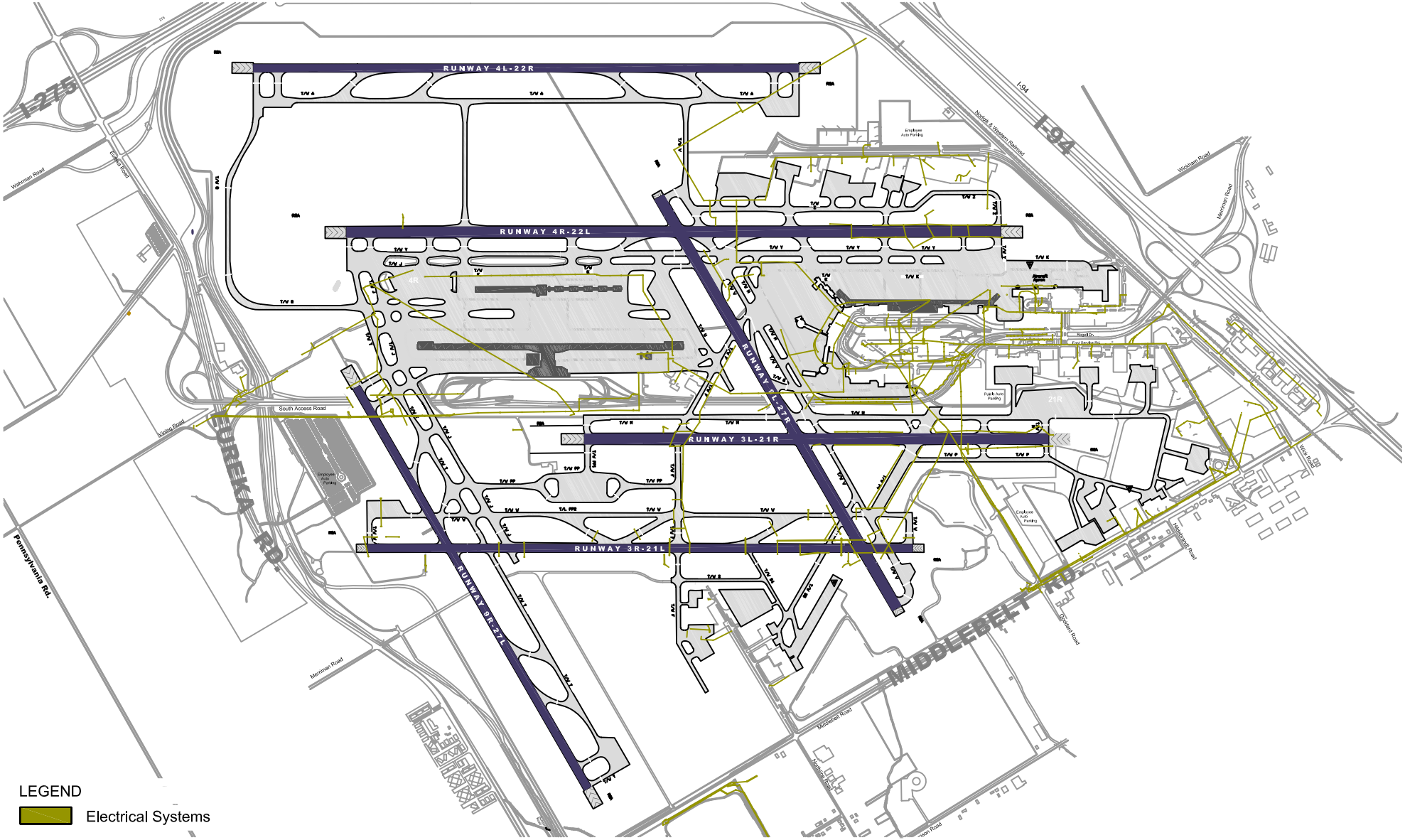
0 2500' 5000'

GRAPHIC SCALE IN FEET

DETROIT METRO • WILLOW RUN
WAYNE COUNTY AIRPORT AUTHORITY

jda

EXHIBIT
2.9-4



PREPARED BY: C & S ENGINEERS, INC.

Detroit Metropolitan
Wayne County Airport

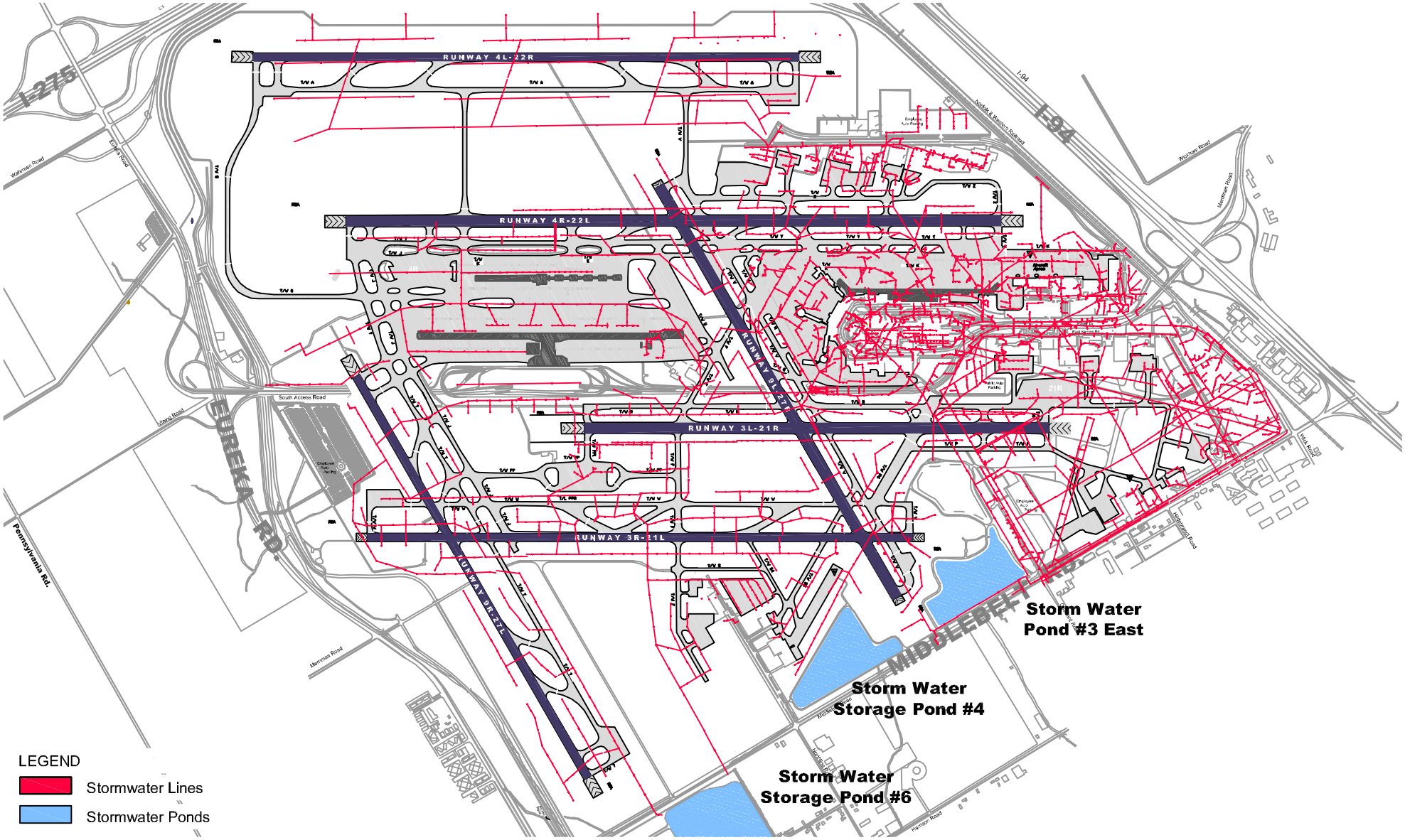
Electrical Systems

DETROIT METRO • WILLOW RUN
WAYNE COUNTY AIRPORT AUTHORITY

0 2500' 5000'
GRAPHIC SCALE IN FEET

jda

EXHIBIT
2.9-5



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Detroit Metropolitan
Wayne County Airport

DETROIT METRO • WILLOW RUN
WAYNE COUNTY AIRPORT AUTHORITY

Stormwater Lines and Ponds

0 2500' 5000'
GRAPHIC SCALE IN FEET

jda

EXHIBIT
2.9-6

2.10 Environmental Overview

Existing environmental conditions at and around DTW are documented to allow a master-planning level assessment of potential environmental and socioeconomic changes likely to result from implementation of the alternatives. This overview is not intended to provide environmental review in accordance with the National Environmental Policy Act (NEPA) and FAA Order 5050.4B, *NEPA Implementing Instructions for Airport Actions*. Prior to the implementation of any improvements described in the Master Plan, the requirements of NEPA and FAA Order 5050.4B will need to be met.

This overview focuses on those environmental resources and conditions considered most likely to be potentially impacted by development alternatives. This includes air quality, noise, land use, geological resources, water resources, biological resources, cultural resources, socioeconomics, and hazardous materials and waste, light emissions, and solid waste.

2.10.1 Air Quality

This section discusses existing air quality in Wayne County, Michigan, where the Airport is located. It addresses air quality standards and describes current air quality in the county.

2.10.1.1 Local Air Quality

According to the USEPA Green Book, Wayne County, Michigan currently meets (i.e. is in an attainment status for) National Ambient Air Quality Standards (NAAQS) for Ozone, Carbon monoxide, Nitrogen dioxide, Sulfur dioxide, and Lead. It should be noted that the area was designated marginal non-attainment for the 8-hour Ozone standard in both 2004 and 2005. Measurements are made for two size classes of particulate matter, 10 microns (PM10) and 2.5 microns (PM2.5). PM10 levels were classified in moderate non-attainment from 1992-1996, but have since dropped and are now in attainment. However, PM2.5 was in non-attainment in 2005[7].

2.10.2 Noise

Noise is considered to be unwanted sound that interferes with normal activities or otherwise diminishes the quality of the environment. It may be intermittent or continuous, steady or impulsive. It may be stationary or transient. Stationary sources are normally related to specific land uses, (e.g., housing tracts or industrial plants). Transient noise sources move through the environment, either along relatively established paths (e.g., highways, railroads, and aircraft flight tracks around airports), or randomly. There is wide diversity in responses to noise that not only vary according to the type of noise and the characteristics of the sound source, but also according to the sensitivity and expectations of the receptor, the time of day, and the distance between the noise source (e.g., an aircraft) and the receptor (e.g., a person or animal). This document considers noise from aircraft operating around DTW. For purposes of noise exposure analysis at airports, the primary operational modes of aircraft are departures (takeoffs) and arrivals (landings).

[7] USEPA Greenbook, http://www.epa.gov/air/oaqps/greenbk, 8/11/06.

It should be noted that ambient background noise is not considered in the noise summary presented below. There are two reasons for this. First, ambient background noise, even in wilderness areas, varies widely, depending on location and other conditions. Therefore, assigning a value to background noise would be arbitrary. Secondly, in calculating noise levels, louder sounds dominate the calculations, and overall, aircraft and other transportation-related noise would be expected to be the dominant noise sources in the region.

2.10.2.1 Maximum Sound Level (L_{max})

The L_{max} metric defines peak noise levels. L_{max} is the highest sound level measured during a single noise event (e.g., an aircraft over flight) and is the sound actually heard by a person on the ground. For an observer, the noise level starts at the ambient noise level, rises up to the maximum level as the aircraft flies closest to the observer, and returns to the ambient level as the aircraft recedes into the distance. Maximum sound level is important in judging a noise event's interference with conversation, sleep, or other common activities. A 2004 study conducted on noise level surrounding the Airport reports L_{max} values ranging from 77 to 96 dBA. Aircraft noise is typically the cause of L_{max}[8]. *A-weighted decibels, abbreviated dBA are an expression of the relative loudness of sounds in air as perceived by the human ear. In the A-weighted system, the decibel values of sounds at low frequencies are reduced compared with unweighted decibels, in which no correction is made for audio frequency. This correction is made because the human ear is less sensitive at low audio frequencies, especially below 1000 Hz, than at high audio frequencies.*

2.10.2.2 Sound Exposure Level (SEL)

L_{max} alone may not represent how intrusive an aircraft noise event is because it does not consider the length of time that the noise persists. The SEL metric combines intensity and duration into a single measure. It is important to note, however, that SEL does not directly represent the sound level heard at any given time, but rather provides a measure of the total exposure of the entire event. Its value represents all of the acoustic energy associated with the event, as though it was present for one second. Therefore, for sound events that last longer than one second, the SEL value would be higher than the L_{max} value. The SEL value is important because it is the value used to calculate other time-averaged noise metrics. The maximum SEL reported in the FAR Part 150 Noise Compatibility Study is 103.9[9].

2.10.2.3 Day-Night Average Sound Level (DNL)

This metric sums the individual noise events and averages the resulting level over a specified length of time. Thus, it is a composite metric which considers the maximum noise levels, the duration of the events, the number of events that occur, and the time of day during which they occur. This metric adds 10 dB to those events that occur between 10 p.m. and 7 a.m. to account for the increased intrusiveness of noise events that occur at night when ambient noise levels are normally lower than during the day time. This cumulative metric does not represent the variations in the sound level heard. Nevertheless, it does provide a basis for comparing environmental noise exposures when

[8] FAR Part 150 Noise Compatibility Study, July 2005, http://dtw.airportnetwork.com, 8/8/06.
[9] FAR Part 150 Noise Compatibility Study, July 2005, http://dtw.airportnetwork.com, 8/8/06

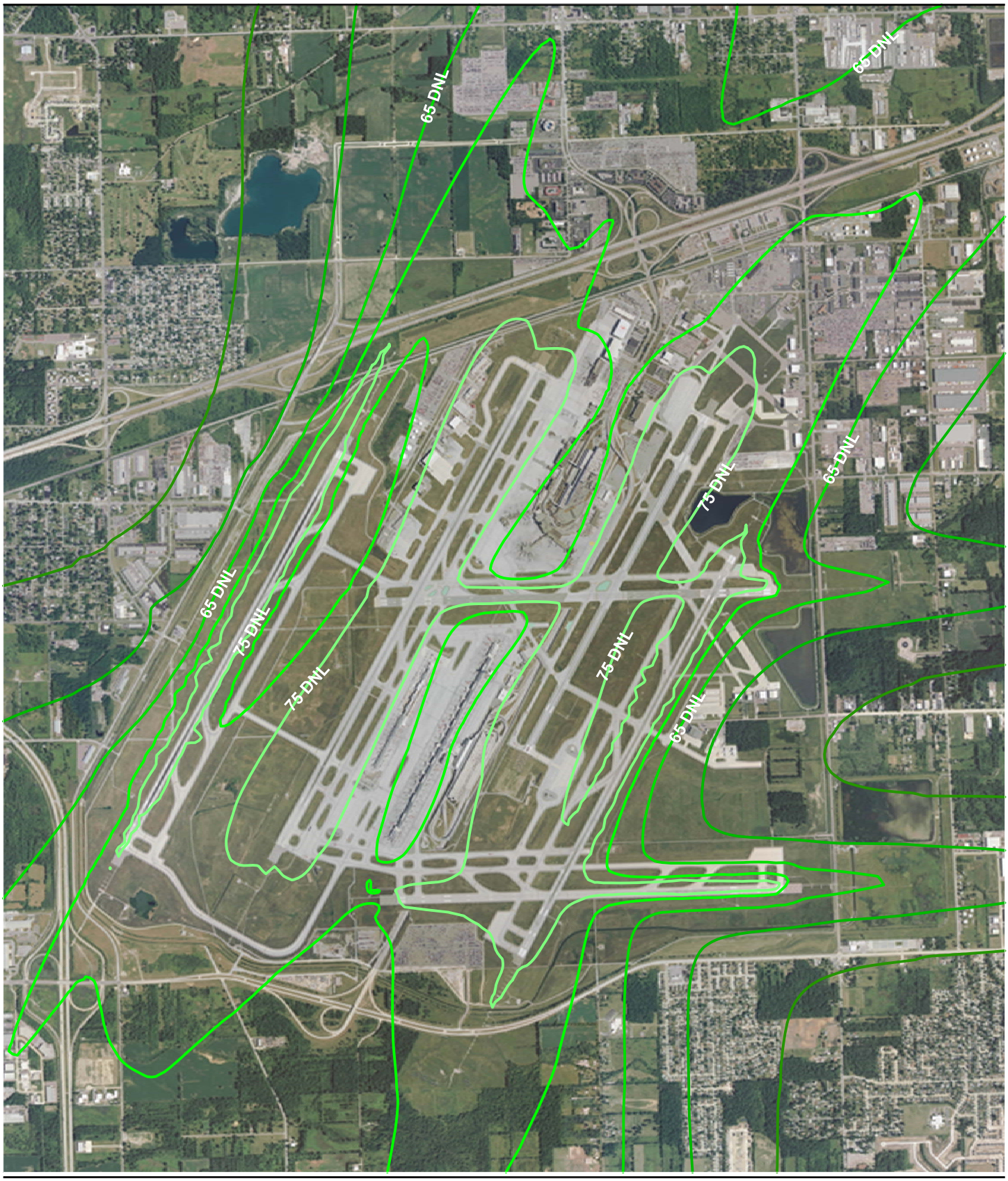
there are multiple noise events to be considered. The FAR 150 Noise Compatibility Study reported DNL levels of 48 to 65 DNL.

2.10.2.4 Noise Contours

Noise contours are used to delineate areas in which noise levels are at or above a specific DNL. The area within the 65 DNL and higher contours are areas where noise exposure may be considered unacceptable by occupants and where land use compatibility controls may be necessary. In 2004, the 65 DNL contour encompassed 9,477 acres and the 75 DNL contour enclosed 1,572 acres as shown on **Exhibit 2.10-1**. The projected 65 DNL and 75 DNL contours for 2011 include 8,702 acres and 1,541 acres respectively.

2.10.2.5 Noise Sensitive Areas

The City of Romulus has several schools within two miles of the Airport, including six elementary schools, a middle school, and a high school. One of the elementary schools, Merriman Elementary, is located directly south of the Airport and is situated within the 65 DNL noise contour. This school has already been sound insulated as part of the Airport's Noise Mitigation Program. There are no hospitals located within five miles of DTW. A review of online telephone directories indicates that there are approximately 50 churches within 3 miles of the Airport.



Detroit Metropolitan
Wayne County Airport

DETROIT METRO • WILLOW RUN
WAYNE COUNTY AIRPORT AUTHORITY

Existing Noise Contours

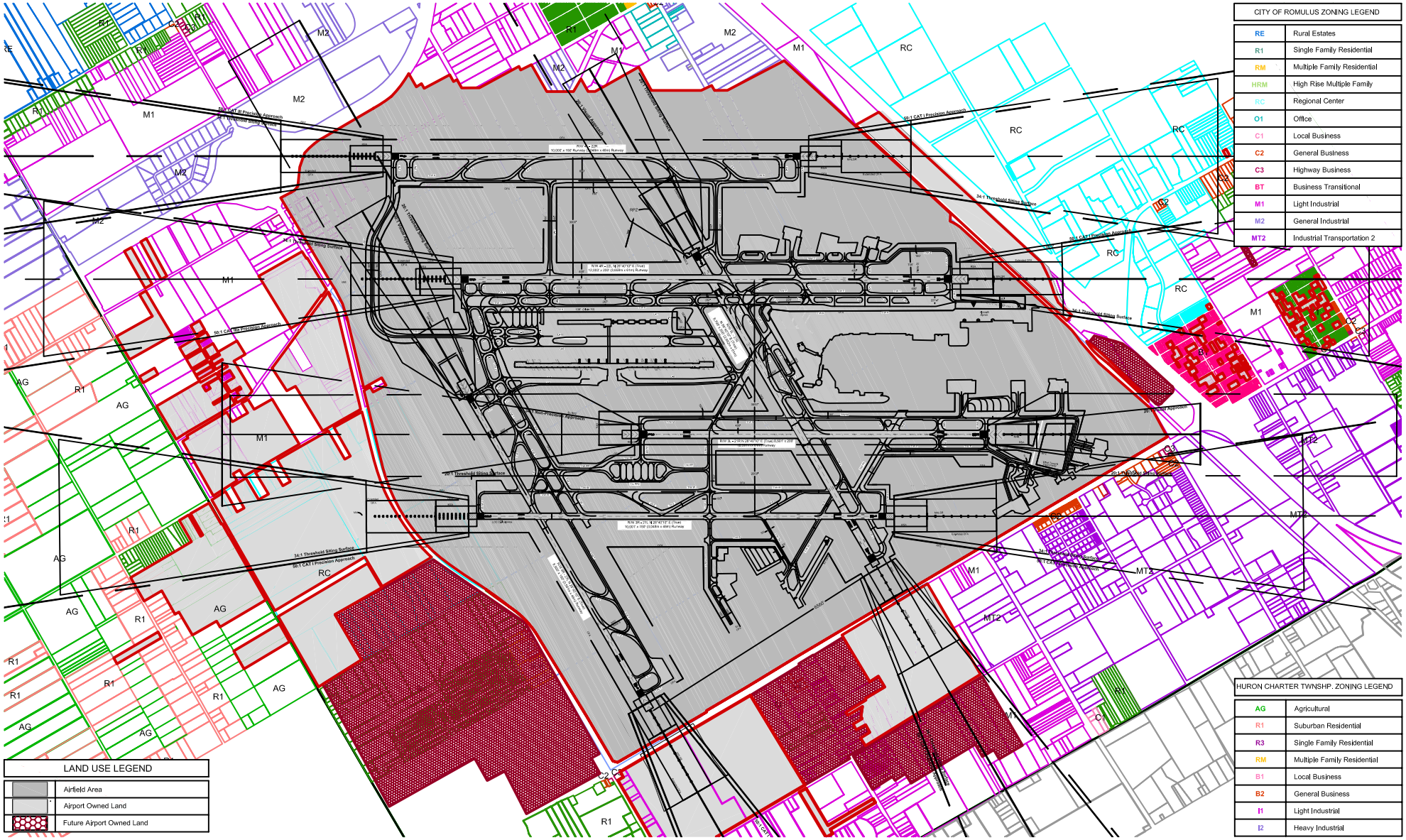
0 3000' 6000'
GRAPHIC SCALE IN FEET

jda

EXHIBIT
2.10-1

2.10.3 Land Use

Land use classifications reflect either natural or human activities occurring at a given location. Land use resulting from natural activities includes rangeland and other open or undeveloped areas. Land use resulting from human activities includes residential, commercial, industrial, airfield, recreational, and other developed areas. Management plans, policies, and regulations dictate the type and extent of land use allowable in specific areas and protection specially designated for environmentally sensitive areas. **Exhibit 2.10-2** shows the existing Land Use at DTW.



Detroit Metropolitan
Wayne County Airport

DETROIT METRO • WILLOW RUN
WAYNE COUNTY AIRPORT AUTHORITY

Existing Land Use

0 2500' 5000'
GRAPHIC SCALE IN FEET

jda

EXHIBIT
2-10.2

2.10.4 Geology

Geologic resources of an area typically consist of surface and subsurface materials and their inherent properties. The term "soils" refers to unconsolidated materials formed from the underlying bedrock or other parent material. Soils play a critical role in both the natural and human environment. Soil drainage, texture, strength, shrink/swell potential, and erodibility all determine the suitability of the ground to support manmade structures and facilities. Topography refers to an area's surface features including its vertical relief. These resources may have scientific, historical, economic, and recreational value.

2.10.4.1 Site geology

The land surrounding the Airport slopes upward from 623 MSL in the southeast to 639 MSL on the west. There are large areas of cut and fill in the central and eastern sections of the Airport, and an additional area of made land in the northeast corner. Made land consists of buried trash, garbage, and rubble. Because each area of made land is unique, on-site analysis of these areas should be conducted prior to any development in these areas. The native soil includes Blount, Corunna, Metea, Pewamo, Selfridge, and Tedrow soils, and ranges from loamy sand to loam, with slopes of 0 to 6 percent[10].

2.10.4.2 Prime and Unique Farmland

With the exception of the fill areas noted above, all of the soils at the Airport are listed in the Wayne County Soil survey as Prime and Unique Farmland. The Tedrow soil type is considered of local importance. The Blount, Corunna, and Pewamo, series are prime farmland if drained, while the Metea and Selfridge soil types are all prime farmland.

2.10.5 Water Resources

Water resources include surface water and groundwater quantity and quality. Surface water resources include lakes, rivers, and streams and are important for a variety of reasons, including economic, ecological, recreational, and human health. Groundwater includes the subsurface hydrologic resources of the physical environment and is an essential resource. Groundwater properties are often described in terms of depth to aquifer or water table, water quality, and surrounding geologic composition. Other issues relevant to water resources include the downstream water and watershed areas affected by runoff characteristics and flood hazards associated with 100-year floodplains. Floodplains are regulated by Executive Order 11988, Floodplain Management, which define them as "the lowland and relatively flat areas adjoining inland and coastal waters including flood-prone areas of offshore islands, including at a minimum, the area subject to a 1 percent or greater chance of flooding in any given year" (that area inundated by a 100-year flood). Floodplain functions include natural attenuation of floods, water quality maintenance, groundwater recharge, as well as habitat for many plant and animal species.

[10] Wayne County Soil Survey, 2006

2.10.5.1 Surface Water

DTW is located within the Ecorse Creek watershed. County storm water drains run along the western and southern borders of the DTW property, and the on-site storm water detention ponds discharge to a county storm water drain. Several additional county drains and tributaries exist in the vicinity of the Airport.

2.10.5.2 Coastal Areas

DTW and adjacent lands are not located in a coastal area.

2.10.5.3 Wild and Scenic Rivers

No wild and scenic rivers are found on or near DTW.

2.10.5.4 Groundwater

The water table throughout the area is less than 10 feet below the surface[11].

2.10.5.5 Storm Water

DTW has three storm water detention ponds (Ponds 3E, 3W, and 4), all of which are located in the central eastern section of the Airport. Ponds 3E and 4 are connected to each other via a culvert pipe, and discharge to the east through a county storm sewer drain. Pond 3W occasionally receives low concentrations of spent deicer. When un-impacted, this pond also discharges to a county storm sewer drain. When deicing fluid is present, the storm water held in 3W is routed with the wastewater to the Wyandotte wastewater treatment plant[12].

2.10.5.6 Potable Water supply

DTW receives its potable water from the municipal water supply.

2.10.6 Biological Resources

Biological resources consist of native or naturalized plants and animals, and their habitats. These resources provide aesthetic, recreational, and socioeconomic benefits to society. This section focuses on plant and animal species that are important to the function of the ecosystem, are of special societal importance, or are protected under federal or state law or statute. For purposes of this assessment, sensitive biological resources are defined as those plants and animal species listed by USFWS or the Michigan Department of Natural Resources (MDNR) as species of concern. Three categories of protection status are included in this section including (1) federally listed threatened and endangered

[11] CGI, 2006, http://www.mcgi.state.mi.us/mgdl/?rel=cext&action=Wayne, 8/8/06, data layers opened and interpreted using ArcMap 9.1®
[12] Wagoner, 2006, Personal Conversation, 8/9/06.

species, (2) state listed threatened and endangered species, and (3) other sensitive species (i.e., federal candidate, proposed threatened, and proposed endangered species).

2.10.6.1 Threatened and Endangered Species

According to the Michigan Natural Features Inventory (MNFI), the Airport and nearby areas support two state threatened plant species, three-awned grass (*Aristida longespica*) and short-fruited rush (*Juncus brachycarpus*)[13]. A Protected Species Area is managed on-site for these plants. This area is mowed annually and burned on a 2-year cycle to inhibit successional changes and encourage the growth of the threatened grasses[14]. In addition, three species of special concern, seedbox (*Ludwigia alterniflora*), conobea (*Leucospora multifida*) and the grasshopper sparrow (*Ammodramus savannatum*) occur either at DTW or in the vicinity. MNFI reports no federally listed species in the area. However, an EIS completed at DTW in September 1992 reports sightings of the Federally Endangered Peregrine Falcon and Upland Sandpiper during migration seasons. The report indicates that the birds' migratory patterns did not appear to be disrupted by the level of activity present at the time of the study[15].

2.10.6.2 Unique Habitats

The Michigan Natural Features Inventory (MNFI) reported no unique habitats at or adjacent to DTW.

2.10.6.3 Floodplains

DTW and adjacent lands are not located within a 100-year floodplain[16].

2.10.6.4 Wetlands

The National Wetlands Inventory has identified several small wetlands on and near the Airport property. No current comprehensive delineation of the wetlands at DTW exists. Several site specific delineations, wetland permits, and mitigations have been documented. WCAA is currently attempting to compile and update information pertaining to its wetlands and wetland impacts[17]

2.10.6.5 Vegetation

The DTW property consists primarily of mowed lawn and manicured grounds with the exception of the Protected Species Area. Much of the surrounding area is developed and the vegetation is landscaped. A large wooded area is located south of the Airport and south of Eureka Road. Small, scattered woodlots, upland shrub areas, and grassland exist throughout the area. In addition, there are emergent, forested, and scrub-shrub wetlands, primarily associated with the storm water detention ponds and county drains in the area.

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[13] Michigan Natural Features Inventory, 2006, data request query, 8/4/06.
[14] Wagoner, 2006, Personal Conversation, 8/9/06.
[15] Final Environmental Impact Statement, Air Traffic Control Noise Abatement Procedures, Detroit Metropolitan Wayne County Airport, Romulus, Michigan, September, 1992.
[16] CGI, 2006, http://www.mcgi.state.mi.us/mgdl/?rel=cext&action=Wayne, 8/8/06, data layers opened and interpreted using ArcMap 9.1®.
[17] USEPA Greenbook, http://www.epa.gov/air/oaqps/greenbk, 8/11/06.

2.10.6.6 Wildlife

In order to minimize waterfowl use of the storm water detention ponds, the ponds are covered with a grid made of plastic thread. The grid can be seen by the birds, and apparently makes them feel uncomfortable landing in the ponds. The squares of the grid are large enough to allow any birds that do land on the ponds to take off again. This deterrent method minimizes bird use of the Airport area, thereby reducing bird-aircraft strikes without the need to euthanize the animals[18]. Other methods used to minimize bird use of the Airport include maintaining water levels that are least attractive to birds, cutting grass to a length that deters the widest number of bird species, and reducing food sources. Raport trapping and nest destruction are also implemented to control bird populations[19].

A ten-foot tall fence is used to keep deer off of the Airport property. Several non-lethal methods are used to disperse wildlife at DTW. These include pyrotechnics, vehicle horns and lights, and propane cannons. Lethal measures are employed as reinforcement for the non-lethal measures. Bird and rodent carcasses are buried in pits near the east end of Taxiway F. Deer are field-dressed and the meat donated for distribution to approved charities.[20]

2.10.7 Cultural Resources

Cultural resources are defined as prehistoric or historic districts, sites, buildings, structures, or objects considered important to a culture, subculture, or community for scientific, traditional, religious, or other purposes. They include archaeological resources, historic architectural or engineering resources, and traditional resources.

Cultural resources that are eligible for listing in the National Register of Historic Places (NRHP) are called historic properties. Historic properties are evaluated for potential adverse impacts from a proposed action. Architectural/engineering resources generally must be more than 50 years old to be considered for inclusion in the NRHP; however, more recent structures, such as those dating from the Cold War era, may warrant protection if they manifest "exceptional significance" or the potential to gain significance in the future. In addition, some cultural resources, such as American Indian sacred sites or traditional resources may not be historic properties but they are also evaluated under NEPA for potential adverse effects from an action.

The Merrill-Morris House, located near the intersection of Eureka Road and Huron River drive, approximately two miles from the Airport is the only historic site in the vicinity of the Airport listed by the State Historic Preservation Office (SHPO)[21]. In addition, Building 348 is one of three buildings recognized as the first structures built at DTW. This steel and masonry structure was the first official Airway Station (Administration Building) at Wayne County Airport. As air travel grew more and more prominent, Building 348 was needed to relieve the growing demand for a new passenger terminal. Designed by Mr. David Gorman and completed in 1939, Building 348 served as the Administration Building and waiting terminal for air travel passengers. Building 348 is significant in the development of aviation in Michigan and a part of United States civil aviation history. Presently, Building 348 is used as the Airport's official Executive Terminal, which serves

[18] Wagoner, 2006, Personal Conversation, 8/9/06.
[19] Detroit Metropolitan Airport Wildlife Hazard Management Plan, 10/22/2004 (revised 11/15/2006).
[20] Wagoner, 2006, Personal Conversation, 8/9/06.
[21] SHPO, http://www.mcgi.state.mi.us/hso/, 8/18/06.

private and corporate flight activity. The building is located in the southwest quadrant of DTW, situated on its original paved access circle. Building 348 is a simple two-storied rectangular building with brickwork construction. This building is a representation of post World War II architecture. Its structure is a simple geometric volume, a rectangle with a flat roof. On the façade of the building, there remains the original aluminum heading…"Executive Terminal". On each side of entrance there are massive stone structures, each depicting a frieze. The frieze immediately to the left shows, "Wilbur-Orville Wright 1903", indicating the buildings' origins during the uprising of aviation in the early 1900's. To the right, the carved stone frieze depicts a picture of an airplane and has "1939" immediately below it, stating the year the Executive Terminal was erected.

The WCAA, concurrent with this master planning effort, is preparing a Cultural Resource Management Plan. The purpose of a Cultural Resource Management Plan (CRMP) aligns with the legal requirement and intention of the National Historic Preservation Act of 1966, as it specifies the manner in which the sponsor will protect and preserve identifiable cultural and historic properties and prevent resources from human and natural destruction. The WCAA, in collaboration with the FAA, and in consultation with the SHPO, is creating the plan for the historical resources located on Airport Property and for the Airport to maintain in its annual budget provision for the ongoing maintenance of protection of historic resources located on Airport property.

2.10.8 Socioeconomic

Socioeconomic resources are defined as the basic attributes associated with the human environment, particularly population and economic activity. Population is described by the change in magnitude, characteristics, and distribution of people. Economic activity is typically composed of employment distribution, personal income, and business growth. Any impact on these two fundamental socioeconomic indicators can have ramifications for secondary considerations, like housing availability and public service provision.

2.10.8.1 Demographics

In 2005, the estimated population of Wayne County, Michigan was 1,998,217. The 1999 per capita income was $20,058 and the 2003 median household income was $37,742[22]. The median household income in Romulus, Michigan in 2000 ranged from $50,000 to $74, 999. DTW, along with General Motors and the Lear Corporation, is listed as one of the major industries in Romulus, Michigan[23].

Table 2.10-1 displays the demographics by race for Wayne County.

[22] U.S. Census, http://quickfacts.census.gov/qfd/states/26/26163.html, 8/8/06.
[23] City of Romulus, http://www.romulusgov.com/index.asp?site=24&item=1362, 8/8/06.

Table 2.10-1 Profile of Demographic Characteristics

Geographic Area	Race: One Race: White	Black or African American	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Other Race	Race: Two or More Races
Wayne County	1,065,607 (53.0%)	868,992 (43.2%)	7,627 (0.4%)	35,141 (1.7%)	506 (0.0%)	32,020 (1.1%)	51,269 (2.6%)

Source: U.S. Census Bureau (2000)

2.10.8.2 Environmental Justice

Executive Order (EO) 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, February 1994) requires each federal agency to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high human health or environmental effects of its programs, policies, and activities on minority populations and low income populations."

Minority population can be described as being composed of American Indian or Alaskan Native, Asian or Pacific Islander, Black, not of Hispanic origin, or Hispanic, and exceeding 50 percent of the population in an area or the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population[24].

Each year the U.S. Census Bureau defines the national poverty thresholds, which are measured in terms of household income dependent upon the number of persons within the household. Individuals falling below the poverty threshold are considered low-income individuals. Census tracts where at least 20 percent of the residents are below the poverty threshold are defined as poverty areas. When the percentage of residents considered poor is greater than 40 percent, the census tract is considered an extreme poverty area[25]. **Table 2.10-2** depicts the Wayne County population that is below poverty level.

Table 2.10-2 Population Below Poverty Level

Geographic Area	Percent
Wayne County	16.5 %
Michigan	11 %
United States	12.5 %

Source: U.S. Census Bureau (2000)

[24] Council on Environmental Quality (CEQ). 1997. Environmental Justice Guidance Under the National Environmental Policy Act.
[25] U.S. Census Bureau. June 1995. "Statistical Brief: Poverty Areas." (Revised: 2000).

2.10.9 Hazardous Materials and Waste

The terms "hazardous materials" and "hazardous waste" refer to substances defined as hazardous by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA). In general, hazardous materials include substances that, because of their quantity, concentration, or physical, chemical, or infectious characteristics, may present substantial danger to public health or the environment when released into the environment. Hazardous materials and waste that are regulated under RCRA are defined as any solid, liquid, contained gaseous, or semisolid waste, or any combination of wastes that either exhibit one or more of the hazardous characteristics of ignitability, corrosivity, toxicity, or reactivity, or are listed as a hazardous waste under 40 CFR Part 261. Petroleum products include petroleum-based fuels, oils, and their wastes.

Issues associated with hazardous material and waste typically center around waste streams, underground storage tanks (USTs), aboveground storage tanks, and the storage, transport, use, and disposal of pesticides, fuels, lubricants, and other industrial substances. When such materials are improperly used in any way, they can threaten the health and wellbeing of wildlife species, habitats, and soil and water systems, as well as humans. WCAA has prepared a Pollution Incident Prevention Plan (PIPP) to address potential issues relating to hazardous materials.

2.10.10 Light Emissions

A 1989 environmental assessment stated that there were minimal light emission effects on residential areas surrounding the Airport and that no complaints concerning light pollution had been received[26]. More current information pertaining to light emissions was not available for this overview.

2.10.11 Solid Waste

Individual airlines hold contracts for waste removal. WCAA contracts Waste Management for removal of solid waste generated by Airport operations. Presently, an Airport-wide recycling program does not exist[27].

[26] Final Environmental Impact Statement, Air Traffic Control Noise Abatement Procedures, Detroit Metropolitan Wayne County Airport, Romulus, Michigan, September, 1992
[27] Wagoner, 2006, Personal Conversation, 8/9/06