

## 3.9 AIRPORT SUPPORT FACILITIES

This section details additional airfield facilities that may be required over the next 20 years.

### 3.9.1 Airport Rescue and Fire Fighting (ARFF) Station

GEG is certified under 14 CFR Part 139; therefore, it must comply with ARFF equipment, staff, and operational requirements that were developed by the FAA and the International Civil Aviation Organization Rescue and Fire Fighting Panel. According to Part 139, ARFF equipment and staff requirements are based upon the length of the largest air carrier aircraft that serves an airport with an average of five or more daily departures. **Table 3-16** presents the ARFF Index, aircraft length criteria, and representative air carrier aircraft. In 2013, GEG maintained an ARFF Index B classification.

ARFF Index	Aircraft Length Criteria	Representative Aircraft
A	Less than 90 feet	CRJ-200
B	90 feet but less than 126 feet	B-737, A-320, ERJ-145
C	126 feet but less than 159 feet	B-757, MD-80, A-310
D	159 feet but less than 200 feet	B-767, DC-10
E	More than 200 feet	B-747, A-380

ARFF operational requirements specify that at least one ARFF vehicle at its assigned post be able to reach the midpoint of the farthest runway serving air carrier aircraft within three minutes from the time of alarm to the time of initial fire extinguishing agent application. All other required vehicles must reach this same point within four minutes of the time of alarm. The existing ARFF facility, located northeast of the airline terminal, meets these operational requirements. However, building and system maintenance are increasing as the facility has reaches its economic life. A new facility is recommended that can be expanded based on needs at GEG and new regulatory requirements in the future, and can provide emergency response to Runway 3L/21R.

As shown in **Figure 3-10**, three sites were evaluated for a new ARFF facility. The primary screening criteria was response time. To estimate response time, critical points were established at the runway mid-point of both the existing and future runways. Response times were estimated using a direct paved route between the proposed site and the critical point and applying an average speed of 35 miles per hour. Additional criteria included a location closer to the terminal facilities and not restricting the development of other aviation facilities. The results of the analysis are described below.

- **Site A, Expand Existing Site**—Site A is located near the terminal and meets the response requirements for the existing airfield, but not the new runway. There is no significant impact to planned development, although the Airport wishes to locate a maintenance center in that location. Expanding the existing site to maintain response capability would be difficult due to existing constraints.

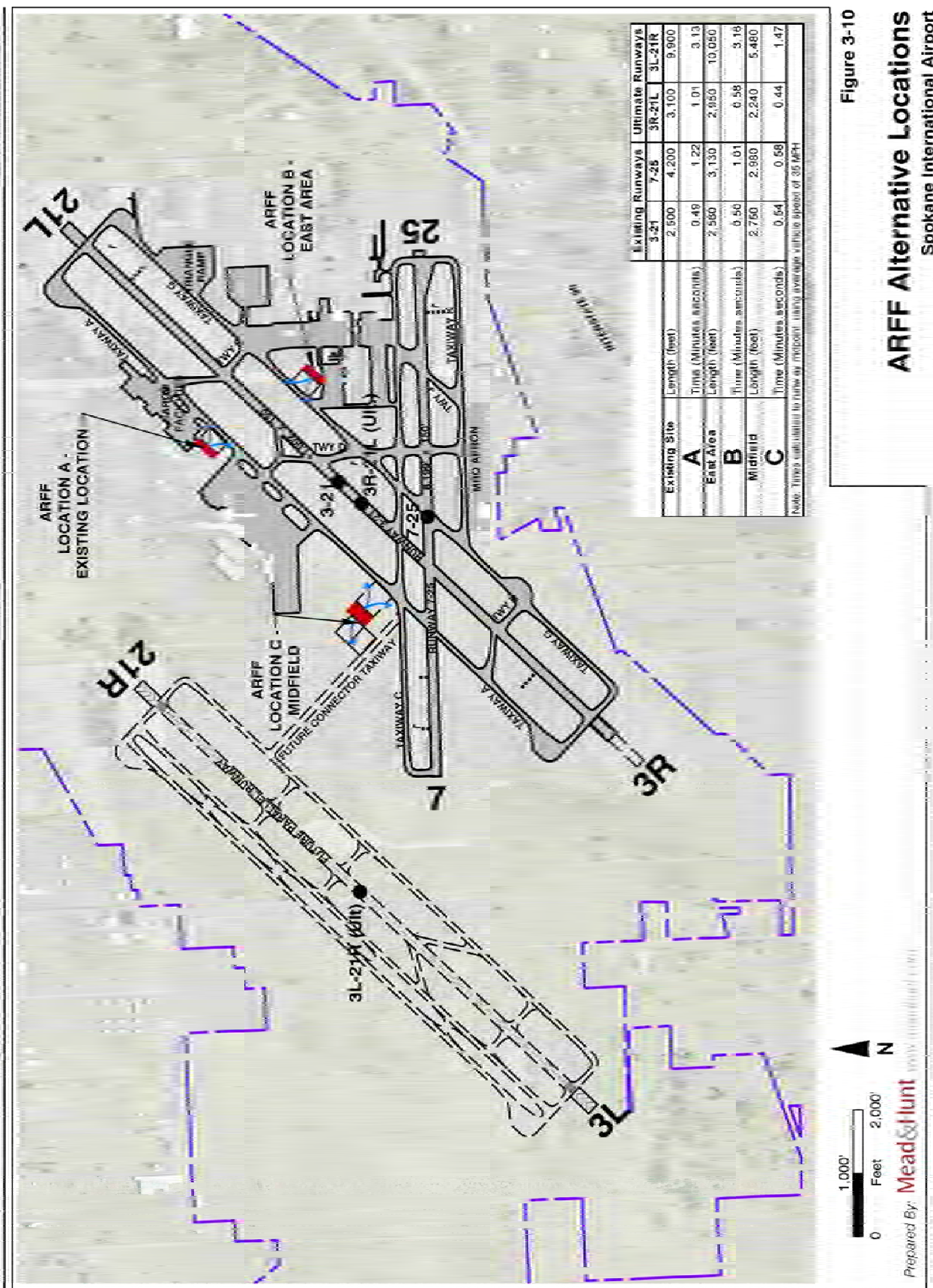


Figure 3-10

- **Site B, East Area**—Site B provides satisfactory response to existing airfield, but not the future runway. Site B is located at an area that is largely restricted from large hangar development due to controller line of sight concerns. Site B is separated from the terminal building by Runway 3/21, which is less desirable for responding to emergencies at the terminal building.
- **Site C, Midfield (Recommended)**—Provides best response time to new runway. Site C is located in close proximity to the terminal building and also offers adequate response to the existing runways. The area is also located within the midfield-area that will be reserved for the expansion of terminal facilities. The north and south side of the facility would be equipped with doors for quicker response times in each direction.

### 3.9.2 Fuel Facilities

The fuel farm facility is located on the north ramp, west of the Runway End 21 landing threshold. Stored fuel types include Jet A, 100 low lead, and 100. Fuel is trucked into the facility via Gate K. Fuel service trucks provide fuel to aircraft on the terminal, cargo, or FBO aprons. No self-serving fuel pumps are located on the Airport. The fuel facility has two vacant tank positions that can be activated if additional capacity is necessary. It is proposed that the fuel farm facility be expanded to accommodate another jet fuel tank.

An underground petroleum line traverses the Airport, starting near Runway End 25 and running to Airport Drive. In the future, it may be possible to convert this line to serve aircraft or aviation related vehicles.

GEG is a strong supporter of promoting the use alternative fuels for civil aviation use, and is currently investigating opportunities of locating a bio-fuel refining site in the airport business park within the East Area of the Airport. According to information contained in Airport Cooperative Research Program (ACRP) Report 83, *Assessing Opportunities for Alternative Fuel Distribution Programs*, alternative fuels for use at airports can be grouped into two categories.

- Alternative jet fuels (two formulations have currently been approved as a “drop-in” fuel that can be mixed with conventional jet fuel up to a 50:50 ratio and be stored/distributed using conventional equipment).
- Alternative fuels used for surface transportation (e.g., biodiesel blended, ethanol blended, compressed natural gas, liquefied petroleum gas, and electricity) are directed at all support vehicles that are used on the airfield.

Overall, the use of alternative fuels at airports offer a variety of economic, operational, and environmental benefits that include diversification of fuel sources; improving reliability and security of fuel supply; reduction of fuel price volatility; providing regional economic benefits; and reducing the Airport’s environmental footprint. In addition, ACRP Report 83 includes a case study example of the planning process undertaken by Hartsfield-Jackson Atlanta International Airport (ATL) to evaluate the potential development of a 39-acre “Energy Park” on airport property for the on-site production and distribution of alternative fuels.

### 3.9.3 Airfield Maintenance Center

The airfield maintenance building is located on the north ramp, north of the cargo facilities. This 50,000 square foot building houses a repair area, snow removal equipment, mowers, and other heavy equipment used to keep the airfield clear and operational. This plan recommends the development of a maintenance center campus to provide administrative space to support the maintenance function. When the ARFF is relocated, the existing ARFF building can be renovated and converted into a maintenance administrative center.

### 3.9.4 Snow Removal and Aircraft Deicing

Winter operations at GEG can be significant involving the sequenced plowing of runways, taxiways, and terminal apron. Snow removal operations dramatically increase the number of vehicles and equipment within the airport operating area. Many of these procedures occur during periods when GEG is also operating under IMC and PVC conditions. Because the piled snow will often create an obstruction or limit visibility at intersections, the snow must often be loaded and stored further away from aircraft movement.



When significant amount of snow falls on the Airport, snow removal equipment vehicles clear the active airfield pavement to help maintain the scheduled flow of aircraft operations. This involves plowing snow to a pile, loading to a truck, and hauling to remote area to melt naturally. At GEG, the additional space between runways and taxiways as well as the availability of vacant land is helpful for clearing operations.



Deicing of aircraft is a necessary prior to departures during cold weather. **Figure 3-11** identifies three potential locations that should be reserved for future deicing operations. Site A was selected based on potential terminal expansion, and provides a central location for aircraft that may depart on either of the existing runways, or the proposed runway. Site B proposes redevelopment of the existing ARFF development area in the 10-year time period. Site C proposes an eastside deicing facility for general aviation and air cargo aircraft at the north end of the central GA ramp. A separate study is being conducted to prepare detailed layout and phasing of the deicing facilities.



### 3.9.5 Customs Facilities

The existing U.S. Customs and Border Patrol (USCBP) facility is located on the Airport's east side GA apron. Because of the limited available apron space and the strength of the pavement, the facility can only accommodate charter flights of aircraft seating less than 30 people. Based on the Airport's estimates and interviews with USCBP staff, there is a need to at least double the size of this facility. The existing facility does not meet USCBP standards. Facility upgrades should be to USCBP standards. Options considered included doubling the size of the existing facility at its existing location and strengthening the apron; moving to a new location either on the east side or the west side near the terminal, or including customs facilities into future terminal building improvements. These options will be explored in further detail and further coordination with the Transportation Security Administration and USCBP representatives will be conducted. The preferred alternative is providing an expanded facility just east of the present location, as shown on Figures 3-19 and 3-20 later in this chapter.

### 3.9.6 Air Traffic Control Tower (ATCT)

The ATCT is located on the Airport's south side, east of the south maintenance apron. The ATCT was recently constructed and is considered a state-of-the-art facility. Because of this, relocating or replacing the tower within the 20-year planning period is not recommended.

With the ultimate expansion of the Airport, terminal, and the potential for a 3<sup>rd</sup> runway parallel to Runway 3-21 west of the existing terminal, there may be a need to relocate the ATCT. A detailed site selection study will be conducted prior to relocation but for the purposes of this Master Plan, it was determined that a 'placeholder' midfield terminal be introduced to help identify the possibility for relocation when the following conditions are met:

- Construction of the midfield terminal.
- Completion of the 3<sup>rd</sup> runway parallel to Runway 3-21.
- Full build-out of the Airport.
- The lifespan of the existing tower is nearing an end.

Once these conditions are met then it will be practicable for a relocated tower. The following benefits would be realized at a midfield location:

- The line of site to the north end of Runway 3/21 and Taxiway G restricts building development on the entire airport's east side, a primary area for accommodating MRO and cargo growth.



- The line of site to the north end of planned Runway 3L/21R and associated taxiways restricts terminal building and garage parking expansion of a future mid-field terminal and also expansion of the existing terminal configuration.
- The distance to the south end of planned Runway End 3L is far away and does not meet current depth perception standards. The method for calculating depth perception has changed since the existing ATCT was constructed; and the ATCT met the standard in place at the time of its design, but does not meet the existing standard. The distance between the ATCT and the planned Runway End 3L will result in an earlier than normal shift to instrument operations during lower visibility conditions since the planned runway end will be more than a mile away. This will translate into reduced operational flow on that runway during lower visibility conditions.

Careful effort should be taken in the planning and site selection for a new ATCT facility. Proper lead time should be given for specific site selection, environmental reports and construction. The ultimate vision of the Airport includes a relocation of the ATCT to a midfield location.

## **3.10 BUILDING AREAS**

Four building areas will support non-airline aviation needs and strategic goals at GEG: the North Cargo Area, South Area, East Area and West Area.

### **3.10.1 North Cargo Area**

The North Cargo Area comprises the buildings and apron that are located directly north of the terminal and west of the approach end to Runway 21. Included in the North Cargo Area are cargo facilities, the ARFF, the fuel farm and glycol storage, airport maintenance and snow removal equipment buildings and other ancillary facilities.

As with most cargo centers, the cargo aircraft fleet usually arrive and depart at the same time to ensure delivery schedules. Because of this, the apron can get congested when freighters convene on this area in the early morning. Additionally, the apron is generally too small to accommodate multiple parked freighter aircraft loading and unloading cargo while other aircraft taxi on and off of Taxiway G. This coupled with antiquated buildings triggered the need for this area to be considered for alternative layouts. The North Cargo Area will continue to be optimal for cargo operations if it is expanded to the west at the end of life of the current facilities.

Two alternative layouts to the North Cargo Area are illustrated in **Figures 3-12 and 3-13**. Each alternative shows an expanded cargo apron, new buildings, an access road for tractor trailers, plus an expanded apron to the southwest that connects to the air carrier apron. Alternative 1 takes into account a potential relocated Airport Drive, provides warehouse facilities with 140,000 square feet of floor area, and parking for 3 777-200s, 4 A310s and multiple smaller cargo aircraft.

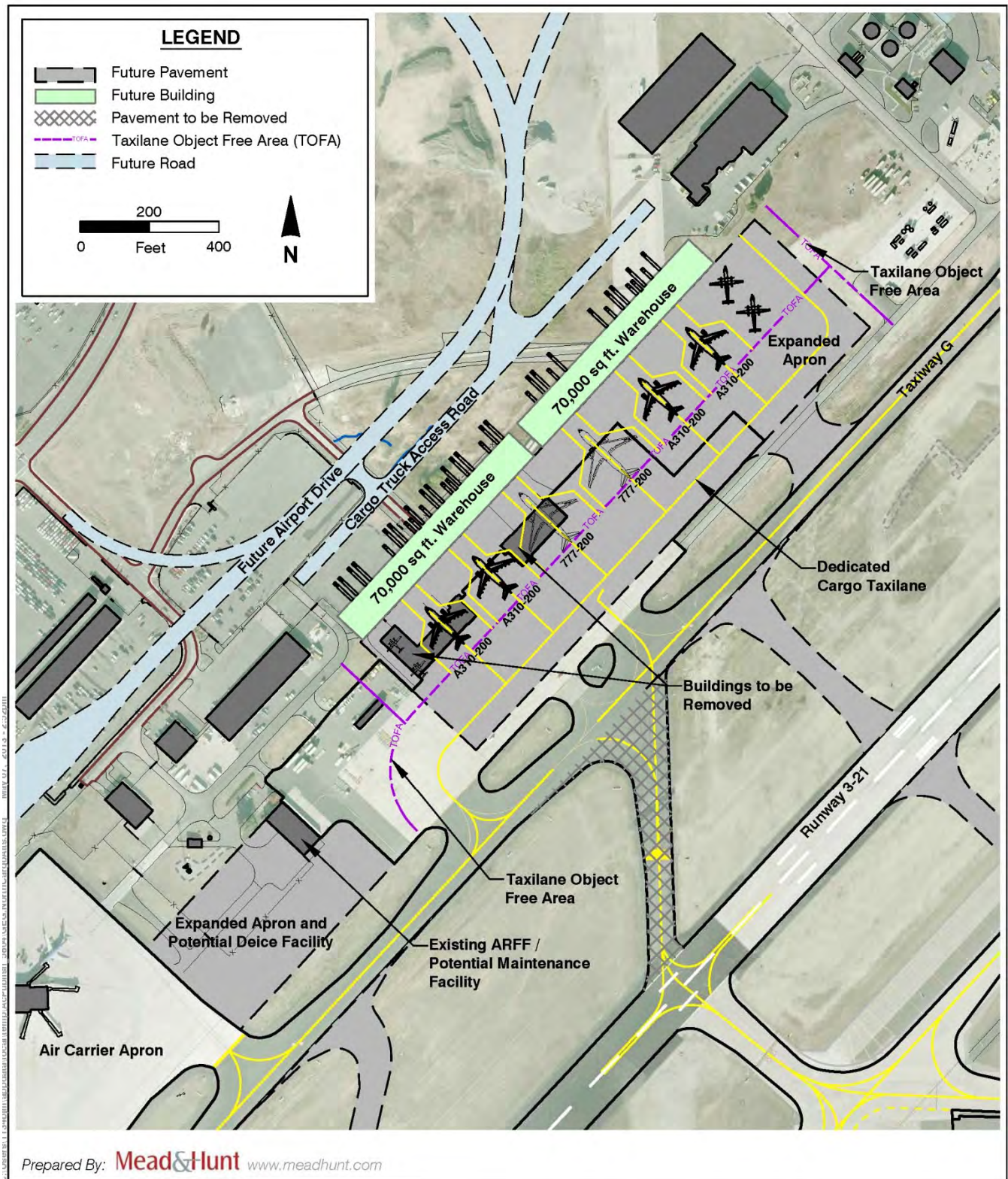
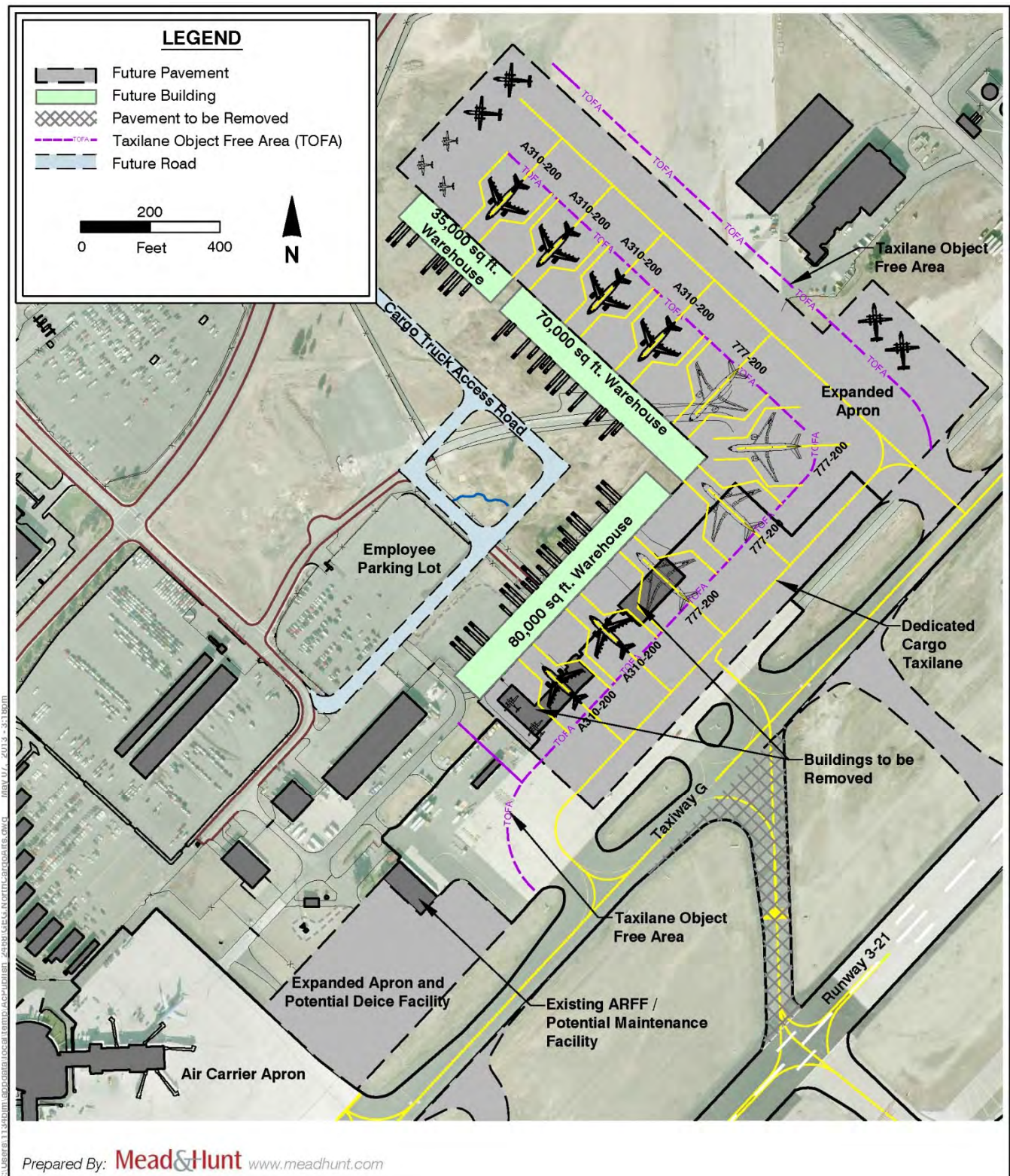


Figure 3-12

## North Cargo Area: Alternative 1

### Spokane International Airport



**Figure 3-13**

## North Cargo Area: Alternative 2

### Spokane International Airport

Alternative 2 provides more warehouses, a total of 185,000 square feet of floor space, and additional aircraft parking. Parking is considered for 4 777-200s and 6 A319s. The drawback to Alternative 2 is it may not allow for the relocation of Airport Drive in its proposed configuration (See Chapter 5).

Discussions on construction a dedicated deice facility, relocating the ARFF and expanding the fuel farm were provided previously in this Chapter. Both alternatives incorporate the potential expansion of each facility in this area.

Alternative 1 is preferred since this layout considers the relocated Airport Drive. While Alternative 2 does provide greater area for aircraft parking and warehouse space, it is expected that Alternative 1 will provide the apron space and building area that will meet the demands of cargo activity in the intermediate term.

### 3.10.2 South Area

The South Area is often identified as the MRO Ramp. Two MRO facilities presently exist, and an expansion is under discussion. Airport management is actively targeting opportunities to consolidate MRO development at GEG. A portion of the South Area is owned and occupied by the Army National Guard (ANG). Several alternative layouts to accommodate MRO expansion were assessed and are presented in **Figures 3-14, 3-15, and 3-16**. The ability for GEG to acquire the ANG property effects the overall development of the South Area. Relocation of Electric Avenue and additional property acquisition may permit further expansion. With the relocation of Electric Avenue, the South Area may also offer potential as an aircraft manufacturing site (**Figure 3-17**). (Closing Runway 7/25 would also significantly reduce development constraints.)

The south side has the following development constraints:

- **Part 77 Height Limitations**—The Part 77 surfaces and corresponding height restrictions associated with Runway 7/25 have increased since the 2003 Plan was prepared. The Part 77 surfaces move the height limitations south 250 feet toward Electric Avenue. For example a 35-foot tall building now needs to be set back 745 feet from the runway centerline instead of 495 feet as was required when the 2003 Plan was prepared. The change is the result the LPV approach procedure to Runway End 7 having approach  $\frac{3}{4}$  mile visibility minimums.
- **Location of Existing Facilities and Infrastructure**—The location of existing hangar facilities and leased areas combined with utility location also influences the layout of the site. Additionally, independent projects have identified limitations with the capacity of existing utilities in this area. Upgrades and improvements to the utilities may be necessary for large scale development of MRO and aircraft manufacturing facilities.

**Alternative 3 is the preferred alternative** based on the desire of airport management to maximize the use of existing utilities and infrastructure and maintain flexibility of development options.

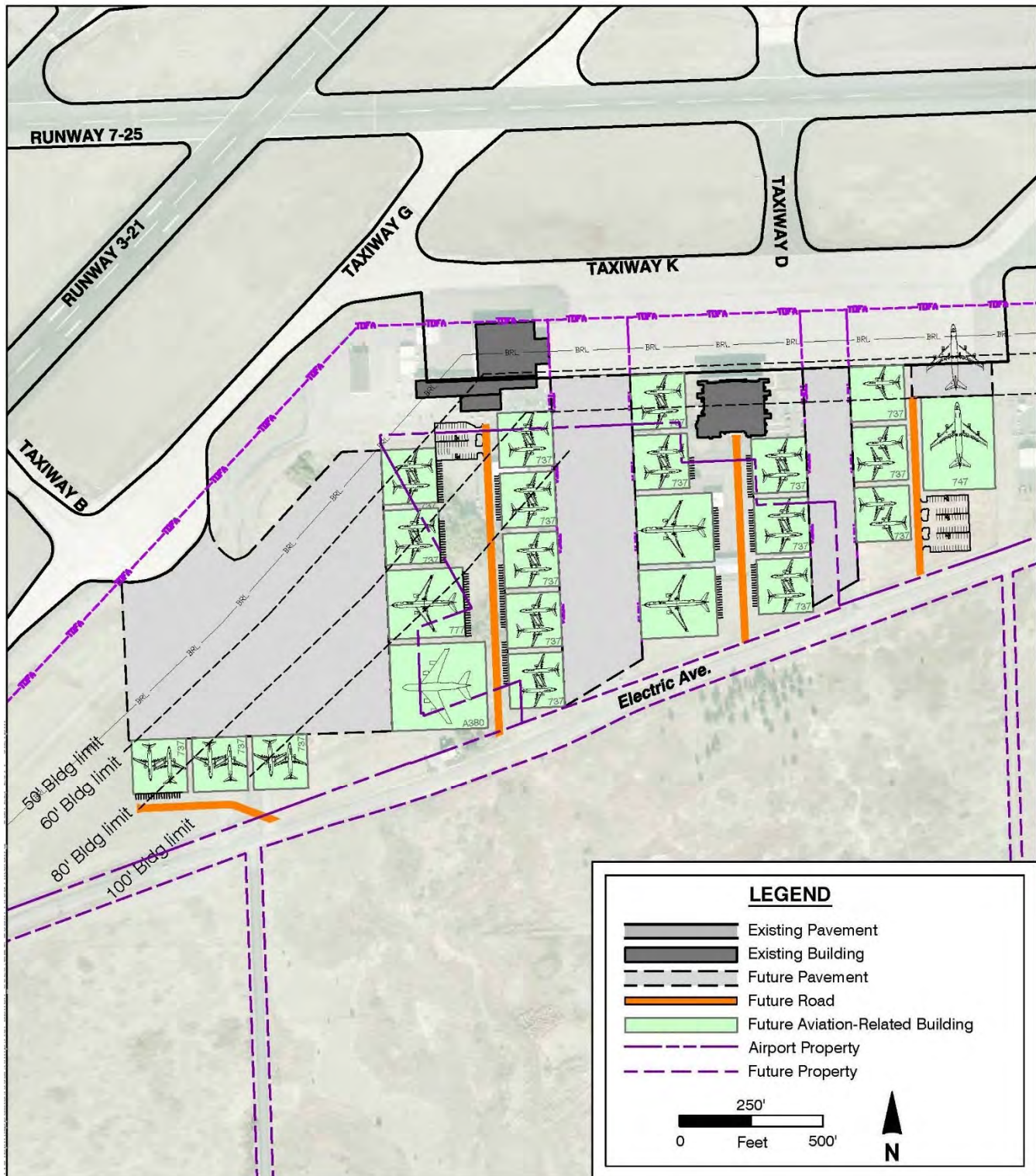


Figure 3-14

### South Area Development: Alternative 1 – Not Preferred

#### Spokane International Airport

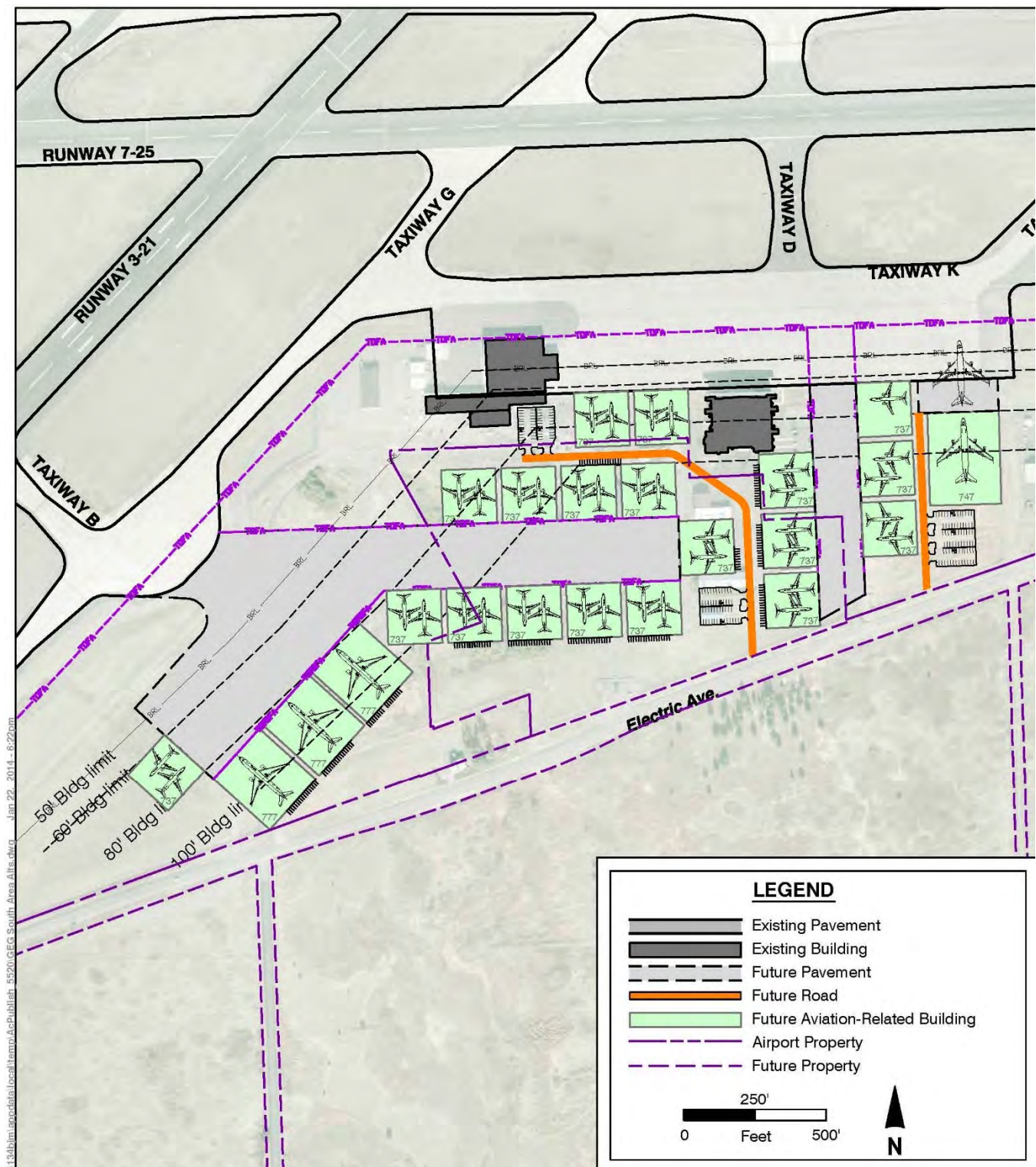


Figure 3-15

### South Area Development: Alternative 2 – Not Preferred Spokane International Airport

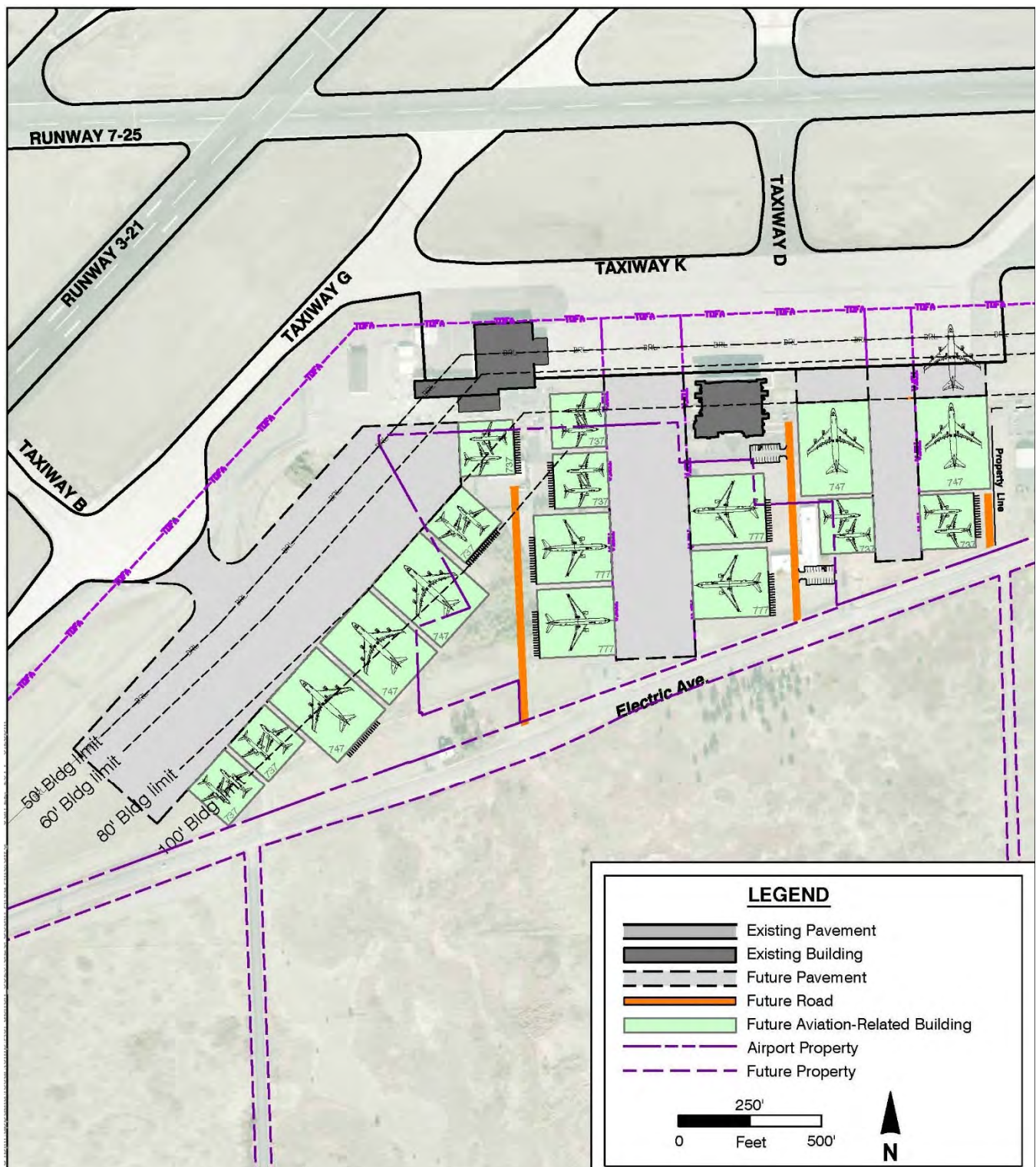


Figure 3-16

### South Area Development: Alternative 3 - Preferred Spokane International Airport

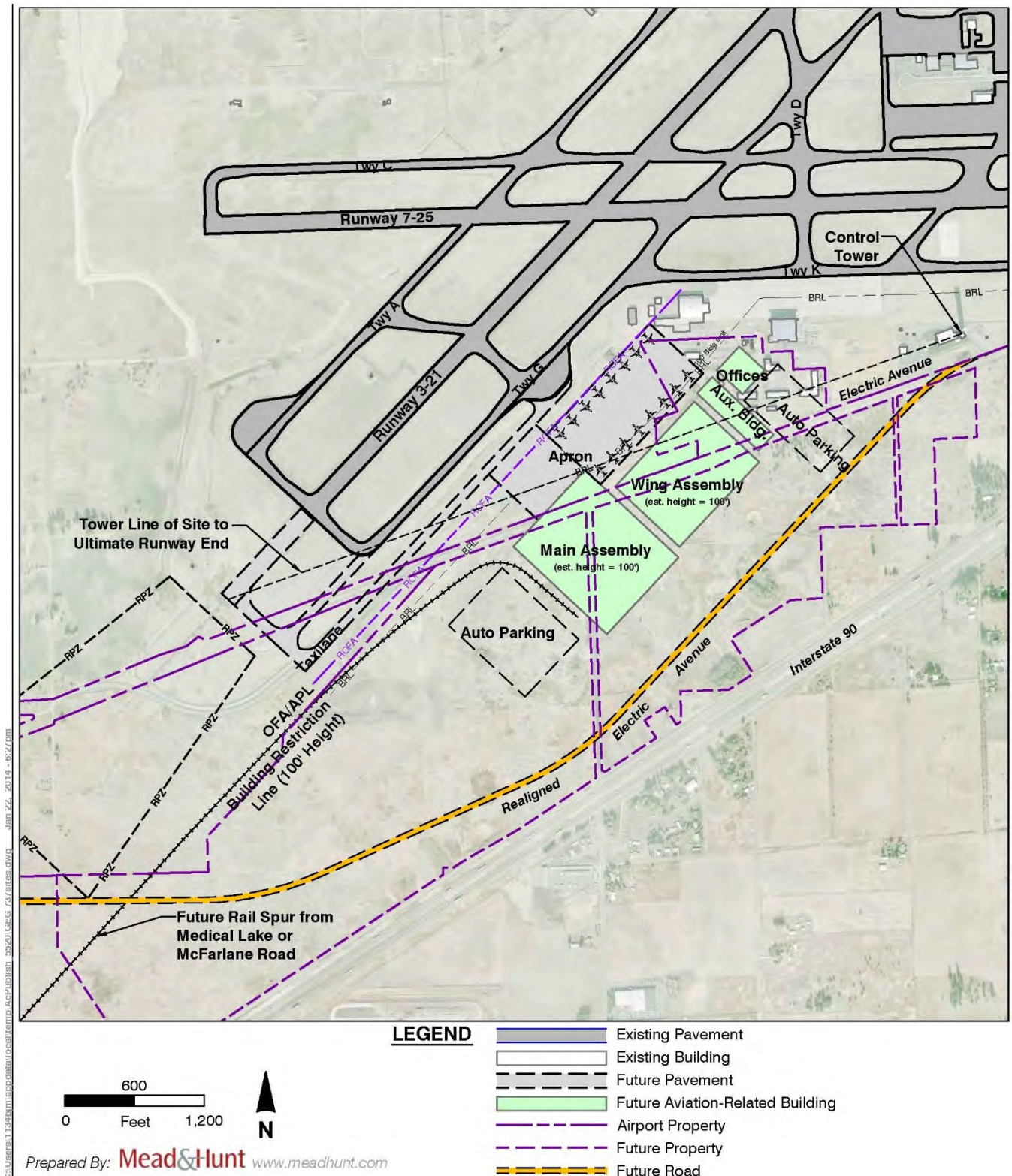


Figure 3-17

## Manufacturing Development: South Site

### Spokane International Airport

### 3.10.3 West Area

The West Area offers opportunity to be developed as an aircraft manufacturing site. The area is large enough to accommodate a significant operation with road, rail, and airport access. The west manufacturing site would benefit from the development of planned Runway 3L/21R. However, depending on the timing of the new runway and the need for airside access, the site could be developed initially with an interim taxiway connecting the site to the existing airport infrastructure. Such a taxiway would ideally be constructed so as to function with the new runway. The implications to crossing Hayford Road would also need to be assessed relative to the timing of the runway implementation work. A new runway will require the realignment or tunneling of Hayford Road. The west side of the airport offers long-term potential to accommodate further expansion of aircraft manufacturing or MRO-support services and other aviation-related activities. **Figure 3-18** illustrates the conceptual development plan for this area.

### 3.10.4 East Area

Existing East Area development includes two large aircraft parking aprons, the GA ramp, U.S. Customs, a U.S. postal facility, and the Airport Business Park. Vertical development of the northern portion of the site is limited by ATCT line of sight with the north end of Taxiway G. The U.S. postal facility will be converted to aviation use should the Post Office discontinue operations at that location. Potential development envisioned for the East Area includes air cargo facility expansion, MRO facility expansion, U.S. Customs expansion, and potential GA facilities. Aviation-compatible business and industrial development will continue east of the aviation/non-aviation line. (The relocation of the ATCT to the mid-field will greatly enhance the development potential of the East Area, as would the closure of Runway 7/25.)

The East Area has sufficient apron infrastructure to accommodate regular use by large airplanes that may frequent cargo and MRO facilities. Controller line of sight places height restrictions on buildings, particularly on the northern portion of the site. The presence of existing facilities such as the paved apron areas, FBOs, and Postal Service facility influence functionality and development costs to prepare the site. **Figures 3-19** and **3-20** illustrate two development scenarios for the East Area.

Alternative 2 is the preferred alternative because it maximizes that amount of cargo buildings adjacent the cargo apron while providing flexibility to meet unknown development needs.

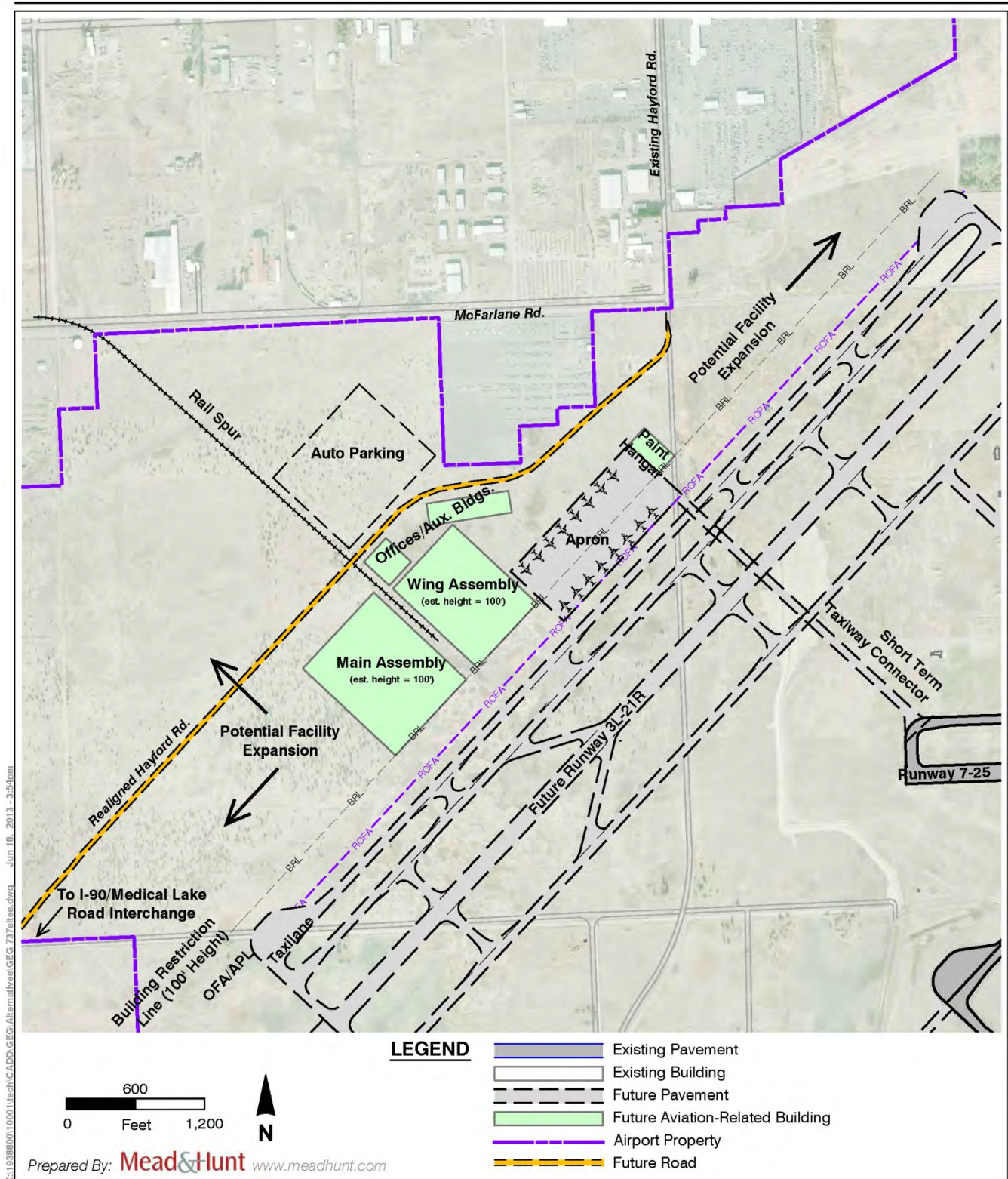


Figure 3-18

## Manufacturing Development: West Site

### Spokane International Airport

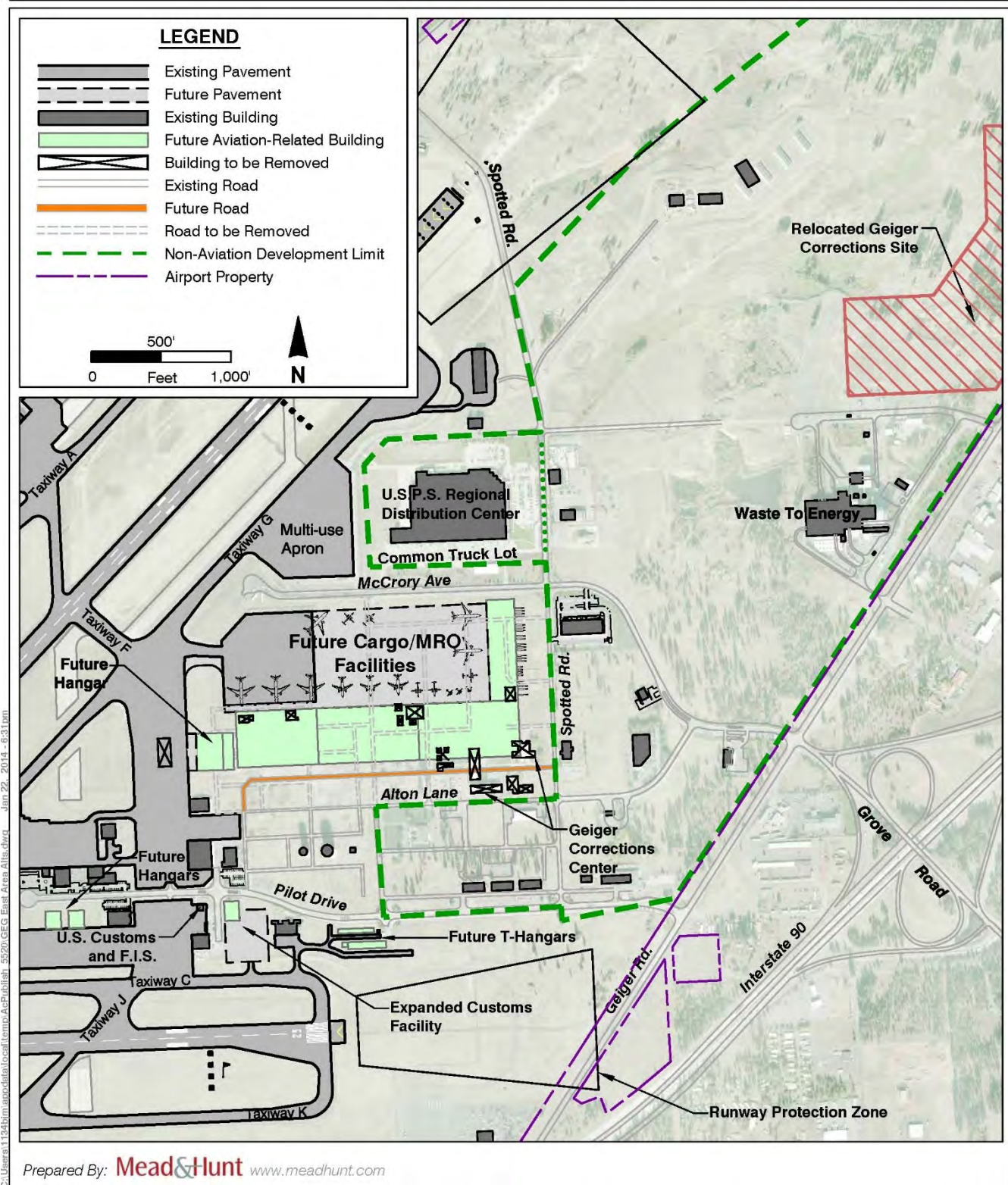


Figure 3-19

### East Area Development: Alternative 1 – Not Preferred

#### Spokane International Airport

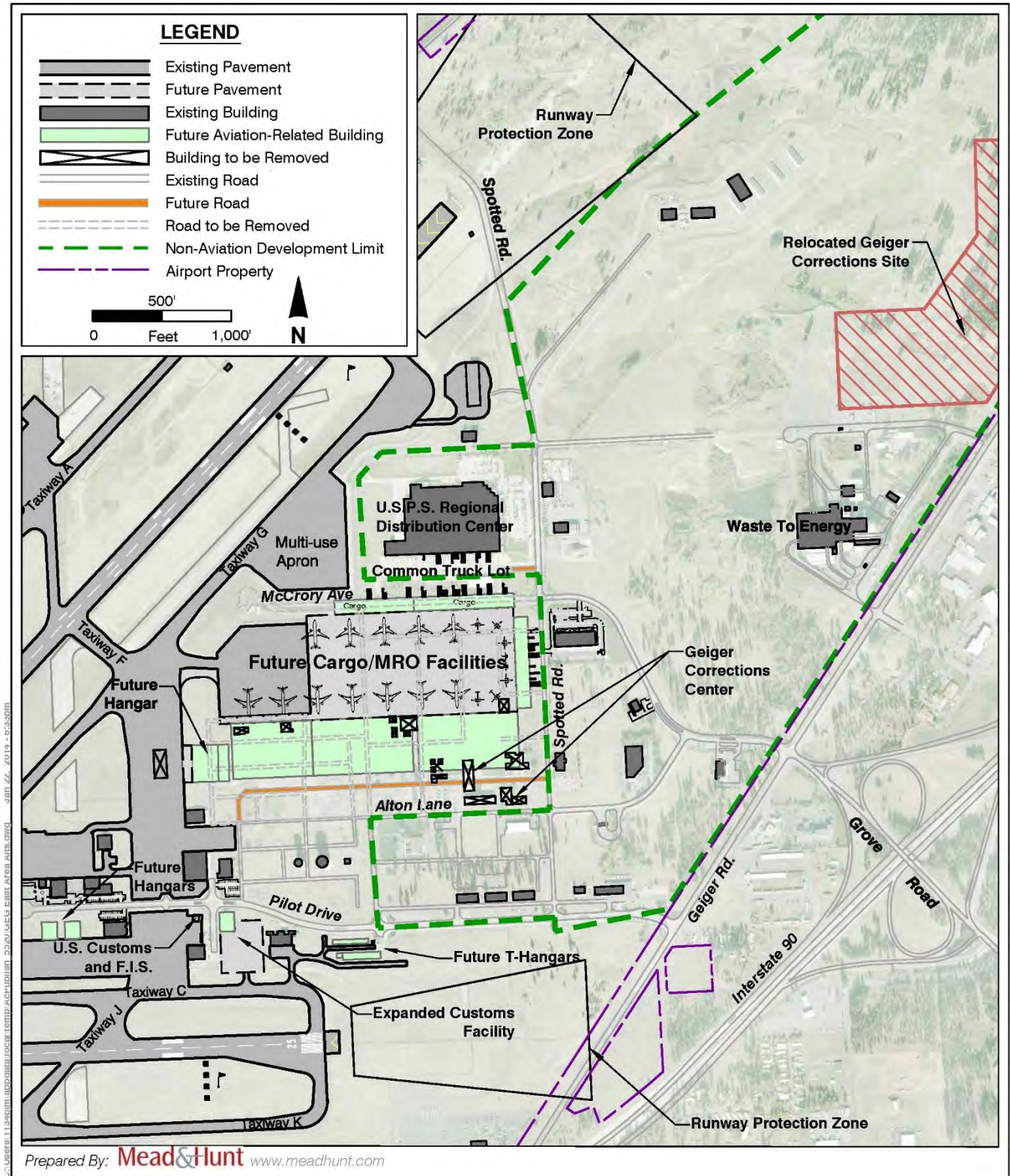


Figure 3-20

## East Area Development: Alternative 2 - Preferred

### Spokane International Airport

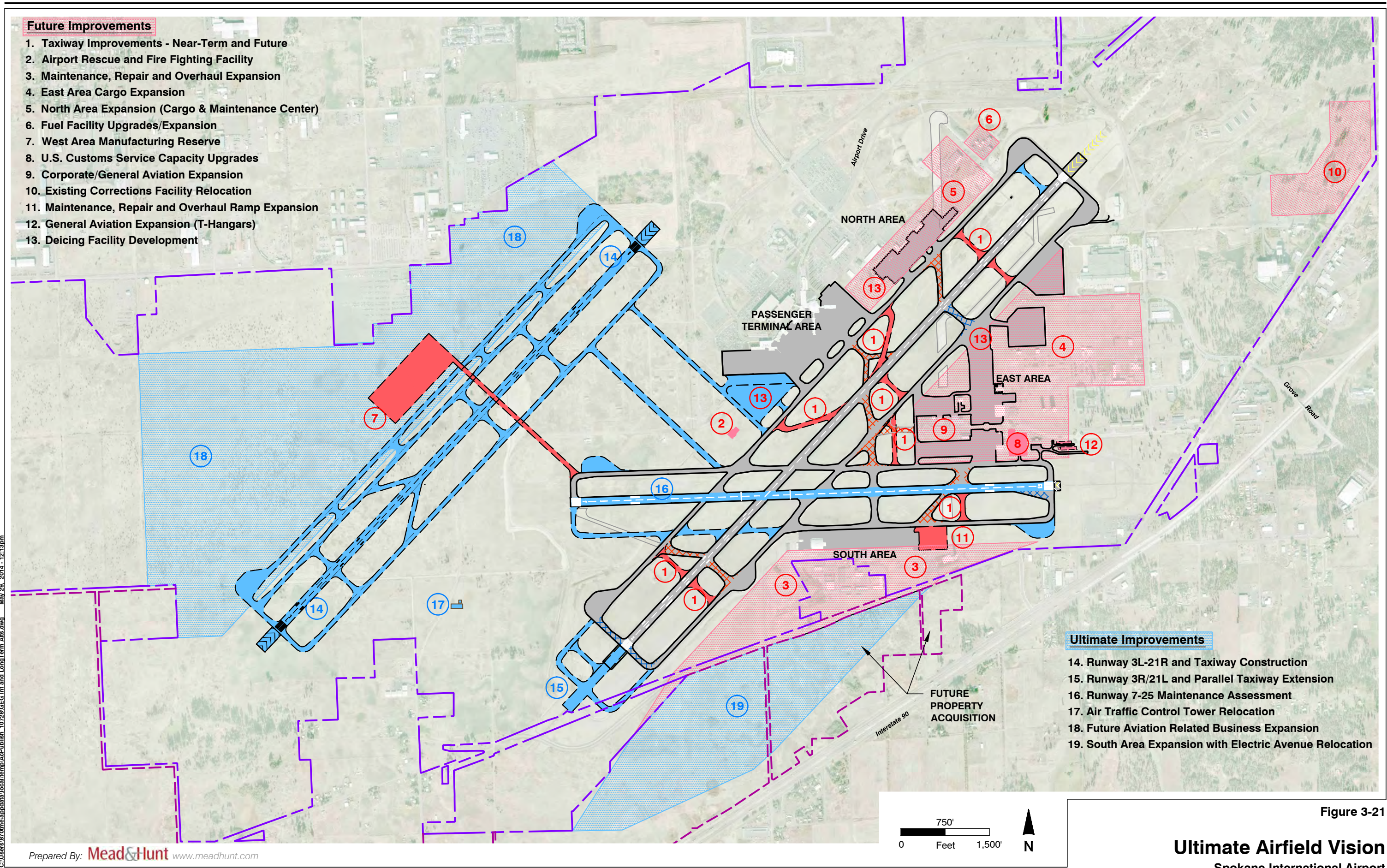
### 3.11 ULTIMATE AIRFIELD VISION

GEG Staff have been presented with a variety of facility expansion options to support the ultimate airport vision for long-term development. Following an assessment of the potential impacts of the proposals for each development issue, in conjunction with a detailed FAA evaluation, the Airport has selected components of a recommended *Conceptual Development Plan*, which are presented in **Figure 3-21**, and which will be presented in the *Airport Plans* chapter of this document to represent the ultimate airport configuration. The ultimate build-out of the various airside development areas on the Airport will be demand driven and likely far exceed that which is projected for the 20-year planning horizon. However, airport property is largely sufficient to meet the needs of the future, and additional property or property rights to be acquired have been included.

A summary of the recommendations described by the ultimate airfield vision for GEG is presented in **Table 3-17**.

<b>Table 3-17. Facility Requirements Summary<sup>1</sup></b>			
<b>Facility</b>	<b>Existing</b>	<b>Future</b>	<b>Ultimate</b>
<b>Runway Dimensional Standards (RDC)</b>			
Runway 3/21 (3R and 21L Ultimate)	D-IV	same	D-V
Runway 7/25	C-III	same	C-III <sup>2</sup>
Runway 3L/21R	—	—	D-V
<b>Taxiway Dimensional Standards (TDG)</b>			
Runway 3/21 Taxiway System	TDG-5	TDG-6	TDG-6
Runway 7/25 Taxiway System	TDG-5	same	same <sup>2</sup>
Runway 3L/21R Taxiway System	—	—	TDG-6
<b>Runway Length/Width</b>			
Runway 3/21 (3R and 21L Ultimate)	11,002' x 150'	same	12,000' x 150'
Runway 7/25	8,199' x 150'	same	same <sup>2</sup>
Runway 3L/21R	—	—	9,000' x 150'
<b>Instrument Approach Visibility Mins.</b>			
Runway 3 and 21 (3R and 21L Ultimate)	<1/2-mile	same	same
Runway 7	3/4-mile	same	same
Runway 25	1 mile	same	same
Runway 3L/21R	—	—	<1/2-mile
<b>Approach Lighting System</b>			
Runway 3 and 21 (3R and 21L Ultimate)	ALSF2	same	same
Runway 7	none	none	MALSR <sup>2</sup> none <sup>2</sup>
Runway 25	none	none	none <sup>2</sup>
Runway 3L/21R	—	—	MALSR
<b>Passenger Terminal Facilities</b>			
Terminal Building, Apron and Landside Access	Maintain Exist. Facilities	same	Relocate/Reconstruct <sup>4</sup>
<b>Aviation Development Areas</b>			
South MRO <sup>3</sup> Areas	Yes	Expand/Infill Exist.	same
South Manufacturing Area	—	Yes <sup>5</sup>	Expand/Infill Site
West Manufacturing Area	—	—	Yes <sup>5</sup>
East Cargo Areas	Yes	Expand/Infill Exist.	same
US Customs and Federal Inspection Services (FIS)	Yes	Expand Exist. Site	same
<b>Support Facilities</b>			
ATCT	Yes	Same	Relocate/Reconstruct <sup>5,6</sup>
Fuel Storage	Yes, with Expansion	Expand Existing Site	Expand/Reconstruct
ARFF	Yes <sup>7</sup>	Maintain <sup>7</sup>	Maintain
<b>Notes</b>			

1. Source: Mead & Hunt, Inc. projections.
2. A determination on the "ultimate" closure of the Runway 7/25 will be made in conjunction with the construction of Runway 3L/21R.
3. Maintenance, Repair, & Overhaul facilities.
4. See Chapter 4 for details on new passenger terminal development alternatives and selection of recommended plan.
5. Placeholder Development Site is identified.
6. Ultimate relocation will be coordinated after ultimate Airport expansion of terminal and 3<sup>rd</sup> runway.
7. New ARFF Facility is currently under construction.



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