

APPENDIX E HAZARDOUS MATERIALS

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**PHASE I ENVIRONMENTAL
DUE DILIGENCE AUDIT SUMMARY**

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Phase I Environmental Due Diligence Audit (EDDA)

Environmental Impact Statement for the Proposed Airfield Safety Enhancement Project and Land Transactions for the Tucson International Airport Tucson, Arizona

Presented to:

LANDRUM & BROWN, INC.
11279 Cornell Park Drive
Cincinnati, OH 45242

Presented by:

SCS ENGINEERS
4222 East Thomas Road, Suite 310
Phoenix, Arizona 85018
(602) 840-2596

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AAI Date: December 27, 2016
File No. 01216132.01

Offices Nationwide
www.scsengineers.com



EXECUTIVE SUMMARY

Landrum & Brown, Inc. (L&B) retained SCS Engineers (SCS) to perform a Phase I Environmental Due Diligence Audit (EDDA) for the Proposed Airfield Safety Enhancement Project and Land Transactions for the Tucson International Airport (TUS), Tucson, Arizona. The area to be evaluated (Site) includes property owned by the City of Tucson and operated by the Tucson Airport Authority and the United States Air Force. The Pima County Assessor Parcel Numbers (APNs) for the Site are 140-42-0120 (partial), 140-43-005B, 140-43-0080, 140-43-0100, 140-43-011A (partial), 140-43-013C (partial), 140-43-013B (partial), 140-48-0010, 140-48-003A (partial), 140-48-0020 (partial), 140-49-0010 (partial), 140-47-005B, 140-47-006E (partial), and 140-47-006F (partial).

The EDDA consisted of a site reconnaissance; interviews; review of environmental, historical, and physical records pertaining to activities on and adjoining the Site; and interpretation and reporting of findings. SCS was also contracted to perform soil sampling of the earthen cover and soil around the A-Magazine Earth Covered Magazines (ECMs) and perform a lead-based paint (LBP) survey of the exterior of the ECMs; this investigation is discussed in a separate report.

At the time of the site reconnaissance, the Site consisted of the following properties:

Description	Environmental Concern?
AIRPORT	
Airport Area: The majority of the airport portion of the Site contains a large amount of pavement, consisting primarily of runways, taxiways, and roads. Also present were stormwater drains and drainage basins; a concrete pad area formerly used by Arizona Air National Guard (AANG) for running engines and currently used occasionally by Tucson Airport Authority (TAA) maintenance for temporary storage; small concrete pads formerly used for engine testing stands and maintenance; and numerous subgrade utility vaults. Much of the remaining area consists of vacant land.	No
<ul style="list-style-type: none"> Small structures include two Runway Supervisor Units (RSUs) and a Federal Aviation Administration (FAA) structure used during bad weather. SCS did not enter these structures. 	No
<ul style="list-style-type: none"> Two AANG arresting systems for stopping aircraft, one deployed arrestor system, and one abandoned arrestor system are located along the runway. These systems reportedly include gas powered engines and small fuel tanks in subgrade concrete vaults with a pit in the bottom; the vaults are reportedly inspected by AANG every day. SCS did not view the interior of these vaults. 	Yes
<ul style="list-style-type: none"> An AANG hydrazine maintenance area consisting of a concrete pad with a drain is located in the northwest portion of the Site. Hydrazine is used in F-16 fighter jets to fuel their emergency power units. This maintenance area is reportedly only used when other maintenance areas are not available. It was believed that the drain goes to a holding tank. 	Yes
Valencia Road Properties, 1000 and 1070 East Valencia Road: The hangar and other structures at 1000 East Valencia Road appeared to be vacant; a prior occupant was Sun West Aviation. The hangar and other structures at 1070 East Valencia Road appeared occupied, possibly by Aerovation (engineering and development company). Four groundwater monitoring wells associated with the AANG are apparently located on these parcels. L&B and Tucson Airport Authority (TAA) stated that no inspection was required for these properties; therefore, they were not accessed.	Yes
Velocity Air/Double Eagle Aviation/Arizona Aero-Tech (same owner), 6971 South Apron Drive and Civil Air Patrol, 7001 South Apron Drive: Full-service fixed base operation (FBO) providing fuel, aircraft parking, maintenance, rental cars, flight instruction, and pilot's lounge. Office structures	Yes

Description	Environmental Concern?
<p>and three hangars with two maintenance areas, a shop, and storage areas are located at this facility. Hazardous materials include fuel, solvents, acids, oils, paints, lubricants, cleaners, etc. typical of maintenance activities. A former fuel aboveground storage tank (AST) location is surrounded by bollards. An approximately 500-gallon used oil AST in concrete spill containment is located outside the shop hangar to the south. Used sandblasting material is blown through a pipe to collect in a 55-gallon drum outside the shop. Previous occupants were Paul's Aircraft and Sun West Aviation.</p>	
<p>Former Fire Station Area, Storage Building, Storage Yard, and Hazardous Material Storage Area: A vacant area south of Velocity Air is the location of a former fire station where structures and old water reservoirs have been removed and filled in. Two subgrade vaults and a wash pad with a drain to an apparent oil-water separator and a manhole remain in the western portion of this area.</p>	Yes
<ul style="list-style-type: none"> • A storage building used by maintenance staff contained various equipment and materials, including three 1-gallon cans of paint stripper. A possible former drain feature filled with concrete extends north-south across the floor of the structure, extending beneath the wall to the area north of the structure. 	No
<ul style="list-style-type: none"> • A fenced storage yard containing various equipment and materials was located east of the storage building. 	No
<ul style="list-style-type: none"> • A fenced hazardous material storage area on a curbed concrete spill containment pad and covered by a canopy was located east of the storage yard; material stored here is typically from maintenance, such as paints, motor and engine oil, solvent, film forming foam for firefighting, and related materials, and TAA reportedly checks this area weekly. 	Yes
<p>Former United States (U.S.) Fish and Wildlife Service (USFWS) Structure: South of the former fire station area is a vacant structure formerly used by the USFWS, containing a garage/shop and various other empty rooms. Two pad-mounted electrical transformers, a subgrade utility vault, and a drainage grate adjoined the structure.</p>	No
<p>Contractors' Yard: Vacant area containing a secured fenced area located near the current fire station and used by various contractors doing work at the airport. A fire diamond was posted on the fence (flammability 2, health 3, and instability/reactivity 1). Observed in the fenced area were vehicles, equipment, a metal storage container, a portable toilet, cable spools, piping, and other supplies.</p>	No
<p>Fueling Facility: East of the current Fire Station is a fueling facility with underground storage tanks (USTs) that is shown to be located within the Site boundaries. However, SCS understands that this area is not included as part of the Site.</p>	No
AIR FORCE PLANT 44 SITE AREAS	
<p>A-Magazine: Twelve ECMs used for storage of explosives and other materials are located on the western portion of the Site. The ECMs are arranged in two rows of six and are known as the A-Magazine. Only the eastern six ECMs are located within Parcel F; however, all 12 ECMs are planned to be demolished during the proposed project. The structures were reportedly built in 1954. The ECMs consist of concrete structures overlain by soil and capped by asphalt that has degraded. Drain trenches along the sides of the floor divert water that leaks into the structures into pipes leading through the walls to the west exterior of the structures. Utilities include electricity and water. This is the best information that is obtainable at this time, given the lack of access due to the current continuous operation of the ECMs.</p>	Yes
<p>Asphalt roads adjoined the two rows of ECMs at A-Magazine and adjoined the boundary with the airport. Areas adjoining the ECMs were used for empty metal and wood box storage. An abandoned railroad and a concrete pad and associated taxiway were located in the north portion of this area. The remainder of the Site area was vacant except for some dirt roads, fences, and utilities.</p>	No

Description	Environmental Concern?
B-Magazine Area: The Site area located south of B-Magazine and south of a paved road was vacant and undeveloped, except for a fence and utilities.	No
PARCELS G AND H	
No structures were located on this portion of the Site. This area consisted of naturally vegetated vacant land crossed by dirt roads, primarily in the eastern portion of Section 32, and Country Club Road, and the adjoining portion of Hughes Access Road. Wildcat dumping of solid waste was observed along the dirt roads, in an area in the south-central portion of Section 32, and along Country Club Road, with lesser amounts along Aerospace Parkway and Hughes Access Road. The dumped materials appeared to be primarily household and construction debris. Access to Country Club Road is currently blocked by a berm north of Aerospace Parkway, and Hughes Access Road is closed to traffic by barricades.	Yes

The Site has been occupied by an airport since 1941 when the land was purchased by the City of Tucson (COT). Prior to development, the Site and surrounding properties were likely used as grazing land. The history of the specific portions of the Site is as follows:

- The western portion of the Site on South Apron Drive has been occupied by aircraft maintenance type businesses since at least 1970. Also present was a former fire station that had been demolished and a structure used by USFWS; the fire station facility had also been used as an airline maintenance facility and for fixed-based operations.
- The Site parcels at the southeast corner of East Valencia Road and South Park Avenue have been occupied by aircraft maintenance, rental, charter, and other service type businesses since at least 1960. A septic system was mentioned in records for this property.
- The vacant area of the Site containing the current contractors' yard was occupied by a soap box derby track in the late 1960s to early 1970s and by a fire training area from the late 1970s until the 1990s.
- The A-Magazine ECMs have been present on the AFP-44 portion of the Site since 1954.
- The area of the Site south of the B-Magazines and the Site Parcels G and H in Sections 32 and 33 have apparently always been vacant and undeveloped, except for dirt roads and two relatively small borrow pits in the north portion of Section 32.

Properties adjoining the Site have been occupied by the TUS and associated businesses, the AANG, AFP-44, Bombardier/Learjet and numerous other aircraft and aviation type companies, industrial and commercial businesses, gravel pits, and vacant land. Based on this assessment, the TUS, AFP-44, and AANG properties are the source of contamination associated with National Priority List (NPL) sites, as discussed below; therefore, they are considered a Recognized Environmental Condition (REC) for the Site.

Numerous regulatory database listings were identified for the Site area, including 7 NPL Sites that are grouped into "Area A" and "Area B;" 7 Comprehensive Environmental Response and Liability Information System (CERCLIS)/Superfund Enterprise Management Systems (SEMS)

facilities; 50 Resource Conservation and Recovery Act (RCRA) facilities; 2 RCRA Corrective Action (CORRACTS) facilities; 68 Emergency Response Notification System (ERNS) incidents; 1 Superfund Program List site; 1 Brownfields/Voluntary Remediation Program (VRP) facility; 14 registered underground storage tank (UST) facilities; 15 leaking UST (LUST) facilities; 4 RCRA Compliance Facilities; 68 Hazardous Materials Incidents Emergency Response Logbook entries; 107 registered drywells; 1 environmental permit; 2 deed restrictions; and 447 Arizona Department of Water Resources (ADWR) registered well listings.

The Site is within areas potentially impacted by groundwater contamination associated with 5 of the 7 NPL sites, including three within Area A: Tucson Airport Remediation Project (TARP, Operable Unit 1 [OU1]); Airport Property Project Area (OU2) – Zone E; and AFP-44 Raytheon Project Area (OU3); and two within Area B: 162nd Fighter Wing AANG Project Area and West-Cap Project Area. Volatile organic compounds (VOCs) are the primary contaminants of concern, particularly trichloroethene (TCE). The groundwater contamination associated with these NPL sites is considered a REC for the Site.

Most of the regulatory listings are associated with the TUS and/or AFP-44, AANG, and Bombardier/Learjet, all of which adjoin the Site. Because the Site is located within the TUS and AFP-44 properties, both of which are relatively large properties, it was not always clear whether the regulatory listings were associated with the Site or adjoining properties; therefore, there is the potential for additional listings to be a REC for the Site than is discussed below. The Site was identified in the following environmental databases that are not considered to be a REC for the Site:

- **RCRA Database** – Federal Express Corp Tusr, 7025 S Apron Way (conditionally exempt small quantity generator [CEG]).
- **Federal ERNS Database** – U.S. Forest Service (USFS) Air Operations Unit at the TUS – 3 drums of waste oil and water were dumped off by an unknown party, no release (4/22/1992).
- **LUSTs Database** – Two of the closed LUSTs were reported to be at the former fire station on the western portion of the Site.
- **Hazardous Materials Incidents Logbook** – Coronado National Forest, TUS, Waste Oil & Water/Drums (4/22/1992, same as incident on ERNS database); Sunwest Aviation, TUS, 650 gallons of Jet A fuel from a truck (12/20/1999); Sun West Aviation, 6971 South Apron Drive (12/21/1999, associated with previous listing)
- **ADWR Well Registration Database** – Based on location information, approximately 57 registered wells were identified as possibly being located on the Site. Many are monitoring wells associated with the NPL Site investigations. L&B confirmed that a total of 22 wells were actually determined to be located on the Site.

In addition, two listings mentioned a fire training facility, which could refer to the former facility located in the eastern portion of the Site in the contractors' yard area, east of the current fire station: 1) the RCRA Database, which listed the fire training facility as a small quantity RCRA

generator; and 2) the Environmental Permits database. In addition, two ADWR groundwater monitoring well listings were shown at that location. According to information from a data evaluation report by Daniel B. Stephens & Associates (DBS) that was provided by TAA, this area was investigated under oversight by Arizona Department of Environmental Quality (ADEQ) and was part of a Remedial Investigation/Feasibility Study (RI/FS). Soil borings were drilled within three unlined burn pits, adjacent to one concrete-lined burn pit, and angled under an oil-water separator. Fuel, petroleum, and total petroleum hydrocarbons exceeded the cleanup levels in effect at that time in subsurface soil from two borings; benzene, toluene, ethylbenzene, m,p-xylene, and o-xylene (BTEX) were detected in four borings below cleanup levels, but with significantly higher levels in two borings; and trace levels of semi-VOCs (SVOCs) were detected in three borings, but were not considered to be environmentally significant. It should be noted that hydrocarbons are not currently regulated in soil in Arizona. No other sources of contaminants were identified in the fire training facility zone and contamination associated with the zone had not comingled with other sources. DBS stated that no data gaps were identified in association with characterization of the nature and extent of contamination at the fire training facility and that no further investigations were necessary under the RI/FS.

In addition, review of ADWR well records indicated there were five groundwater monitoring wells at the former AANG Test Stand located south of the former fire training facility. A map in the well records also showed soil boring locations and a drywell was that location; one of the monitoring wells was placed adjacent to the drywell. Based on this information, this area has been previously investigated.

Other environmental listings identified by the regulatory database search within the respective search distances are not considered to be RECs for the Site, other than those associated with the NPL sites.

Data Gaps

Certain limitations that could affect the accuracy and completeness of this report are as follows:

- **Site Access Limitations** – Much of the Site was within restricted areas at the TUS and AFP-44. SCS was not given access to the interiors of the Runway Supervisor Units (RSUs), FAA structures, or Arizona Air National Guard (AANG) arresting system vaults. In addition, SCS was not allowed to access the interiors of the A-Magazine ECMs (although the interior of some ECMs were viewed during a pre-project tour in 2016) or perform any destructive sampling because the structures were still in use.

SCS was told by L&B that although the Site parcels at the southeast corner of Valencia Road and Park Avenue were within the Site boundaries, no site reconnaissance was to be performed. In addition, SCS was informed that the fuel farm east of the current Fire Station was not included as part of the Site and was therefore not inspected, although it is shown to be within the Site boundaries. Due the size of the Site and the two undeveloped portions of the Site in Sections 32 and 33, all areas could not be directly examined, but were reviewed in aerial photographs. SCS does not expect these data gaps to change the conclusions of this report.

- **Physical Obstructions to Observations** – None.
- **Outstanding Information Requests** – None
- **Historical Data Sources Failure** – There were gaps in the historical information prior to 1958. The Site was developed with the current airport beginning in 1941. It is assumed that prior to 1941, the Site was vacant land, possibly used for grazing. Therefore, this data gap is not likely to be significant and does not affect the conclusions of this report.
- **Other** – SCS spoke to occupants of the Site and did not directly interview the COT (one of the land owners). Due to the long period of time the occupants have been on Site, this is not expected to affect the conclusions. It is possible that there could be information that SCS did not identify that could have bearing on specific locations of the Site; however, this Phase I EDDA was based on the best available data.

Recognized Environmental Conditions (RECS)

SCS has performed a Phase I EDDA in conformance with the scope and limitations of ASTM Practice E1527-13 for the Proposed Airfield Safety Enhancement Project and Land Transactions for the Tucson International Airport, Tucson, Pima County, Arizona. Any exceptions to, or deletions from, these practices are described in Section 10 of this report. This assessment has revealed no evidence of RECs in connection with the Site, except as discussed below. No Historical RECs (HRECs) or Controlled RECs (CRECs) were identified for the Site, except as discussed below.

RECs

- Groundwater contamination associated with the TARP, Airport Property Project Area – Zone E, AFP-44 Raytheon Project Area, AANG Project Area, and West-Cap Project Area NPL sites appears to extend onto the Site. Therefore, the groundwater contamination associated with these NPL sites is considered a REC for the Site.
- The western portion of the Site on South Apron Drive has been occupied by aircraft maintenance type businesses since at least 1970, which is considered a potential REC for the Site.
- Also present in the western portion of the Site on South Apron Drive was a former fire station that was demolished. Two closed LUSTs were reported at the old fire station site. There could be residual concentrations of contaminants in soil associated with these releases, and it was unclear if there had also been investigations of the wash rack and separator; therefore, these features are considered a potential REC for the Site.
- The Site parcels at the southeast corner of East Valencia Road and South Park Avenue have been occupied by aircraft maintenance and service type businesses since

at least 1960, which is considered a potential REC for the Site; SCS was also not provided with access to these properties during the Site investigation.

- Several areas of the Site that have potential for contamination from fuel or chemicals used or stored in these areas include the fuel tanks and vaults associated with the four AANG arresting systems, the AANG hydrazine maintenance area, and the hazardous material storage area adjoining the former fire station. These are potential RECs for the Site.
- The A-Magazine ECMs at AFP-44 (the eastern six ECMs are within Parcel F) have been used to store explosives and other hazardous materials since 1954, which is considered a potential REC for the Site. SCS was not allowed to visually inspect the interiors of the ECMs or perform any destructive sampling because they were in use.
- Wildcat dumping of solid waste on the Site Parcels G and H in Section 32, and to a lesser extent along the roads in Section 33, is considered to be a REC for the Site.

HRECs

- None.

CRECs

- None.

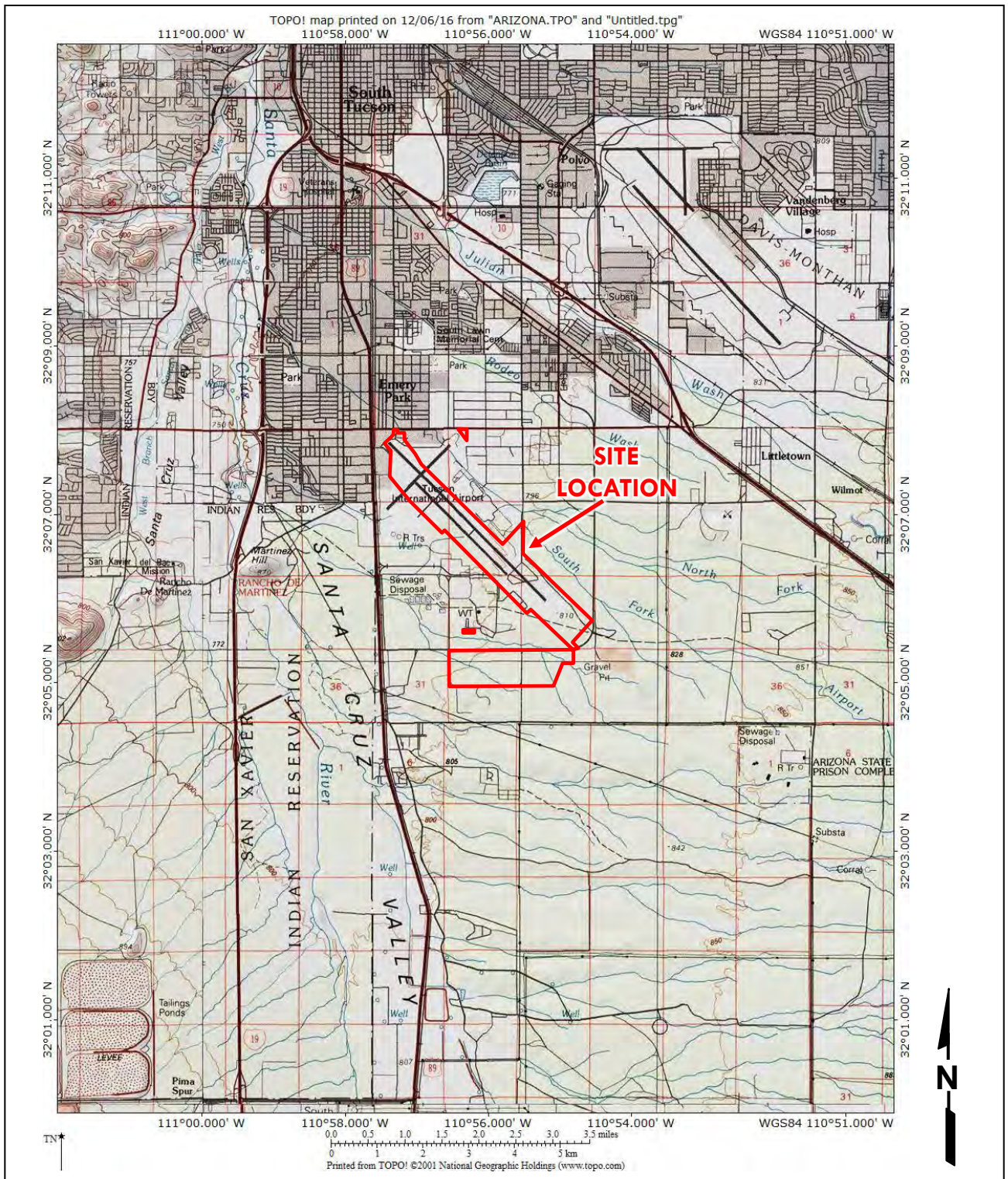
Recommendations

SCS has the following recommendations for additional environmental investigation of the Site.

- Groundwater contamination associated with the NPL sites is already under investigation. Numerous locations have been investigated at the facilities during these investigations. Ongoing monitoring and remediation activities are being performed; therefore, SCS has no recommendations for additional investigation associated with these NPL sites.
- The western portion of the Site on South Apron Drive and the Site parcels at the southeast corner of East Valencia Road and South Park Avenue should be investigated to determine if the long occupancy by aircraft maintenance and service type businesses has impacted soil on the Site. This should include the investigation of septic tanks, which may or may not still be present. Groundwater is not expected to have been impacted by Site activities due to the large number of groundwater wells already being monitored in the Site area, including on the Site; if there were significant impacts to groundwater from a Site source rather than those identified for the NPL sites, it is likely that it would have already been identified.
- Although the two LUST cases at the former fire station were closed, there could still be residual levels of contamination present. The former facility drain and oil-water separator should be removed and it should be determined whether the water drained

to the sewer or to a leach field. A soil sampling investigation should be performed to evaluate whether there were impacts to soil from the separator.

- The fuel tanks and vaults associated with the four AANG arresting systems, the AANG hydrazine maintenance area, and the hazardous material storage area adjoining the former fire station should be investigated to determine whether the use and storage of fuel or chemicals in these areas has impacted Site soils.
- SCS was retained to perform soil sampling and exterior LBP testing at the A-Magazine ECMs; these investigations are discussed under separate cover. Additional investigations should be performed once access to the interior of the ECMs is provided, including LBP and asbestos surveys. Once the structures are removed, additional soil sampling should be performed beneath the structures due to the storage of hazardous materials and to confirm there has been no release.
- Wildcat dumping of solid waste on the Site in Section 32, and to a lesser degree along the roads in Section 33, should be cleaned up. Construction materials that were discarded on the Site should be tested for asbestos prior to removal for disposal off Site. Soil in one location that contained a collection of discarded fluorescent tube light bulbs should be tested for impacts from mercury.
- Known hydrocarbon contamination is present in the subsurface at the former fire training facility in the eastern portion of the Site. Because this area has reportedly been characterized and because hydrocarbons are not currently regulated in Arizona, this area is not considered a REC; however, if possible, project activities should avoid disturbing this area.
- Due to the long term operation of the airport, it is possible that there were operations and incidents in the past, such as accidents and fuel spills, that could have left residual concentrations of contaminants in soil on the Site and that have not been identified in this report. If potential contamination is encountered during construction activities, a decision should be made as to whether further investigation is warranted.



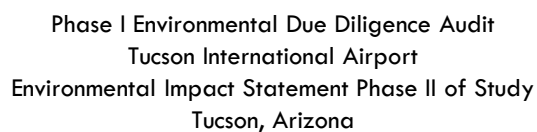
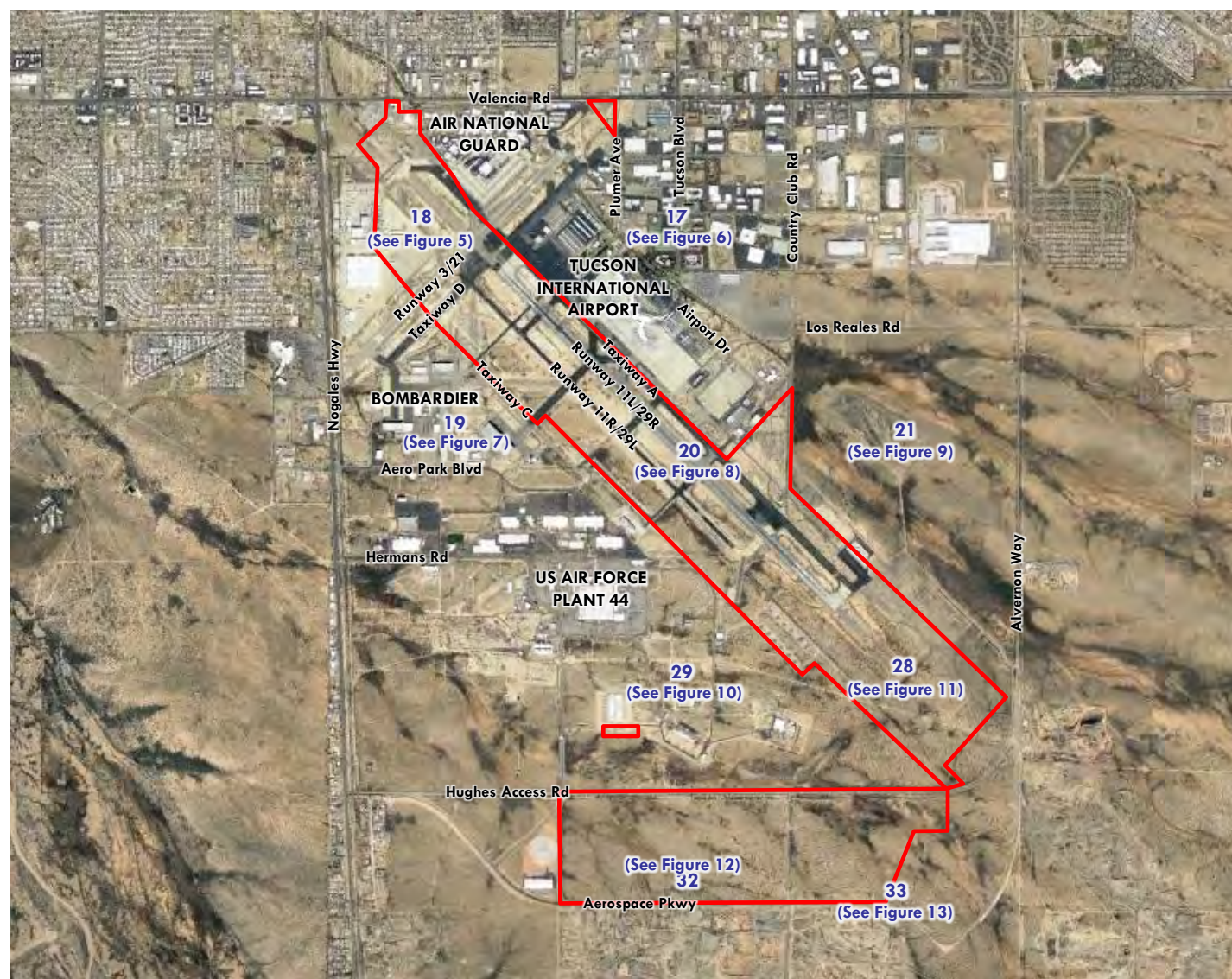



Figure 2
Site and Vicinity
Topographic Map



 Approximate Project Area Boundaries

18 Section number and detail map number
(See Figure 5)



Source: Google Earth 2017



SEE FIGURE 6

SEE FIGURE 7

— APPROXIMATE BOUNDARY OF SITE

55-209879 (X) APPROXIMATE LOCATION OF WELL AND ADWR ID #

55-619931 (X) APPROXIMATE LOCATION OF ABANDONED WELL AND ADWR ID #

0 1000 2000

APPROXIMATE SCALE IN FEET

Source: Pima County MapGuide Map website, 2016 Spring Aerial Photograph

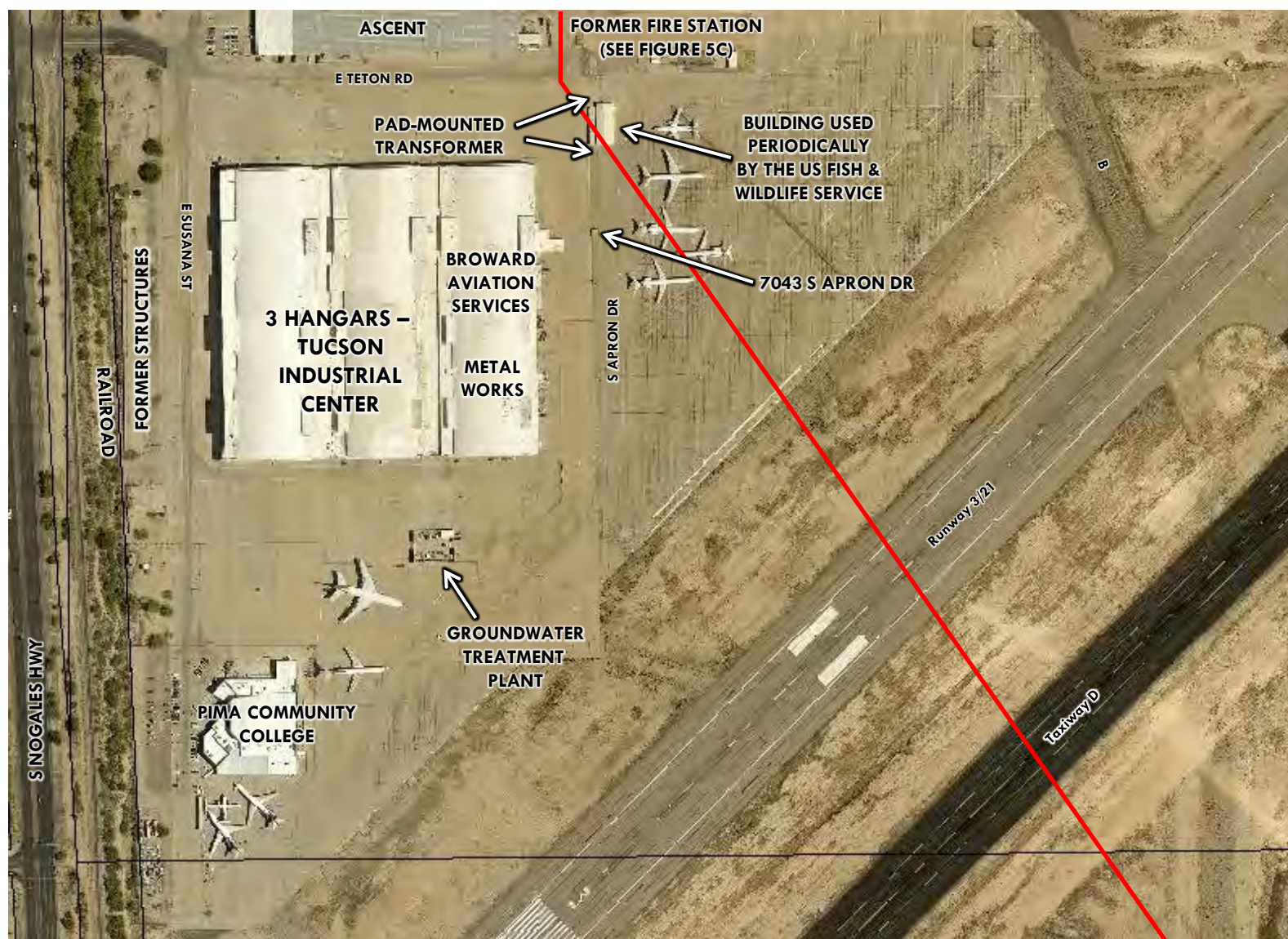




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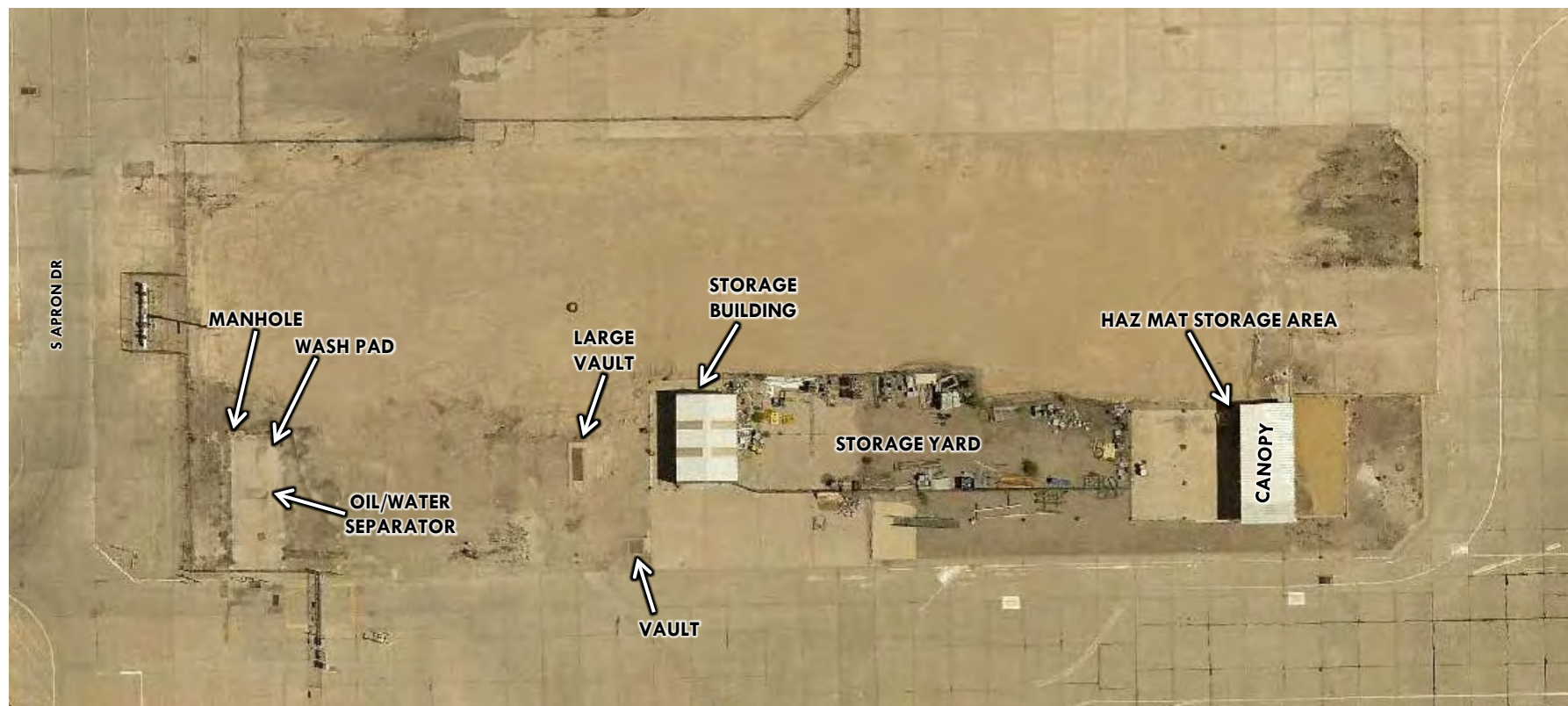
Figure 5A
 Site Detail – Northwest
 Fixed Base Operations Area
 North of Teton Road



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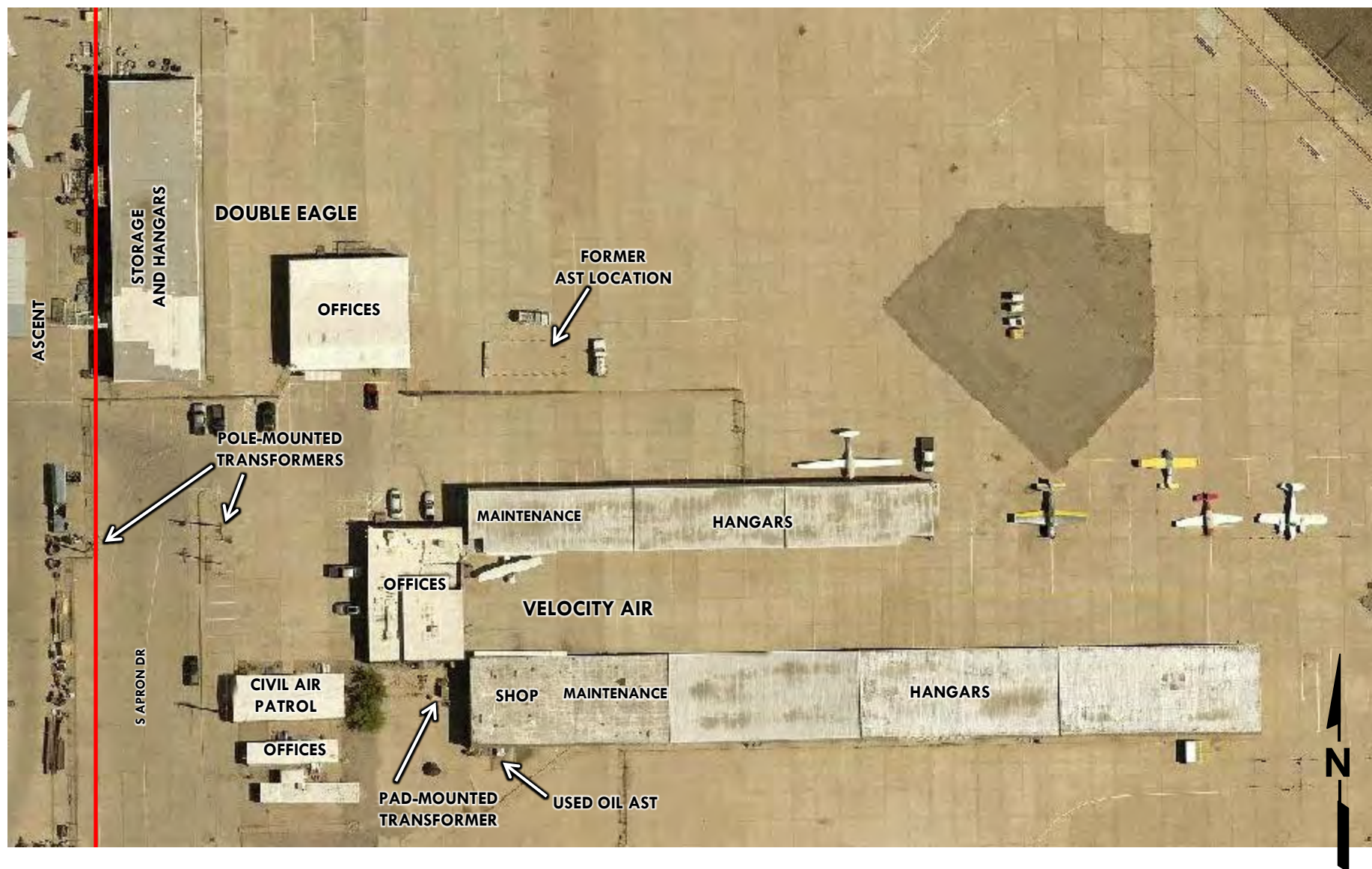
Figure 5B
Site Detail – Northwest
Fixed Base Operations Area
South of Teton Road



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Figure 5C
Site Detail
Former Fire Station



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Phase I Environmental Due Diligence Audit
Tucson International Airport
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Tucson, Arizona

Figure 5D
Site Detail
Velocity and Double Eagle





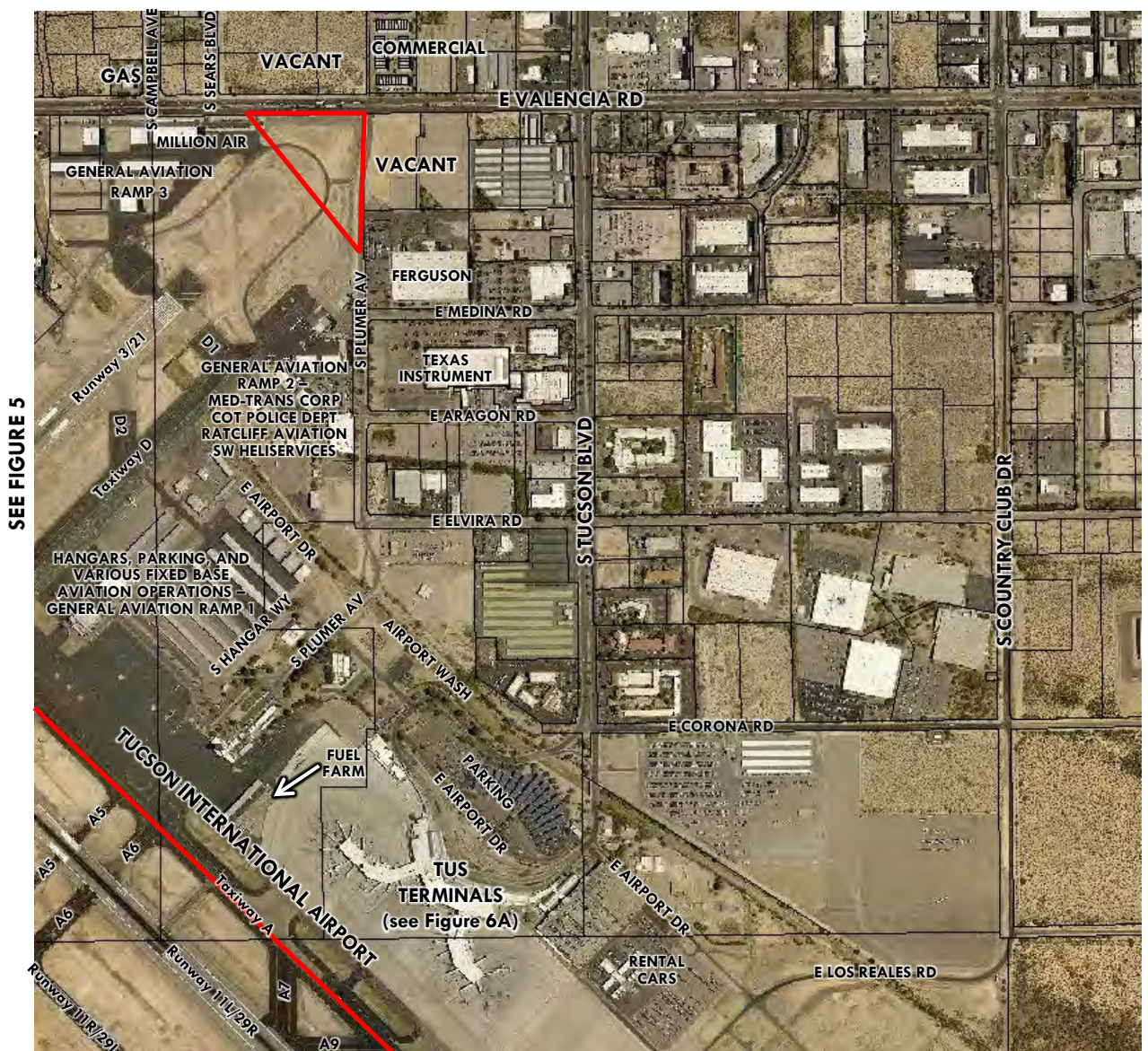
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Phase I Environmental Due Diligence Audit
Tucson International Airport
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Tucson, Arizona

Figure 5F
Site Detail
FAA Mouser Shack and
Abandoned Arrestor System







SEE FIGURE 5

SEE FIGURE 8

— APPROXIMATE BOUNDARY OF SITE

Source: Pima County MapGuide Map
website, 2016 Spring Aerial Photograph

0 1000 2000

APPROXIMATE SCALE IN FEET





SEE FIGURE 5



— APPROXIMATE BOUNDARY OF SITE

0 1000 2000

APPROXIMATE SCALE IN FEET

Source: Pima County MapGuide Map
website, 2016 Spring Aerial Photograph



SEE FIGURE 8

SEE FIGURE 6



SEE FIGURE 10

— APPROXIMATE BOUNDARY OF SITE

55-524217 (X) APPROXIMATE LOCATION OF WELL AND ADWR ID #

Source: Pima County MapGuide Map
website, 2016 Spring Aerial Photograph

0 1000 2000

APPROXIMATE SCALE IN FEET

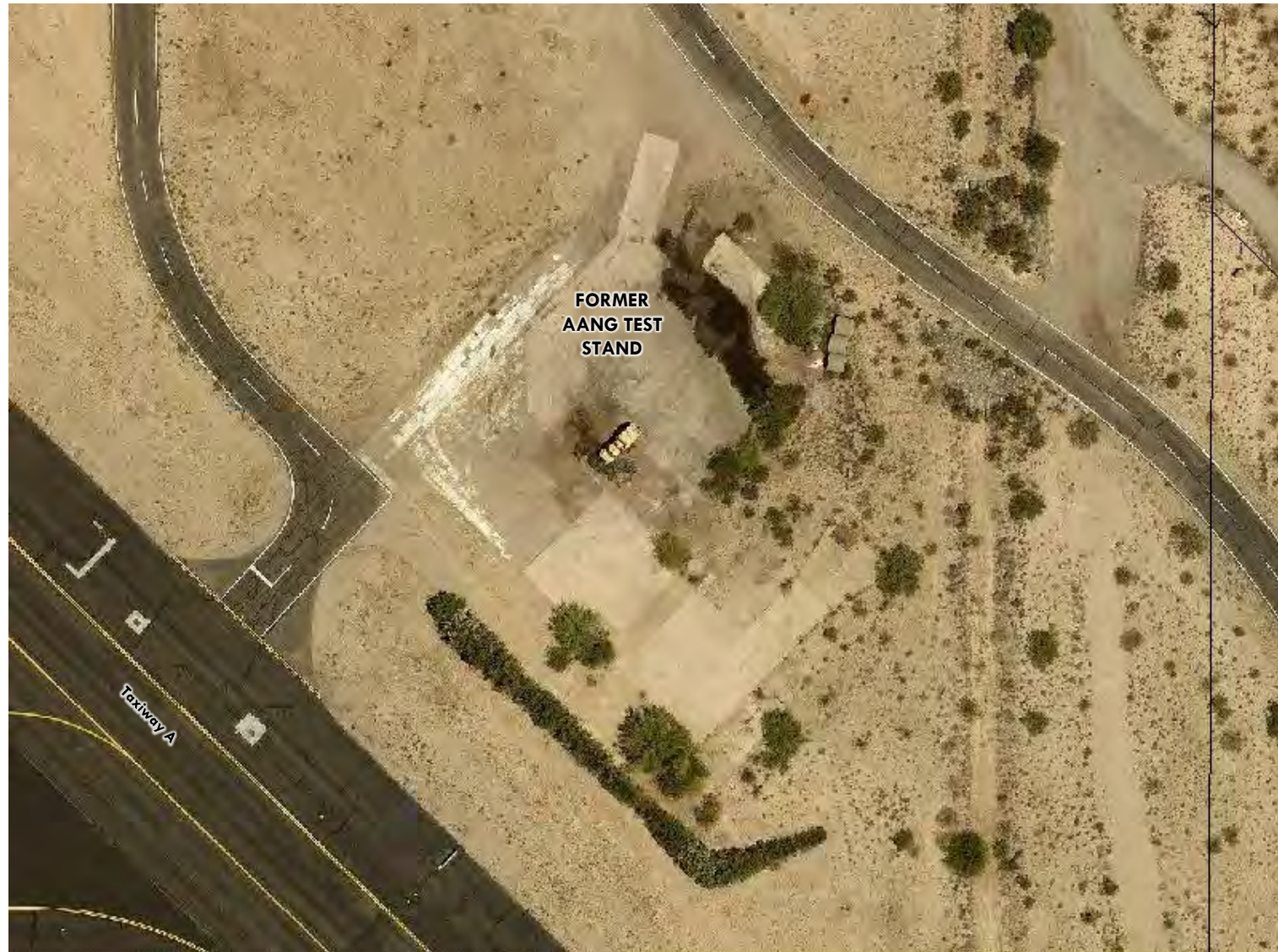




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Phase I Environmental Due Diligence Audit
Tucson International Airport
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Figure 8A
Site Detail –Contractors' Yard
and Portion of Fire Training Area



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Phase I Environmental Due Diligence Audit
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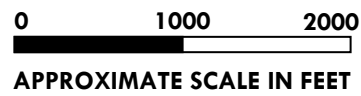
Figure 8B
Site Detail – Former AANG
Test Stand Area

SEE FIGURE 8



SEE FIGURE 11

— APPROXIMATE BOUNDARY OF SITE



Source: Pima County MapGuide Map website, 2016 Spring Aerial Photograph

SEE FIGURE 8



SEE FIGURE 12

— APPROXIMATE BOUNDARY OF SITE

55-809549 (yellow circle) APPROXIMATE LOCATION OF WELL AND ADWR ID #

55-482463 (green circle) APPROXIMATE LOCATION OF ABANDONED WELL AND ADWR ID #

0 1000 2000

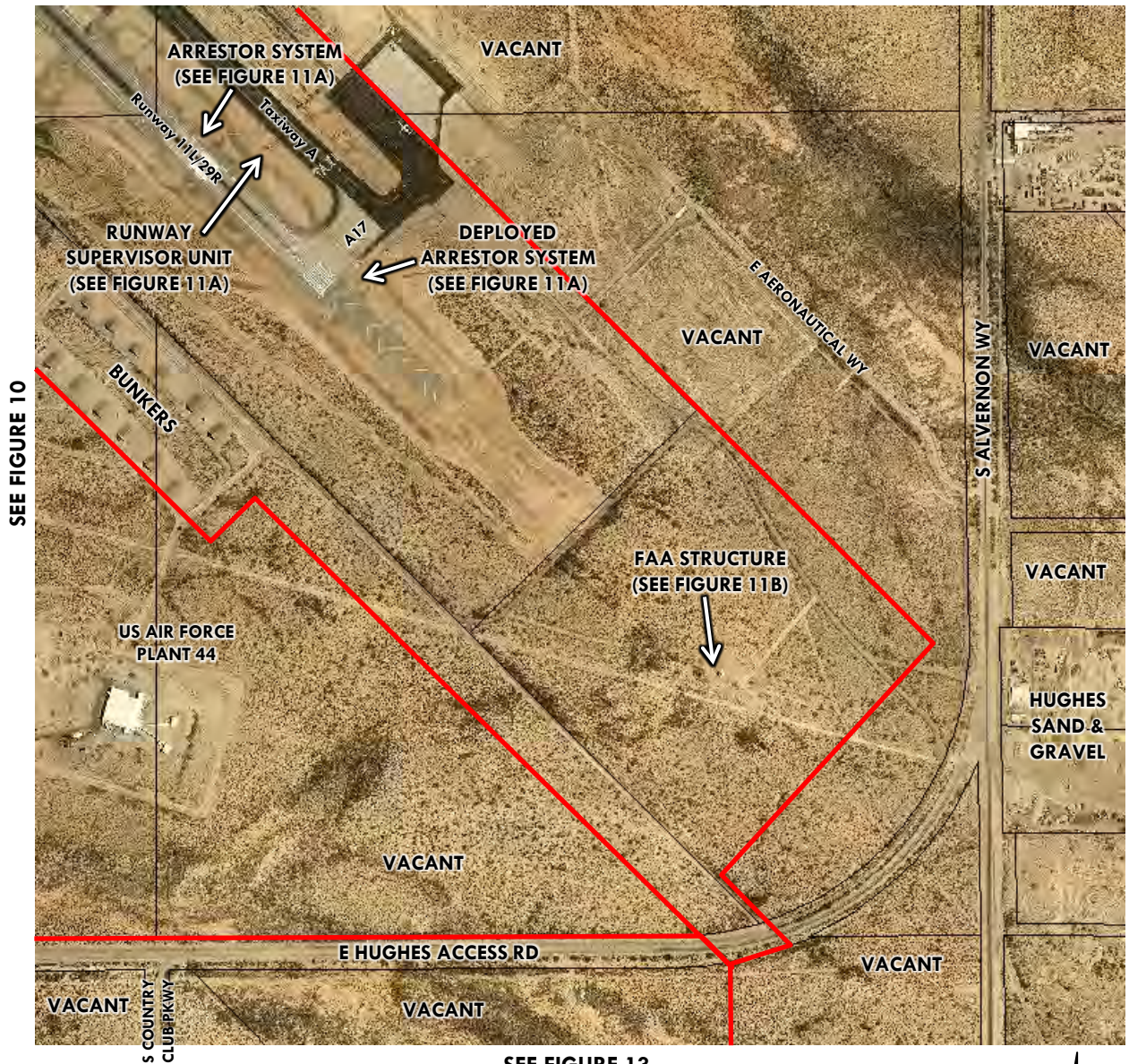
APPROXIMATE SCALE IN FEET

Source: Pima County MapGuide Map website, 2016 Spring Aerial Photograph



SEE FIGURE 11

SEE FIGURE 9



— APPROXIMATE BOUNDARY OF SITE

0 1000 2000

APPROXIMATE SCALE IN FEET

Source: Pima County MapGuide Map
website, 2016 Spring Aerial Photograph







SEE FIGURE 10



SEE FIGURE 13

— APPROXIMATE BOUNDARY OF SITE

55-545386 (X) APPROXIMATE LOCATION OF ABANDONED WELL AND ADWR ID #

Source: Google Earth website, 2/2017
aerial photograph

0 1000 2000

APPROXIMATE SCALE IN FEET





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Figure 12A
Site Detail
Waste Dumping Areas





— APPROXIMATE BOUNDARY OF SITE



SEE FIGURE 11



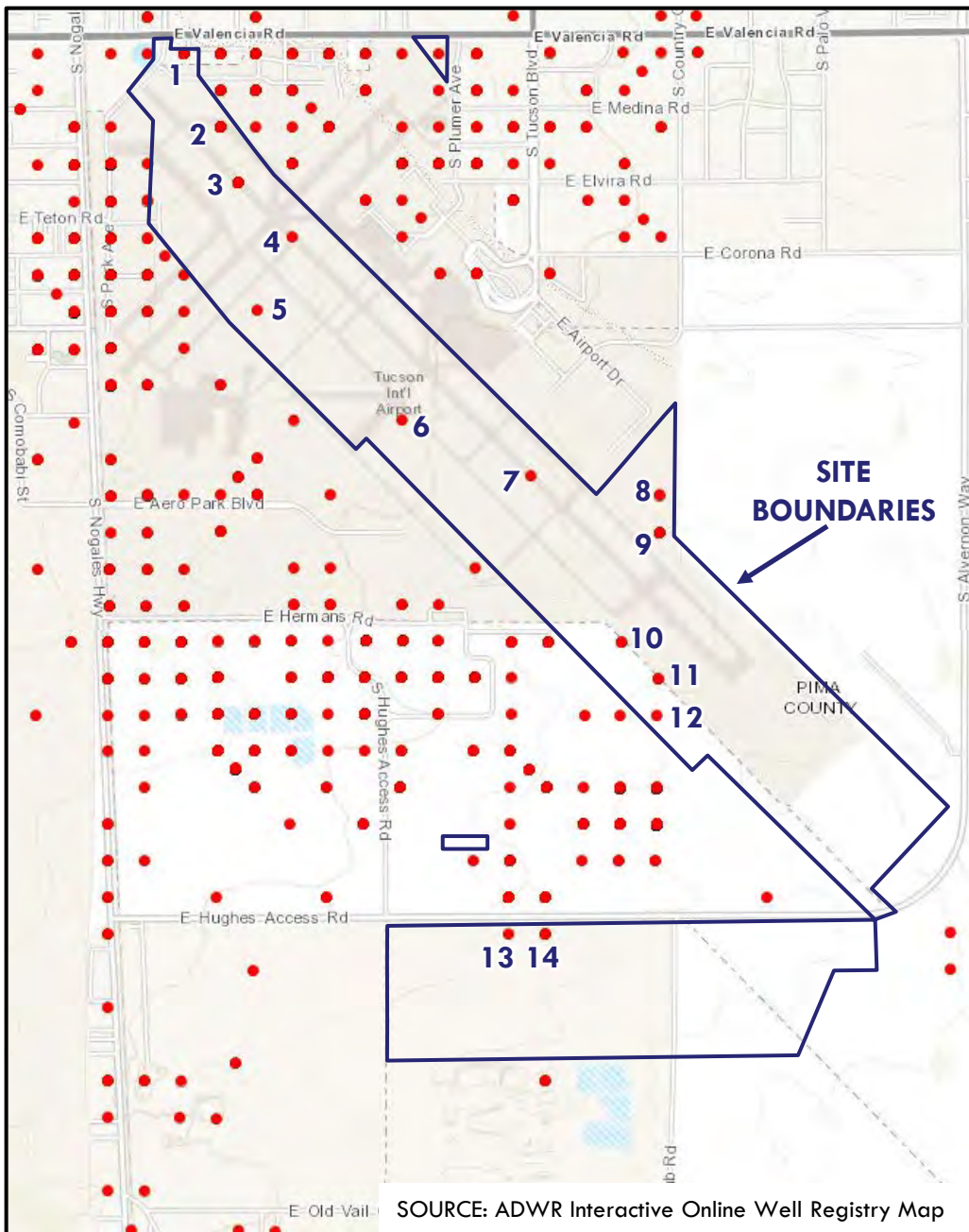
— APPROXIMATE BOUNDARY OF SITE

0 1000 2000

APPROXIMATE SCALE IN FEET

Source: Pima County MapGuide Map
website, 2016 Spring Aerial Photograph





- 2** • Indicates that one or more registered wells were identified on the ADWR interactive map within that quarter-quarter-quarter section. Numbers indicate locations that are within the site boundary, and correspond to column "Figure 14 Well Location #" on Table 1 – Registered Wells Potentially on Site. Note that some wells could possibly be on site that are shown off site on the map, or vice versa.



















Photograph 1. Vacant site parcel at the southeast corner of Park Avenue and Valencia Road (1000 East Valencia Road). View to the northeast.



Photograph 2. View across the site parcel at 1000 East Valencia Road toward the structure on the site parcel at 1070 East Valencia Road. View to the east.



Photograph 3. Park Avenue and Tucson Water's Martin Reservoir adjoining the northwest portion of the site to the west. View to the southwest.



Photograph 4. View across the northwest portion of the site from the perimeter road. View to the northeast.



Photograph 5. View across the site from the West Apron. View to the east-northeast.



Photograph 6. Access gate to the former fire station, Velocity Air, Double Eagle, and US Fish & Wildlife Service (USFWS) structure areas. View to the northeast.



Photograph 7. Transformers on poles south of the Velocity Air area. View to the southwest.



Photograph 8. Velocity Air and Double Eagle area. View to the south.



Photograph 9. Double Eagle offices. View to the northeast.



Photograph 10. Double Eagle hangar. View to the northwest.



Photograph 11. Interior of Double Eagle hangar. View to the west.



Photograph 12. Interior of Double Eagle hangar. View toward the northwest.



Photograph 13. Former location of aboveground storage tank (AST) for fuel east of the Double Eagle offices. View to the southeast.



Photograph 14. Velocity Air hangar and offices. View to the southeast.



Photograph 15. Velocity Air office building on the left and Civil Air Patrol offices in the center. View to the south.



Photograph 16. Velocity Air north hangars. View to the northeast.



Photograph 17. Velocity Air south hangars. View to the southeast.



Photograph 18. Maintenance area in the west end of the Velocity Air north hangar. View to the southwest.



Photograph 19. Storage area in the west side of the maintenance area. View to the south.



Photograph 20. Spill tray and pallet in the storage area. View to the south.



Photograph 21. Drums in the maintenance area in the west end of the Velocity Air south hangar. View to the east.



Photograph 22. The shop area in the west end of the Velocity Air south hangar. View to the southwest.



Photograph 23. Typical materials stored in cabinets in the shop area of the Velocity Air south hangar. View to the south.



Photograph 24. Used oil collection area in the southwest portion of the shop. View to the southeast.



Photograph 25. Sand blasting equipment in the southwest corner of the shop. View to the southwest.



Photograph 26. Equipment and materials in the shop. View to the northeast.



Photograph 27. Some oil containers stored on a shelf inside the office building.



Photograph 28. Used oil AST in secondary containment outside the south wall of the Velocity Air south hangar. View to the northeast.



Photograph 29. Drum to capture sand blasting debris outside the west wall of the Velocity Air south hangar. View to the east.



Photograph 30. Pad-mounted transformer and drum south of the Velocity Air offices. View to the northwest.



Photograph 31. Ascent Aviation facility adjoining the site to the west, near Velocity Air and Double Eagle. View to the southwest.



Photograph 32. View of former fire station site and storage building. View to the northeast.



Photograph 33. Wash rack in the west portion of the former fire station area with Ascent Aviation to the rear. View to the northwest.



Photograph 34. Wash rack in the west portion of the former fire station area (USFWS building to rear). View to the south.



Photograph 35. Manhole in the wash rack pad.



Photograph 36. Drain and separator in the wash rack pad.



Photograph 37. Vault in the former fire station area.
View to the southeast.



Photograph 38. Interior of vault.



Photograph 39. Vault in the former fire station area.
View to the north



Photograph 40. Photograph 38. Interior of vault.



Photograph 41. Storage building at the former fire station area. View to the northeast.



Photograph 42. Interior of the storage building. View to the north.



Photograph 43. Interior of the storage building. View to the northeast.



Photograph 44. Concrete-filled apparent linear drain in the center of the storage building. View to the northeast.



Photograph 45. Storage yard east of the storage building. View to the northwest.



Photograph 46. Hazardous waste storage area east of the storage yard. View to the northeast.



Photograph 47. Drums on the concrete pad west of the hazardous waste storage area. View to the north.



Photograph 48. Hazardous waste storage area. View to the northeast.



Photograph 49. Hazardous waste storage area. View to the northeast.



Photograph 50. Hazardous waste storage area. View to the east.



Photograph 51. Hazardous waste storage area. View to the east.



Photograph 52. USFWS structure south of the former fire station area. View to the southwest.



Photograph 53. USFWS structure south of the former fire station area. View to the southeast.



Photograph 54. Pad-mounted transformer at the northwest corner of the USFWS structure. View to the southeast.



Photograph 55. Pad-mounted transformer at the southwest corner of the USFWS structure. View to the southeast.



Photograph 56. Drain east of the transformer and south of the USFWS structure. View to the east.



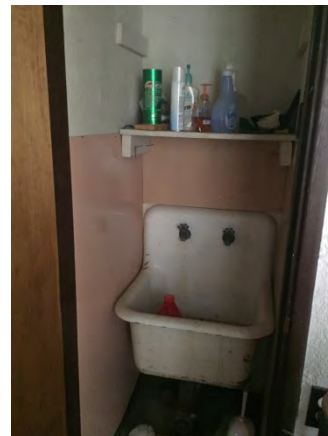
Photograph 57. Utility vault west of the USFWS structure. View to the southeast.



Photograph 58. Interior of the utility vault.



Photograph 59. Interior of the USFWS structure. View to the northwest.



Photograph 60. Janitor's closet in the north portion of the structure. View to the northwest.



Photograph 61. Room in the north portion of the USFWS structure.



Photograph 62. Shop area in the south and east portion of the USFWS structure. View to the southwest.



Photograph 63. Shop area in the south portion of the USFWS structure. View to the west.



Photograph 64. Second story room in the north portion of the USFWS structure. View to the northeast.



Photograph 65. Triple Hangar area southwest of the USFWS structure, adjoining the site to the southwest. View to the southwest.



Photograph 66. View across the site toward Sky West and Bombardier/Lear Jet. View to the south.



Photograph 67. View across the site toward Ascent Aviation. View to the west.



Photograph 68. Arizona Air National Guard (AANG) jets on taxiway prior to taking off. View to the southeast.



Photograph 69. AANG hangars adjoining the site to the east. View to the southeast.



Photograph 70. View from the triangular site area at the southwest corner of Valencia Road and Plumer Avenue. View to the south.



Photograph 71. View from the triangular site area at the southwest corner of Valencia Road and Plumer Avenue. View to the southwest.



Photograph 72. Commercial airplane on taxiway. View to the northwest.



Photograph 73. View across the site toward the new airport traffic control tower and Sky West. View to the southwest.



Photograph 74. View across the site toward the Triple Hangers. View to the southwest.



Photograph 75. View across the site toward Sky West and Bombardier/Lear Jet. View to the southwest.



Photograph 76. Runway Supervisor Unit (RSU) south of Taxiway A4. View to the southwest.



Photograph 77. AANG arrestor system north of Taxiway A5. View to the southwest.



Photograph 78. Atlantic Aviation, old airport traffic control tower, and parked airplanes adjoining the site to the east. View to the southeast.



Photograph 79. Fuel farm northwest of the airport terminal, east of the site. View to the north.



Photograph 80. Fuel pit area in the terminal ramp east of the site. View to the southeast.



Photograph 81. View across the site toward the Triple Hangers. View to the northwest.



Photograph 82. Fire station north and east of the site. View to the southwest.



Photograph 83. View from fire station toward the planned construction yard portion of the site (to rear); fueling area visible left rear. View to the southeast.



Photograph 84. Existing construction yard in the eastern portion of the site. View to the west.



Photograph 85. Existing construction yard in the eastern portion of the site. View to the west.



Photograph 86. Existing construction yard in the eastern portion of the site. View to the south.



Photograph 87. Existing construction yard in the eastern portion of the site. View to the southwest.



Photograph 88. Existing construction yard in the eastern portion of the site. View to the south.



Photograph 89. View across the site toward the A-Magazine at US Air Force Plant 44. View to the southwest.



Photograph 90. South end of the runway at Taxiway A17. View to the southwest.



Photograph 91. Deployed AANG arrestor system near Taxiway A17. View to the southwest.



Photograph 92. Road in the area southeast of the end of the runway.



Photograph 93. The Federal Aviation Administration (FAA) structure in the area southeast of the runways. View to the northeast.



Photograph 94. Area southeast of the end of the runway. View to the northwest.



Photograph 95. Perimeter road along the southwestern portion of the site. View to the northwest.



Photograph 96. A-Magazines visible in the background on the US Air Force Plant 44 property. View to the southwest.



Photograph 97. Taxiway toward the airport terminal across the site. View to the northeast.



Photograph 98. Compass rose area on the site. View to the northeast.



Photograph 99. Gravel surfaced area in the south-central portion of the site in Section 32. View to the southwest.



Photograph 100. Wildcat dumping in the south-central portion of the site in Section 32.



Photograph 101. Wildcat dumping in the south-central portion of the site in Section 32.



Photograph 102. Wildcat dumping in the south-central portion of the site in Section 32.



Photograph 103. View across the western portion of the site in Section 32. View to the northwest.



Photograph 104. Drainage basin north of Aerospace Parkway in the south portion of the site in Section 32. View to the south.



Photograph 105. Mounded soil in the south-central portion of Section 32.



Photograph 106. Wildcat dumping in the south-central portion of the site in Section 32.



Photograph 107. Aerospace Parkway and vacant land adjoining the site to the south. View to the southwest.



Photograph 108. Country Club Road crossing through the site between Sections 32 and 33. View to the northwest.



Photograph 109. Country Club Road extending south from Aerospace Parkway south of the site. View to the southwest.



Photograph 110. Wildcat dumping along Country Club road on the site between Sections 32 and 33.



Photograph 111. A collection of fluorescent tube lightbulbs disposed on the site along Country Club Road.



Photograph 112. Wildcat dumping in the southwest portion of the site in Section 32.



Photograph 113. Wildcat dumping in the southwest portion of the site in Section 32.



Photograph 114. Wildcat dumping in the southwest portion of the site in Section 32.



Photograph 115. Wildcat dumping in the southwest portion of the site in Section 32.



Photograph 116. Wildcat dumping in the southwest portion of the site in Section 32.



Photograph 117. View across the western portion of the site. View to the southwest.



Photograph 118. Dirt road used for access for installation of chain-link fence on the north portion of the site in Section 32. View to the east.



Photograph 119. Excavated area in the north portion of the site in Section 32. View to the southeast.



Photograph 120. Hughes Access Road closed to traffic, adjoining the site to the north in Sections 32 and 33. View to the east.



Photograph 121. World View adjoining the site in Section 33 to the west. View to the northeast.



Photograph 122. Vacant land in the Section 33 portion of the site. View to the east.



Photograph 123. Vacant land in the Section 33 portion of the site. View to the northwest.



Photograph 124 Some wildcat dumping in the north portion of the site in Section 33.



Photograph 125. Dirt road used for access for installation of chain-link fence on the north portion of the site in Section 33. View to the southeast.



— Approximate Site Boundary

2011

Source: Pima County MapGuide





— Approximate Site Boundary

2006

Source: Pima County MapGuide



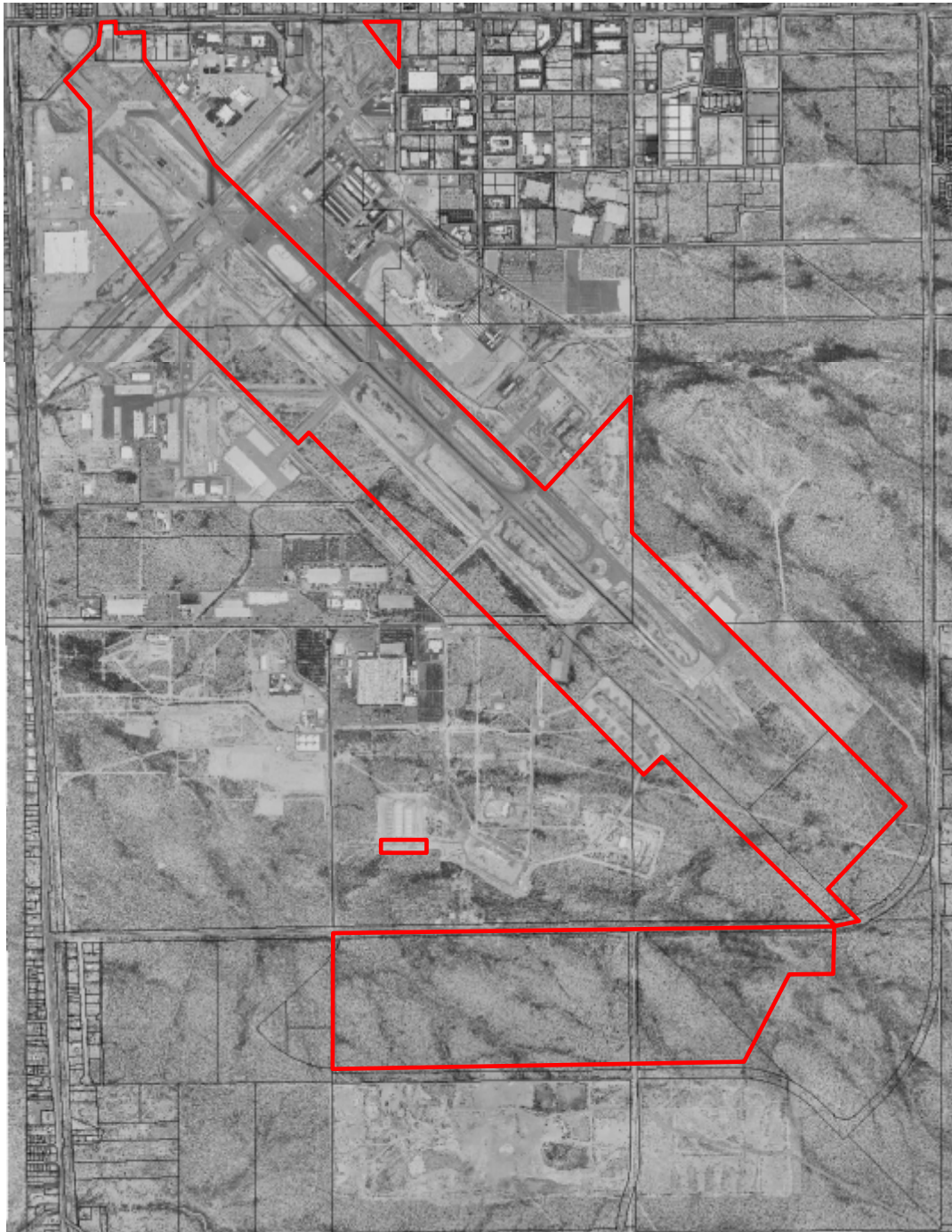


— Approximate Site Boundary

2002

Source: Pima County MapGuide





— Approximate Site Boundary

1998

Source: Pima County MapGuide





— Approximate Site Boundary

1992

Source: Pima County MapGuide



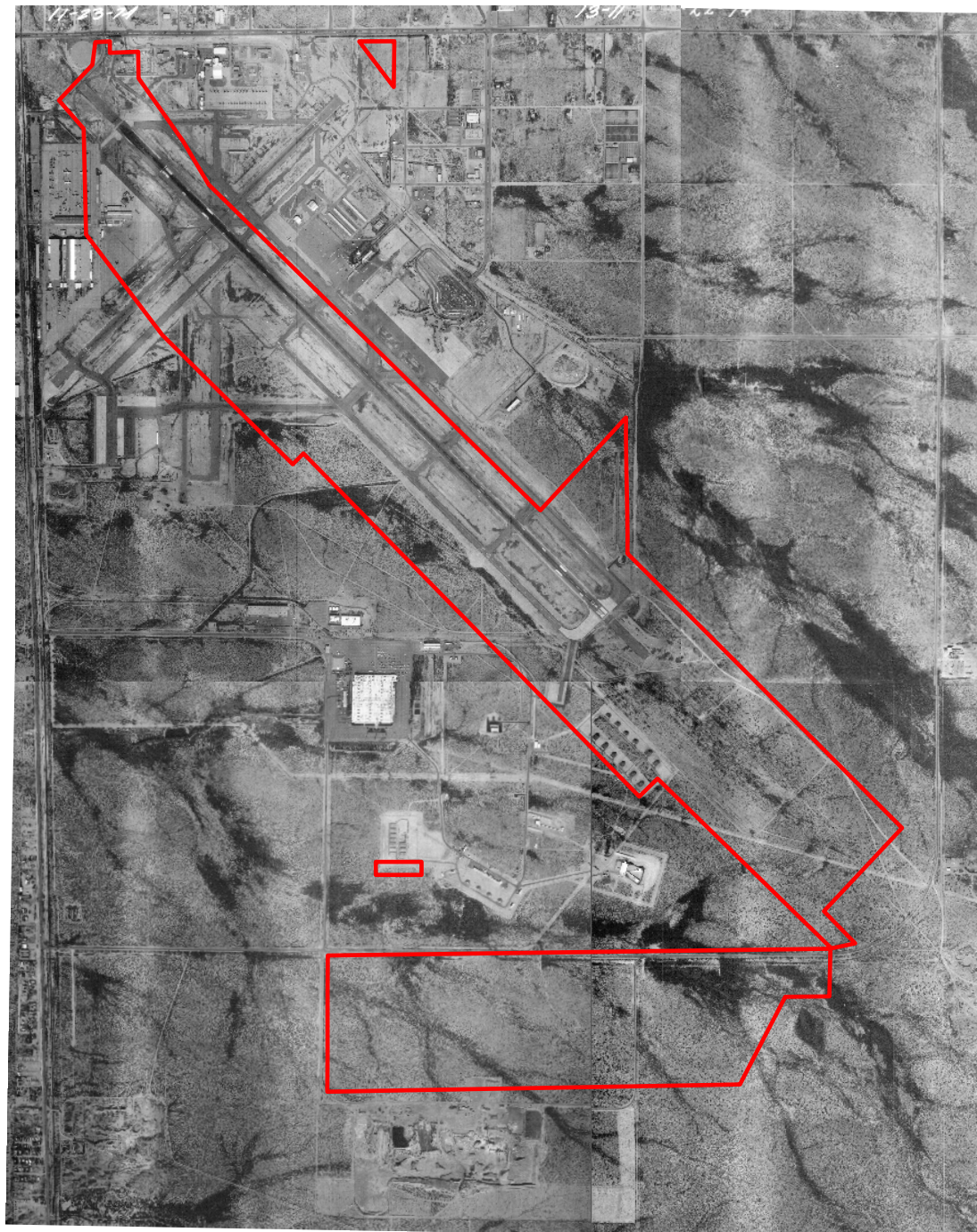


— Approximate Site Boundary

1980

Source: NETR Online





— Approximate Site Boundary

1974

Source: NETR Online





— Approximate Site Boundary

1967

Source: NETR Online

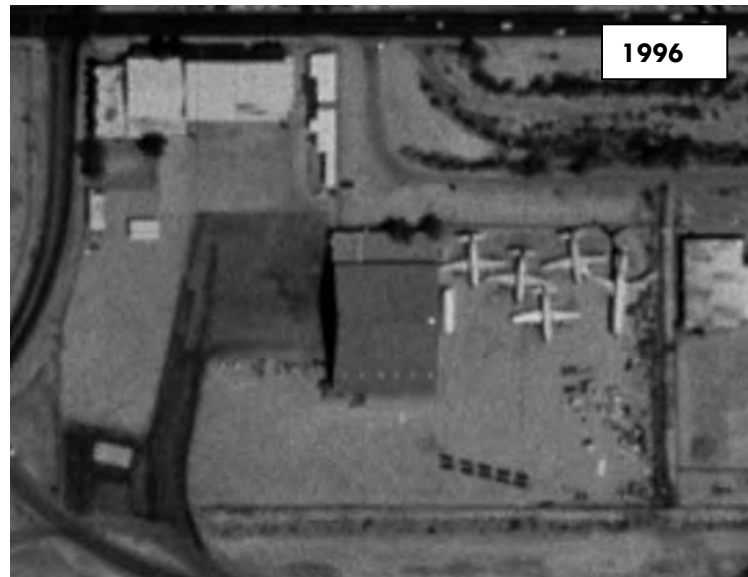
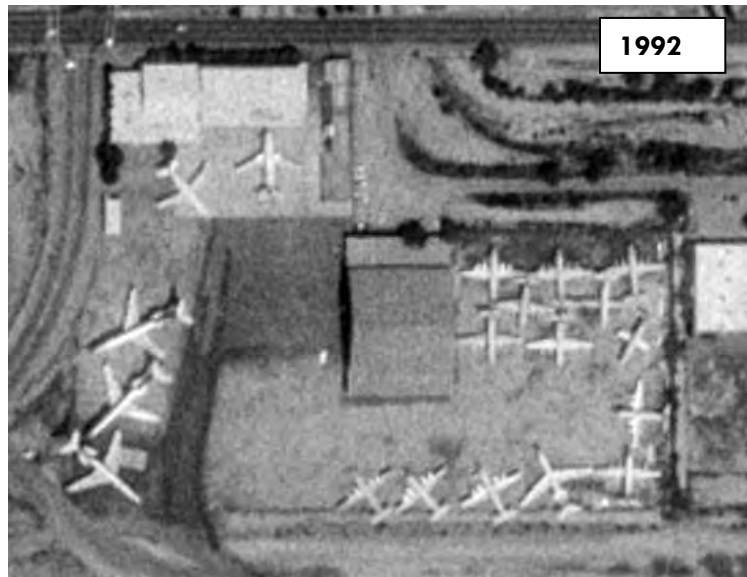


— Approximate Site Boundary

1958

Source: NETR Online





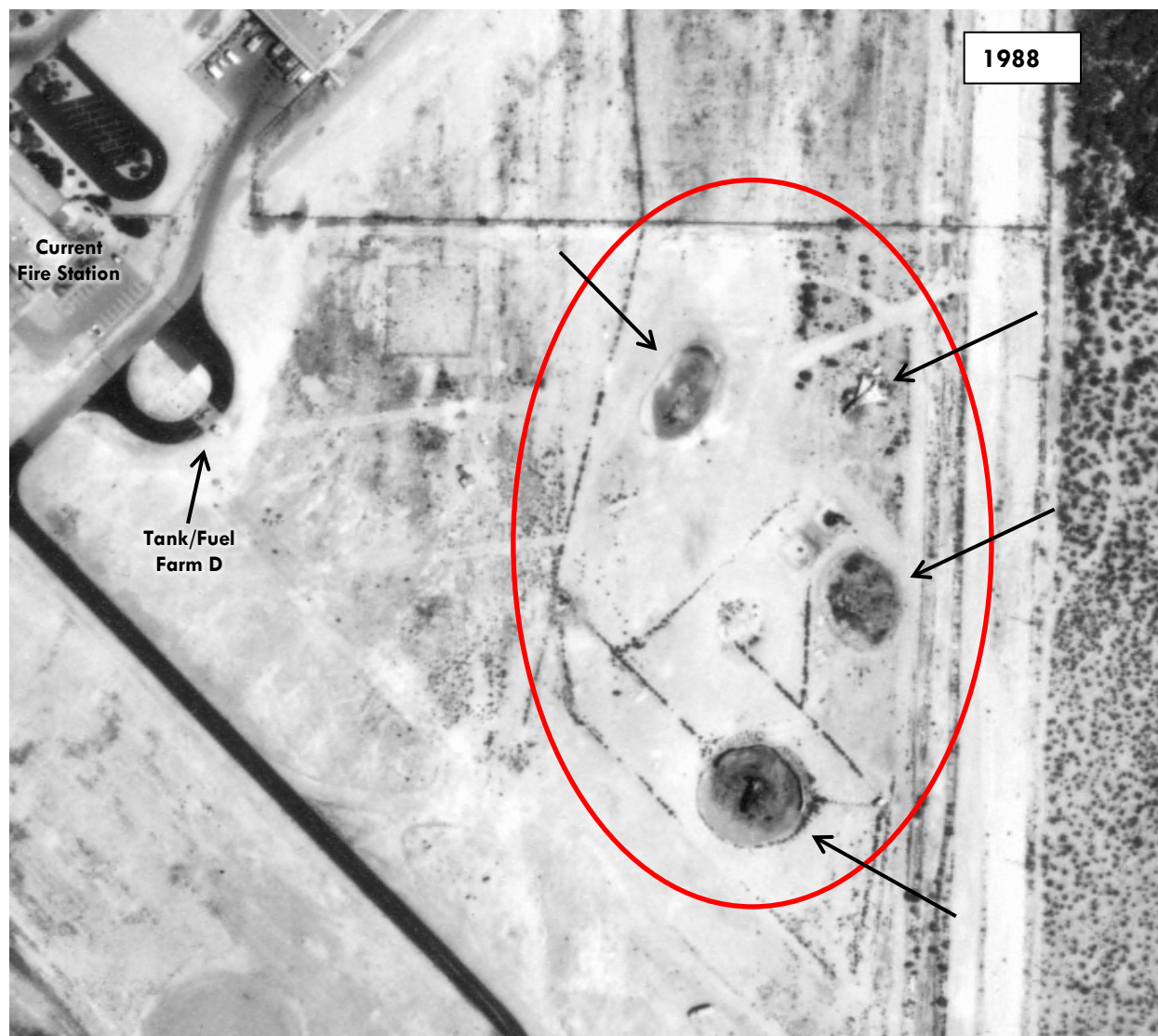


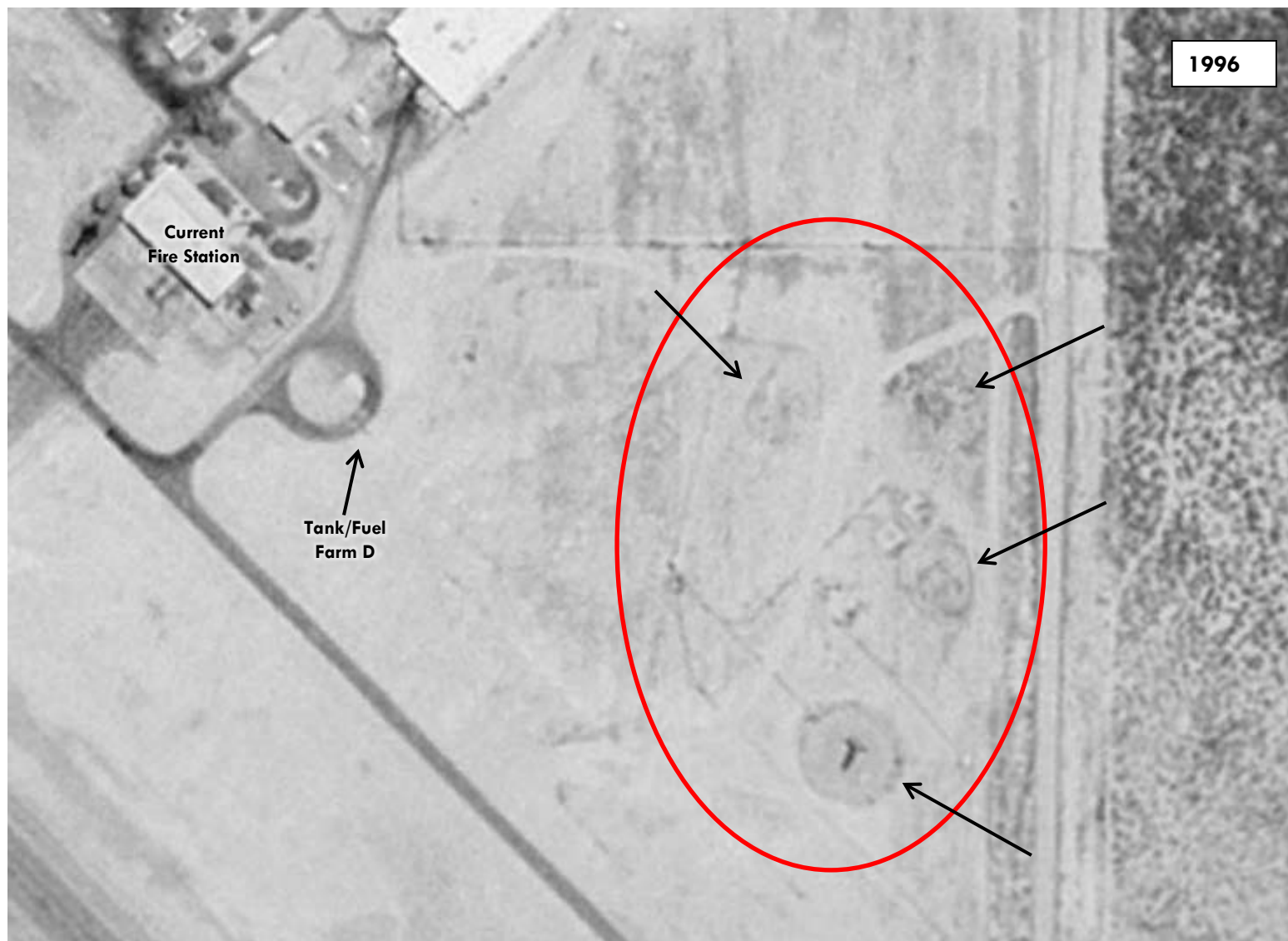












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SOIL AND LEAD-BASED PAINT INVESTIGATION SUMMARY

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SCS ENGINEERS

November 22, 2017
File No. 01216132.01

Mr. Chris Babb
Landrum & Brown, Inc.
11279 Cornell Park Drive
Cincinnati, OH 45242

Subject: Soil and Lead-Based Paint Investigation of Earth Covered Munitions Site
Environmental Impact Statement for the Proposed Airfield Safety Enhancement
Project and Land Transactions for the Tucson International Airport (TUS)
Tucson, Arizona

Dear Mr. Babb:

SCS Engineers (SCS) performed soil sampling and a lead-based paint (LBP) survey at the Earth Covered Munitions (ECM) Site known as the A-Magazine at the United States Air Force Plant 44 (AFP-44) facility adjoining the airport property. Each ECM is covered by a soil layer, which in turn is also covered by a layer of weathered asphaltic material. Photographs were not allowed to be taken during this investigation. A copy of a set of photographs of the A-201 through A-206 ECMs (provided by Raytheon) is included in Attachment 1. A Site Vicinity Map and Site Map are included as Figures 1 and 2.

The purpose of the soils investigation is to evaluate whether soils on the top of the ECMs and around the base of the ECMs have been impacted by materials stored in the ECMs or by pesticides, herbicides, or asphalt leaching. Soil samples were collected from the sides of the ECMs and from the ground surface adjoining the ECMs. The purpose of the LBP survey is to aid the planning for eventual demolition of these structures to evaluate whether special handling or disposal will be required for the debris. The LBP survey was performed on painted surfaces on the front of the ECMs and on the vent area on the top rear of the ECMs. The methodology and results of the investigation are discussed below.

SOIL SAMPLING INVESTIGATION

Collection of Soil Samples

On May 22 and 23, 2017, Mr. Brian Gould of SCS collected 80 soil samples (72 primary samples and 8 duplicate samples) as follows: 3 soil samples from the soil layer covering each ECM (one from each of the two sides and one from the rear area of each ECM), and 3 soil samples from the soil adjacent to each ECM (one from soil adjoining each of the two sides and one from the rear areas of the ECMs). The soil sample locations are shown on Figure 3.

The soil samples were collected from a depth of ground surface to 6 inches below ground surface directly into two laboratory provided 4-ounce glass jars. Samples were labeled with a unique sample identification number and the date and time of sample collection, placed into an insulated



cooler with wet ice, and chilled to and maintained at ± 4 degrees Celsius ($\pm 4^{\circ}$ C) pending delivery to the laboratory under proper chain of custody procedures. The samples were delivered to ESC Lab Sciences in Phoenix, Arizona on May 24, 2017, who then shipped the samples overnight to their laboratory in Mount Juliet, Tennessee for analysis, all under proper chain of custody procedures.

Laboratory Analysis

The 80 soil samples were analyzed for organochlorine pesticides (EPA Method 8081B); organochlorine herbicides (using EPA Method 8151); organophosphorous pesticides (EPA Method 8141B); Priority Pollutant Metals (EPA Methods 6010C/7471B – antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc); and polynuclear aromatic hydrocarbons (PAHs), which may have leached into the soil from the weathered asphaltic material (EPA Method 8270C-SIM [Selective Ion Monitoring]).

Results

Metals were detected in all the soil samples. Organochlorine pesticides were detected in six soil samples and PAHs were detected in 17 of the samples. No organochlorine herbicides or organophosphorous pesticides were detected in any of the samples. Detected concentrations were compared to the Arizona residential and non-residential soil remediation levels (RSRLs and NRSRLs, respectively). A summary of the laboratory results is included in Table 1. The laboratory report is included in Attachment 2.

The metals arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, and zinc were detected in the analyzed samples. None of the concentrations exceeded the RSRLs or NRSRLs, except for arsenic in four of the samples (201E, 202C/DUP-7, 204C, and 206E). Arsenic in these samples exceeded the RSRL/NRSRL concentration of 10 milligrams per kilogram (mg/kg). The arsenic concentrations in the four samples ranged from 10.1 to 11.5 mg/kg; the range of concentrations in all the samples was 3.04 to 11.5 mg/kg. All four samples came from the east or south sides of the north row of ECMs (200 series, also known as #877 through 882).

The average concentration of arsenic in the samples collected from the sides and rear of the ECMs was 7.8 mg/kg, while the average concentration of arsenic for samples collected from the ground surface was 5.0 mg/kg. This could indicate that the source soil used to cover the ECMs had higher concentrations of arsenic or that the arsenic was derived from the asphalt or possibly herbicides/pesticides applied to the sides of the ECMs. However, the concentrations of arsenic detected in the samples are relatively low and are within the range of typical background levels in soil in Arizona.

LEAD-BASED PAINT SURVEY

LBP Testing

On May 23, 2017, Ms. Patricia Hartshorne and Mr. Brian Gould of SCS performed a lead-based paint survey of the exterior of ECMs A-201 through A-206 (a.k.a. #877 through 882) using a portable hand-held X-Ray Fluorescence (XRF) analyzer. This survey method tests the lead

content of painted surfaces directly without the need to collect samples; it is a non-destructive method that will not damage the building materials/structures. Due to overheating of the XRF as a result of hot weather (temperatures exceeding 100 degrees Fahrenheit), Ms. Hartshorne returned to the site on June 6 and 15, 2017 to complete the sampling of the exterior of ECMs A-101 through A-106 (a.k.a. #871 through 876). The high temperatures caused repeated shut-down of the XRF, which was mitigated during the third event by wrapping with ice packs.

Two general areas of exterior painted surfaces were tested. The front area of the ECMs contained painted surfaces on the concrete wall, concrete pad, and concrete ramp adjoining the wall, and on the metal doors, pipes, trim strip on the concrete pad, electrical panels and boxes, and vents. The second area tested was the vent on the top rear of the ECMs. Painted surfaces in the vent area included the concrete base for the vent and the metal vent, flag, flag arm, and vent door. Painted plastic vault covers adjacent to the ECMs were also tested.



XRF wrapped in ice packs

Results

The XRF results for the tested painted surfaces ranged up to 2.78 milligrams per square centimeter (mg/cm^2). A reading of $1.0 \text{ mg}/\text{cm}^2$ or greater is considered to be LBP. The testing logs are included in Attachment 3.

For demolition purposes, waste characterization would consist of collecting a representative bulk composite sample of all materials to be disposed and analyzing using the toxicity characteristic leaching procedure (TCLP). The “rule of thumb” for estimating whether the toxicity characteristic might be exceeded is to multiply the toxicity characteristic value by 20. In this case, the toxicity characteristic for lead is 5 milligrams per liter (mg/L), which would suggest that concentrations of $100 \text{ mg}/\text{kg}$ or greater would be needed to exceed the toxicity characteristic using the leaching procedure. Although the XRF results are not directly comparable to the TCLP level, based on the relatively low test results for lead detected during the site testing, it is likely that the waste stream generated by demolition and removal of the sampled structures will not exhibit the lead toxicity characteristic of hazardous waste.

CONCLUSIONS AND RECOMMENDATIONS

SCS was not permitted to enter the structures or to perform destructive sampling on the structures because they are still in use. The following conclusions and recommendations are based on these restrictions and on the results of the soil sampling and LBP testing investigation:

- Prior to the demolition of the 12 ECM sites, a LBP survey should be performed for any painted or similarly coated surfaces inside each structure. It is recommended that this survey be performed during cooler weather in order to optimize the performance

of the XRF analyzer. Paint chips could also be collected as a confirmation for the results.

Based on the relatively low test results for lead detected during the site testing of the exterior of the ECMs, it is likely that the waste stream generated by demolition and removal of the sampled structures will not exhibit the lead toxicity characteristic of hazardous waste. However, the presence of lead in the paint should be taken into account with regard to worker safety during demolition.

- Prior to the demolition of the 12 ECM sites, an asbestos survey will need to be performed for each structure. An Asbestos Hazards Emergency Response Act (AHERA)-certified Building Inspector should perform a visual inspection and sampling of suspect materials to identify the presence of asbestos-containing materials (ACMs) in specified locations in the structures as required for National Emissions Standards for Hazardous Air Pollutants (NESHAP) compliance prior to demolition.
- Following demolition of the 12 ECM structures, a minimum of 3 soil samples should be collected from the soil directly beneath the former location of each ECM. The soil samples should be analyzed for herbicides, pesticides, priority pollutant metals, and PAHs using the same methods described above. Additionally, the soil samples should also be analyzed for explosive residues (using EPA Method 8330) and for nitrates (EPA Method 9056).

CLOSURE

SCS appreciates the opportunity to assist you with this project. Should you have any questions regarding this project, please contact Randy Bauer at (602) 840-2596.

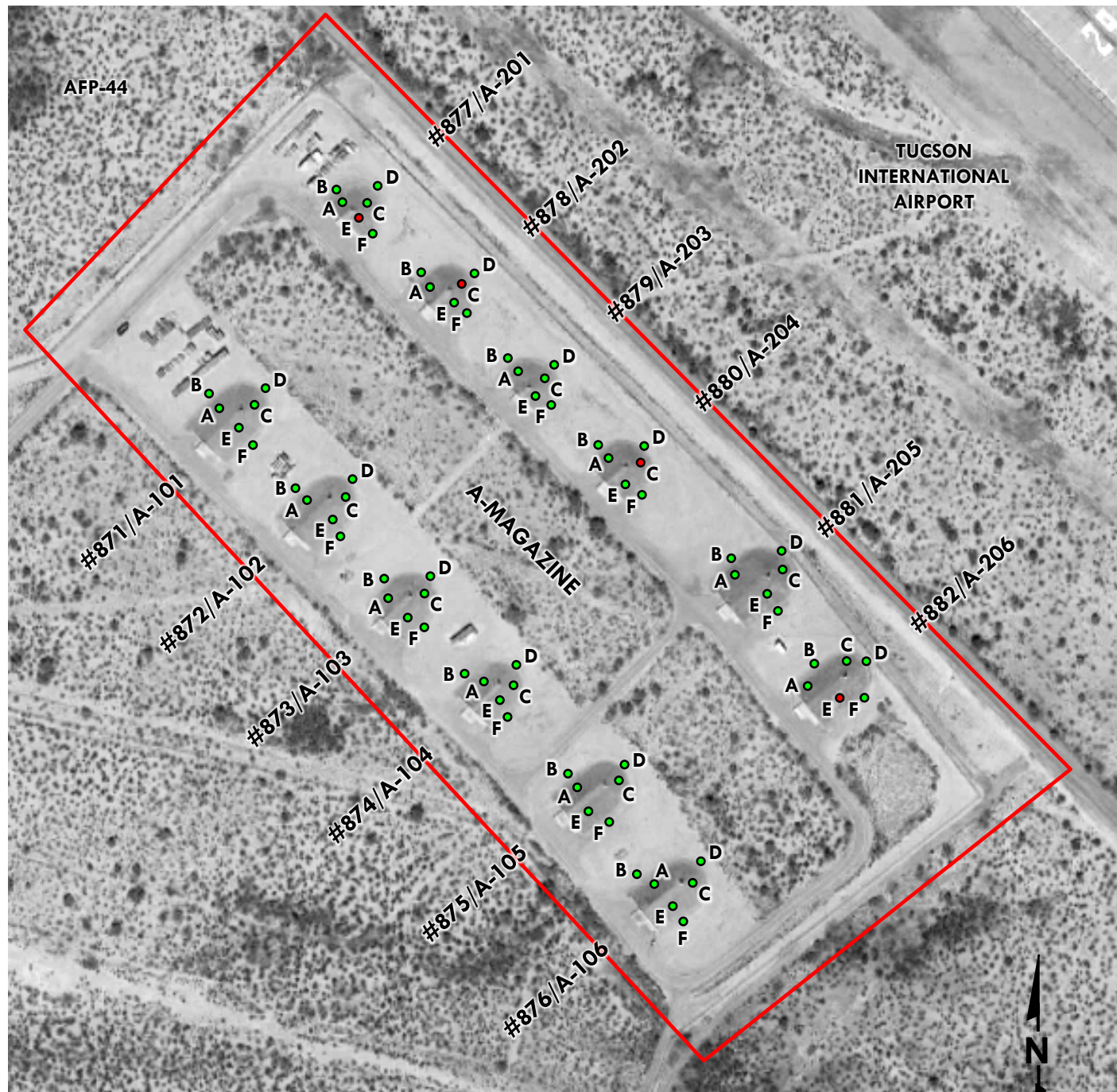
Sincerely,



Patricia M. Hartshorne, RG
Project Manager
SCS ENGINEERS



Randy D. Bauer, RG
Project Director
SCS ENGINEERS



Source: Google Earth, 2017

- B ● Approximate Soil Sample Location
- Concentration Exceeded RSRL or NRSRL

0 200 400
APPROXIMATE SCALE IN FEET

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