Appendix D

Hazardous Materials: Summary of Environmental Site Assessments/Investigations

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Appendix D
Hazardous Materials: Summary of Environmental Site Assessments/Investigations

As summarized herein, four environmental site assessments (ESA)/investigations (ESI) were undertaken in 2017 and 2018 that identified areas of known or potential hazardous waste sites within the Proposed Project site that may be affected by implementation of the Proposed Project:

- Amec Foster Wheeler Environment & Infrastructure, Inc., Final Phase I Environmental Site Assessment: Project Area 2 – Southside T1RP and Support Facilities, San Diego International Airport, San Diego, California, July 26, 2017.
- Amec Foster Wheeler Environment & Infrastructure, Inc., Final Phase II Environmental Site Investigation Report for Project Area 2 – Southside T1RP & Support Facilities, San Diego International Airport, San Diego, California, February 7, 2018.
- Kleinfelder Phase I Environmental Site Assessment: Project Area 3, Terminal 1 San Diego International Airport, San Diego, California, Kleinfelder Project No. 20182081.001A, November 17, 2017.
- Kleinfelder Phase II Environmental Site Assessment: Terminal 1, Project Area 3, San Diego International Airport, San Diego, California, Kleinfelder Project No. 20182081.001A, May 7, 2018.

Additional studies reviewed include the Post-Remediation Risk Assessment and Final Cleanup and Abatement Completion Report for the Teledyne Ryan Property (TDY site)[1] located to the east of the proposed new Terminal 1 site, and the Annual Site Conditions Certification Report[2] for the Naval Training Center Waste Disposal Site (NTC site) located west of the existing Terminal 2 (site of the proposed new San Diego County Regional Airport Authority [SDCRAA] administrative office building). The boundaries of the studies listed above are shown on **Figure 1**.

Additionally, Final Sampling and Analysis Report Water Code Section 13267 Order for the Determination of the Presence of Per- And Polyfluoroalkyl Substances at San Diego International Airport, was reviewed.[3]

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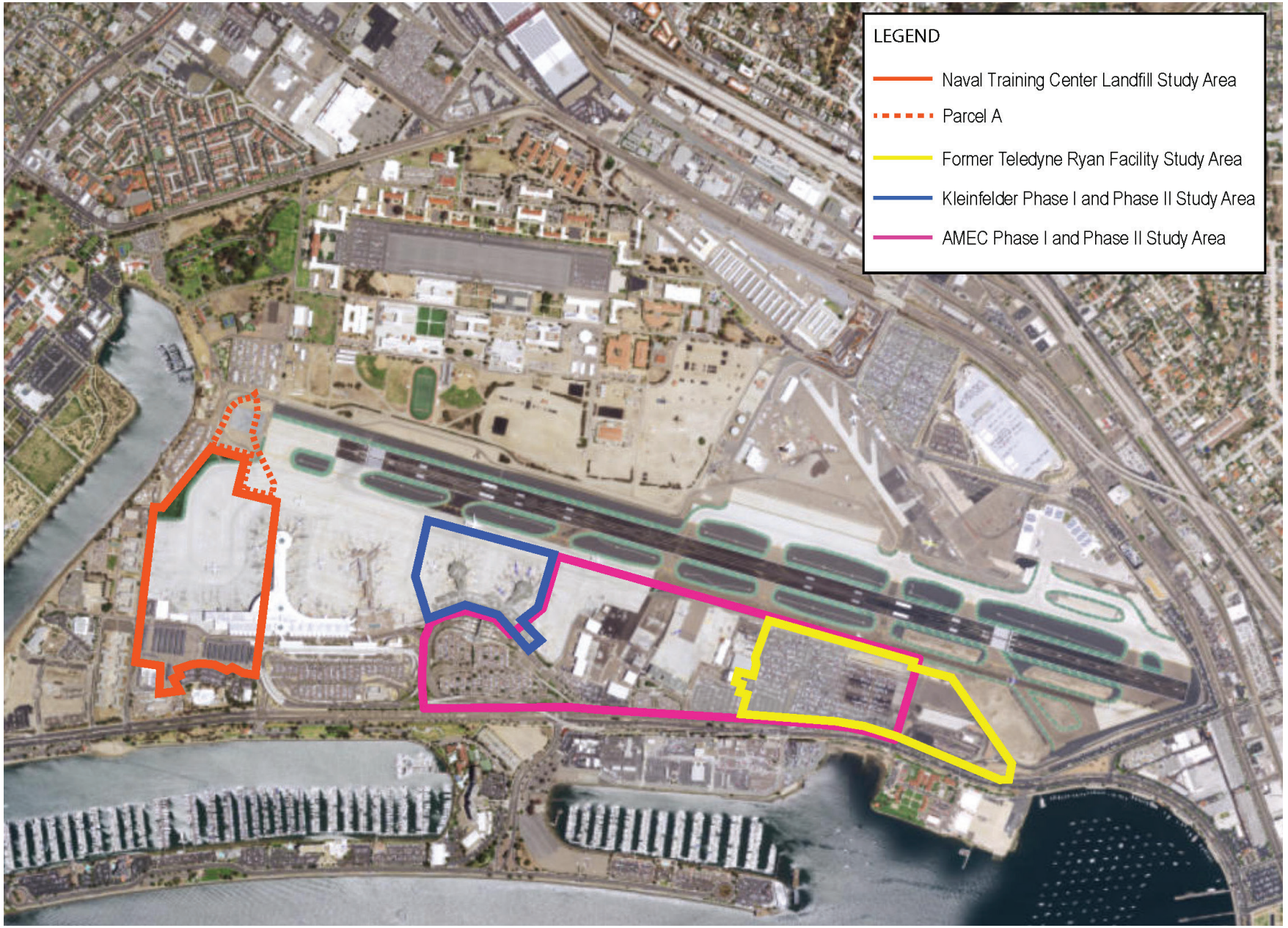
[1] Geosyntec, *Cleanup and Abatement Completion Report Airport/Former TDY Site, 2701 North Harbor Drive San Diego, California SL2090541880: Talo*, Prepared for TDY Industries, LLC. December 12, 2014; Geosyntec, Inc., *Post-Remediation Risk Assessment, Airport/Former TRA Site, 2701 North Harbor Drive, San Diego, California SL209054180: Talo*, October 17, 2014.

[2] Ninyo and Moore, *Annual Site Conditions Certification Report Parcel A of the Naval Training Center (NTC) Waste Disposal Site (aka Former Site 1 – Old MCRD Landfill; aka Old MCRD Refuse Disposal Area) 3225 Harbor Drive, San Diego, California 92101 GeoTracker Global ID No. L10004197278 San Diego Water Board (Region 9) Case # 9 000000823/16591-1, SWIS No. 37-CR-0058, Reference Code 240135: K Schwall*, Prepared for San Diego County Regional Airport Authority, October 30, 2018.

[3] Wood PLC Environment and Infrastructure Solutions, *Final Sampling and Analysis Report Water Code Section 13267 Order for The Determination of the Presence of Per- And Polyfluoroalkyl Substances at San Diego International Airport*, Prepared for San Diego County Regional Airport Authority, December 2019.



Source: Ninyo & Moore, 2007 and October 30, 2018; Geosyntec, December 12, 2014; Amec Foster Wheeler, 2017; Kleinfelder, 2018.

Figure 1

San Diego International Airport
Airfield Improvements and Terminal 1 Replacement Project

PREVIOUS SITE EVALUATIONS STUDY AREA

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Based on a review of the results of a public records search of government databases performed electronically by Environmental Data Resources, Inc. (EDR), historical records, additional site research, and site reconnaissance, several "Recognized Environmental Conditions" (RECs) and "Historical Recognized Environmental Conditions" (HRECs), have been identified within the Proposed Project site. For this Environmental Assessment (EA), RECs are defined as the presence or likely presence of a hazardous substance or petroleum products in, on, or at a site: (1) because of a release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. HRECs are RECs from a previous release of any hazardous substances or petroleum products that has occurred in connection with the site and has been addressed to the satisfaction of the applicable regulatory authority or meets unrestricted residential use criteria established by a regulatory authority, without subjecting the site to any required controls.

The Amec and Kleinfelder Phase I studies listed above identified RECs and HRECs in their respective study areas. Based on the results of Phase I studies, Phase II subsurface investigations were conducted to test for the presence of contaminants in soil and groundwater. Below summarizes the Amec and Kleinfelder studies, by identifying the RECs and HRECs followed by a summary of the results of the Phase II investigations.

Additionally, there is an HREC called the former NTC Inactive Landfill, which is within the Proposed Project construction area (site of the future SDCRAA administration office building), but outside of the area reviewed for the Amec and Kleinfelder Phase I ESAs. This HREC is a 52-acre site formerly used by the NTC and MCRD from the 1940s to 1971 as a municipal landfill for consumer waste, burn ash, and construction debris (See Figure 1). The site has undergone extensive remediation and was developed as part of the Terminal 2-West "Green Build" development. The western-most portion of the Proposed Project site is part of the former NTC Inactive Landfill. SAN has removed the waste and a remediation and closure plan was implemented. An area to the north of the Inactive Landfill (Parcel A as shown on Figure 1) continues to be subject to monitoring under oversight of the San Diego Regional Water Quality Control Board (RWQCB), but the remainder of the site has been terminated from enrollment in RWQCB General Orders No. R9-2012-0001 and R9-2012-0002, which releases the site from any further permitting or monitoring requirements.[4,5]

[4] Ninyo and Moore, *Annual Site Conditions Certification Report. Parcel A of the Naval Training Center (NTC) Waste Disposal Site (aka Former Site 1 – Old MCRD Landfill; aka Old MCRD Refuse Disposal Area) 3225 Harbor Drive, San Diego, California 92101, Geo Tracker Global ID No. L10004197278, San Diego Water Board (Region 9) Case #9 000000823/16591-1, SWIS No. 37-CR-0058, Reference Code 240135: K Schwall*, Prepared for San Diego County Regional Airport Authority, October 30, 2018.

[5] California Regional Water Quality Control Board - San Diego Region, Letter from David W. Gibson, Executive Officer to Mr. Richard Gilb, Environmental Affairs Manager, San Diego County Regional Airport Authority, *Notice of Termination of Enrollment in General Order No. RS-2012-0001, and General Order No. RS-2012-0002: Notice of Enrollment in General Order No. RS-2012-0003 for the Parcel A portion of the Naval Training Center/Marine Corps Recruit Depot Landfill, San Diego*, March 1, 2018.

Amec Phase I and II Studies

The following RECs were identified in the Amec Phase I ESA (**Figure 2**):

- One 3,000-gallon waste oil underground storage tank (UST) and one 12,000-gallon wastewater UST (also referred to as an oil/water separator) are located in the western-most pump island of the fuel pumping station. The 12,000-gallon UST collects stormwater from the fuel rack that potentially contains hydrocarbons from minor drips and spills at the fuel pumps and is thus considered "wastewater." The USTs were identified as a REC in the Amec Phase I ESA due to limited information that was obtained at the time. However, the tanks are under County of San Diego Department of Environmental Health (DEH) regulatory oversite and are in full compliance with regulatory requirements. The fueling operations and Granular Activated Carbon (GAC) treatment system are subject to National Pollutant Discharge Elimination System (NPDES) Permit No. CAS000001 (i.e., the Industrial General Permit for stormwater).

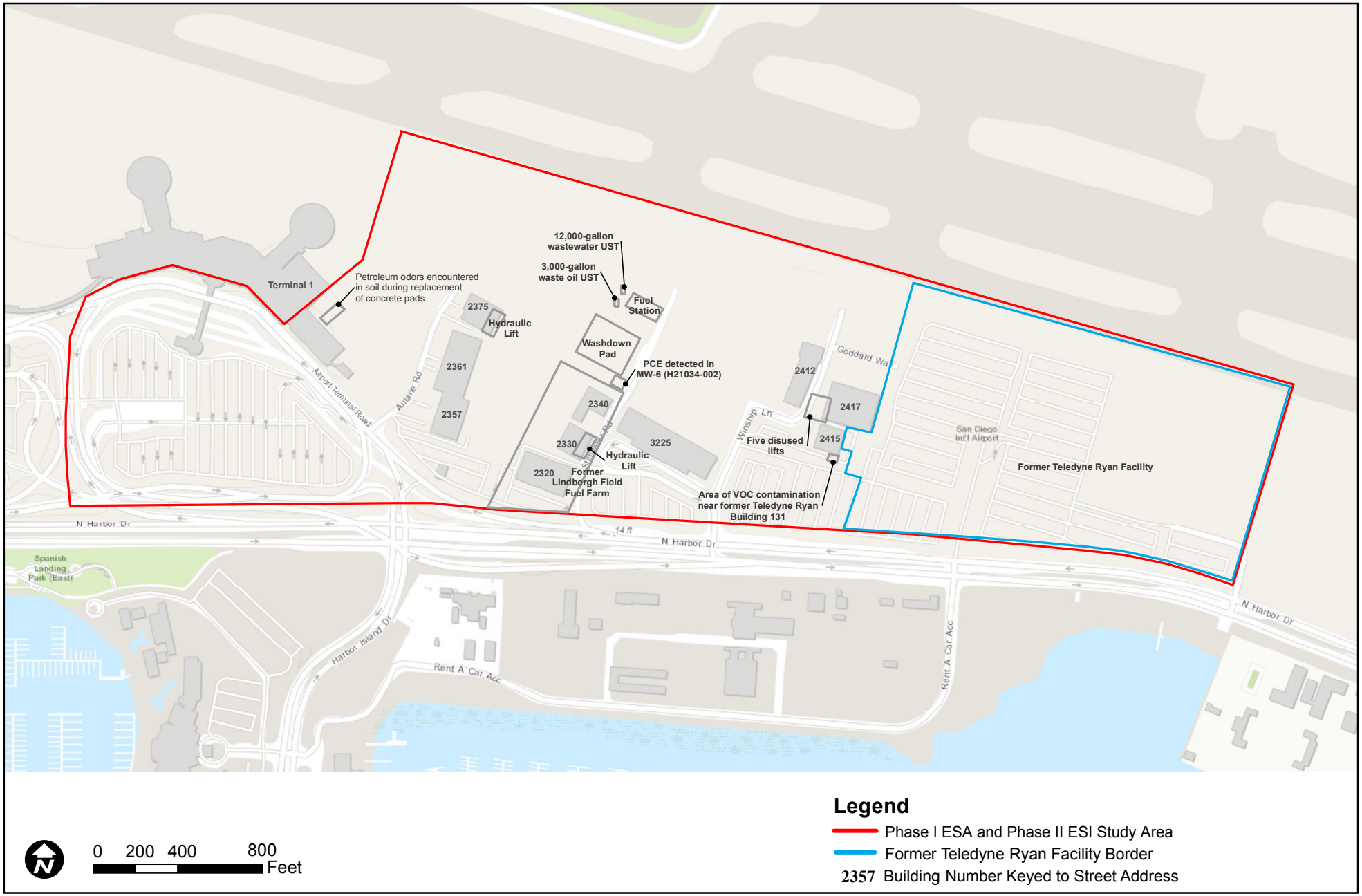
- Several active and inactive hydraulic lifts[6] were identified. The inactive lifts are currently filled with concrete, with some metal parts still exposed at the surface. Based on the age of the lifts, the lifts contained cylinders of hydraulic fluid used to lift vehicles and platforms. Based on the potential for hydraulic fluid to have been released from the cylinders, the active hydraulic lifts and the abandoned lifts are considered RECs.

- Strong petroleum odors were observed in soil encountered during the replacement of several concrete pads along the western property border of the Phase I study area (which is eastern portion of the existing Terminal 1 airfield ramp). The petroleum odors observed in the soil present a REC. Soil sampling conducted as part of the Phase II ESI did not indicate significant concentrations of petroleum nor significant extent of contamination as described in the summary of the Phase II ESI later in this appendix.

The following HRECs were identified in the Amec Phase I ESA (Figure 2):

- County of San Diego DEH UST removal records were identified for 3225 North Harbor Drive (Building 3225 shown on Figure 2) under the name U.S. Air, dated August 30, 1990. U.S. Air was formerly known as American Eagle Airlines and Pacific Southwest Airlines. The 1990 record documents the removal of five USTs (one 10,000-gallon gasoline UST; one 3,250-gallon diesel UST; one 3,250-gallon methyl ethyl ketone (MEK) UST; one 2,250-gallon MEK UST; and one 2,250-gallon waste oil UST). Following the removal of the USTs, ponded product was observed beneath the gasoline UST. The UST removal incident received a No Further Action (NFA) letter from the County DEH dated July 23, 1991. The NFA letter indicated that the only soil showing evidence of waste oil contamination was located under the waste oil tank and that there was no indication of MEK or chlorinated compound contamination. A total of 70 cubic yards of soil was excavated and transported to Gibson Oil Refinery Company, Bakersfield, California for recycling.

[6] A hydraulic lift is a machine that uses a hydraulic force to lift or move objects by exerting pressure on liquid in a piston. Old hydraulic lifts can leak hydraulic fluid from reservoir tanks and pipes onto the soil below.



Source: Amec Foster Wheeler Environment & Infrastructure, Inc., July 26, 2017.

Figure 2

San Diego International Airport
Airfield Improvements and Terminal 1 Replacement Project

AREAS OF CONCERN IDENTIFIED IN THE AMEC PHASE I ESA

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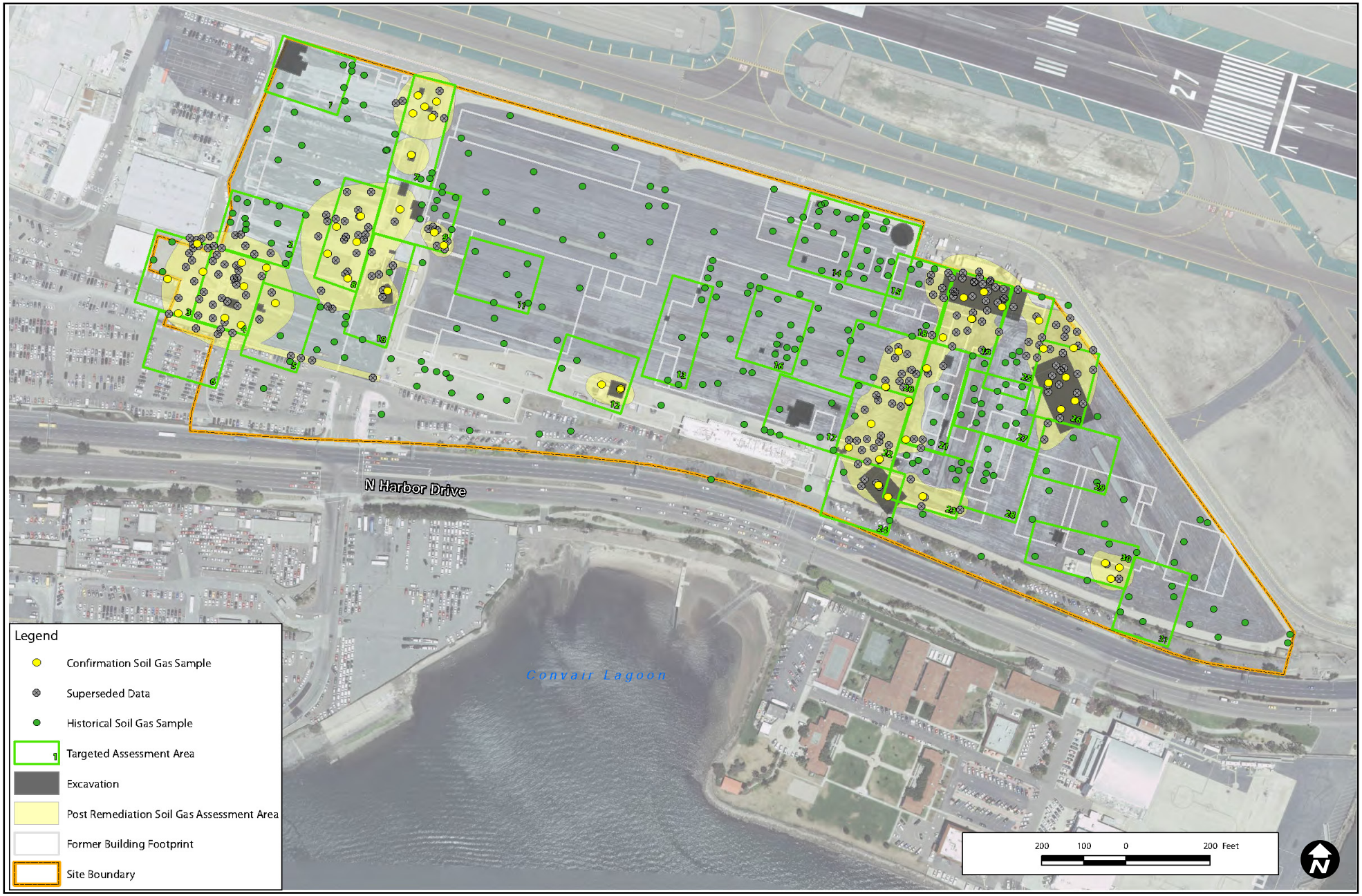
- Previous soil and groundwater contamination at the TDY site, a 44-acre parcel located at 2701 North Harbor Drive in San Diego, including at Building 131 shown on Figure 2, was identified. Activities at the TDY site included large-scale manufacturing of aircraft and aeronautical equipment. Based on previous investigations conducted at the TDY site, soil and groundwater historically contained various organic and inorganic compounds at concentrations above background levels. Remedial activities included treatment of soil, groundwater, and soil gas. A post-remedial risk assessment prepared by GeoSyntec for TDY Industries indicated that no additional remediation is warranted. because (1) cleanup levels for all waste constituents was attained at all monitoring points and throughout the zone affected by the waste constituents, including any portions thereof that extend beyond the TDY site boundary; (2) illicit waste discharges related to TDY's historical activities into and through the storm water conveyance system (SWCS), off-site municipal sewer Municipal Separate Storm Sewer Systems (MS4s), and/or receiving waters at the site have been prevented or eliminated; and (3) all media (soil, groundwater, and soil gas) are protective of all on-site receptors based on a final site-wide post-remediation risk assessment.

  As part of this investigation, soil gas surveys were performed in the western and eastern portions of the former TDY site, which identified two areas with residual soil gas impacts in excess of risk-based goals, including an area in the western portion of the former TDY site, east of the proposed new Terminal 1 footprint in an area that would be used for aircraft apron and aircraft overnight parking and an area in the eastern portion of the TDY site, where no construction would occur (see **Figure 3**). Remediation of the soil gas on the western portion of the former TDY site was addressed through in-situ soil vapor extraction, and the impacts on the eastern side of the former TDY site were addressed through ex-situ excavation and treatment. Following remediation, testing indicated that soil gas concentrations were reduced to below remedial goals. As a result, the remediation site was closed on February 13, 2015 by the San Diego RWQCB.

- Previous contamination at the former Lindbergh Field Fuel Farm, located west of the former Commuter Terminal at 2320, 2330, and 2340 Stillwater Road was identified. The fuel farm was in operation from 1952 until 1997, when it was decommissioned. Decommissioning of the Lindbergh Field Fuel Farm was followed by soil and groundwater remediation activities. Several cases were consolidated and closed in 2002 by the County DEH. However, it was determined that approximately 395 cubic yards of contaminated soil remained in an area that was inaccessible. This was because of access limitations due to North Harbor Drive and the presence of utilities.

- A former 32,500 gallon above-ground storage tank (AST) in the former Lindbergh Field Fuel Farm that has undergone extensive remediation, including excavation of contaminated soils, was identified.



Source: Geosyntec Consultants 2014

Figure 3

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POST-REMEDIATION SOIL GAS SURVEY

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- Perchloroethylene (PCE) in groundwater in a well (MW-6) installed northwest of the fuel station was identified. Based on historical use of the site as a commercial airport and designation of groundwater in the area as having no beneficial uses, the incident was administratively closed by County DEH in 2013.

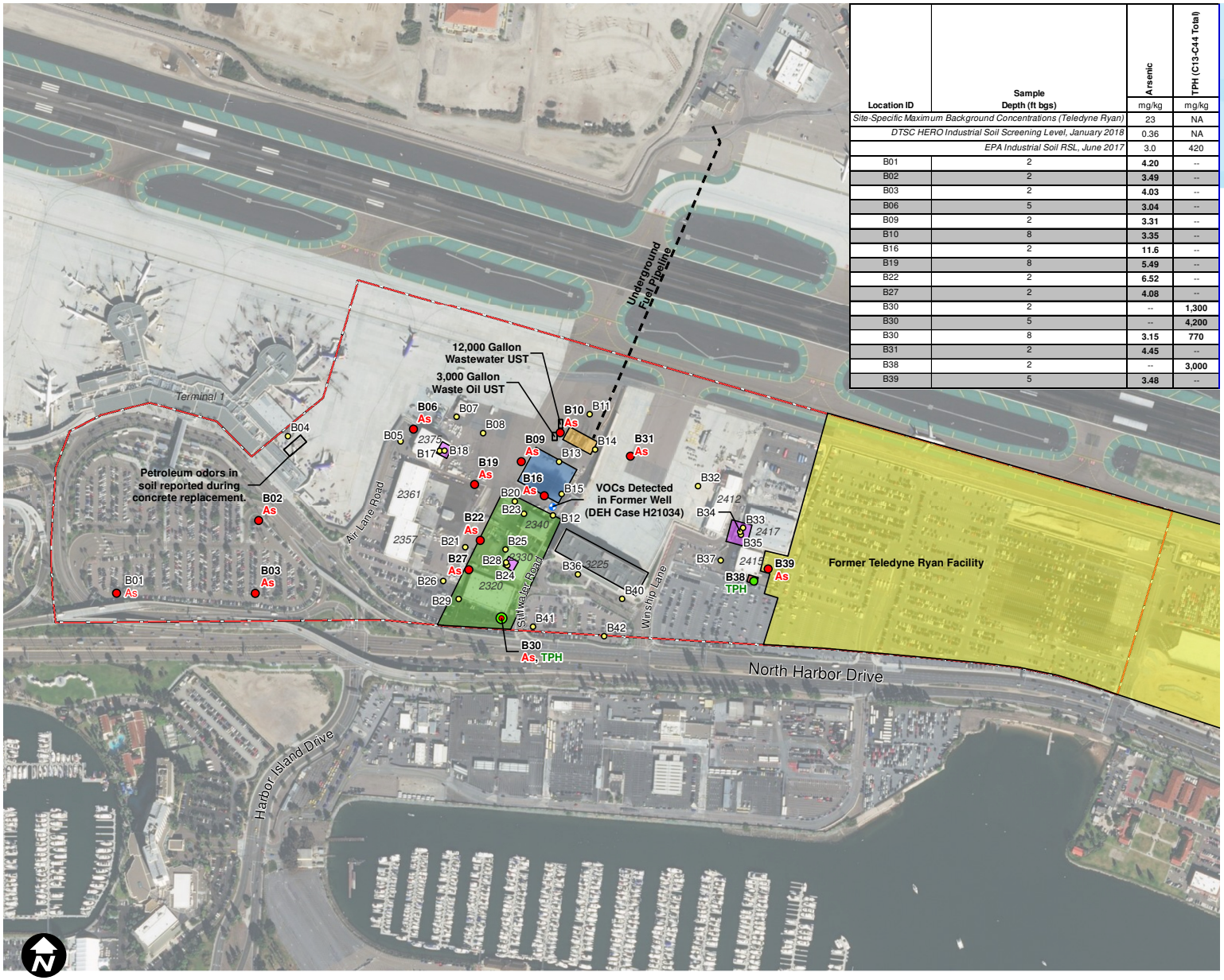
Based on recommendations in the Amec Phase I ESA, a Phase II ESI subsurface investigation was conducted to test for the presence of contaminants in soil and groundwater that included the areas identified as RECs and HRECs in the Phase I ESA. Samples were taken from locations, where previous use and the Phase I ESA indicated contamination was most likely. Soil samples were analyzed for total petroleum hydrocarbons (TPH), volatile organic compounds, including oxygenates (VOCs), and California Administrative Manual (CAM) Title 22 Metals. A subset of the soil samples was also analyzed for semi-volatile organic compounds (SVOCs) and polychlorinated biphenyls (PCBs). Grab groundwater samples were collected at 10 of the borings and analyzed for TPH and VOCs. A subset of the groundwater samples was also analyzed for SVOCs and PCBs. Additional sampling locations were selected to assess the overall site condition in areas not previously investigated.

As part of the Phase II ESI, a total of 126 soil and 10 groundwater samples were collected from 42 borings across the site. Based on the sampling results, the Phase II ESI identified elevated TPH in soil and groundwater at and/or near the former Lindbergh Field Fuel Farm (south of Building 2320). TPH concentrations at this location exceed regional screening levels (RSLs) for soil.[7] Elevated concentrations of TPH were also detected in groundwater; however, because there are no Maximum Contaminant Levels (MCLs) for TPH in groundwater, a direct comparison with regulatory action levels could not be made. Only low levels of VOCs typical of petroleum hydrocarbon contamination were detected in the groundwater samples at this location, at concentrations well below applicable MCLs, if available. Other areas within the former Lindbergh Field Fuel Farm may be contaminated as well.

The soil data indicate that other areas of the site contain low levels of TPH (below the RSL); however, such contamination is likely limited in extent (i.e., "hot spots"). With the exception of isolated detections slightly above the laboratory reporting limits, no VOCs, SVOCs, or PCBs were found in the soil at the site. In all cases, the concentrations detected were less than RSLs.

Arsenic was the only metal detected in the soil samples at concentrations above its established RSL. Because arsenic was detected in most of the samples throughout the site, including those taken from locations not used for airport operations, its presence in soil is likely not the result of previous site use, but rather represents background conditions of the area as a whole. **Figure 4** shows soil sample locations and identifies those soil samples with RSL exceedances of TPH and/or arsenic.

[7] Screening levels (SLs) represent health risk-based concentrations derived from standardized equations combining exposure information assumptions with U.S. Environmental Protection Agency (USEPA) toxicity data. RSLs are determined by the USEPA region where a particular project is located, which in the case of projects located in California is USEPA Region 9. Regional screening levels help identify areas, contaminants, and conditions that have been impacted by human use such that further investigation and/or remediation may be warranted. Generally, at sites where contaminant concentrations fall below screening levels, no further action or study is warranted.



Location ID	Sample Depth (ft bgs)	Arsenic	TPH (C13-C44 Total)
		mg/kg	mg/kg
Site-Specific Maximum Background Concentrations (Teledyne Ryan)		23	NA
DTSC HERO Industrial Soil Screening Level, January 2018		0.36	NA
EPA Industrial Soil RSL, June 2017		3.0	420
B01	2	**4.20**	--
B02	2	**3.49**	--
B03	2	**4.03**	--
B06	5	**3.04**	--
B09	2	**3.31**	--
B10	8	**3.35**	--
B16	2	**11.6**	--
B19	8	**5.49**	--
B22	2	**6.52**	--
B27	2	**4.08**	--
B30	2	--	**1,300**
B30	5	--	**4,200**
B30	8	**3.15**	**770**
B31	2	**4.45**	--
B38	2	--	**3,000**
B39	5	**3.48**	--

LEGEND

- Soil Sample Location
- As — Soil Sample Location with Arsenic Exceeding RSL's
- TPH — Soil Sample Location with TPH Exceeding RSL's
- As, TPH — Soil Sample Location with Arsenic and TPH Exceeding RSL's
- Fuel Pipeline
- Approximate Location of Former Well
- Phase I ESA and Phase II ESI Study Area
- Area of VOC contamination near former Teledyne Ryan Building 131.
- Former Commuter Terminal with Former USTs (DEH Case H02431)
- Former Lindbergh Field Fuel Farm (DEH Case H03605)
- Former Teledyne Ryan Facility (DEH Cases H00419-001 through -008)
- Fuel Station
- Hydraulic Lift
- Washdown Pad
- 2417 Building Number

0 250 500 1,000
In Feet

NOTES:

BOLD = value exceeds RSL

All locations are approximate.

-- = value did not exceed RSL or background concentration
As = Arsenic
bgs = below ground surface
DEH = San Diego County Department of Environmental Health
DTSC = California Department of Toxic Substances Control
EPA = United States Environmental Protection Agency
ft = feet
HERO = Heath and Ecological Risk Office
mg/kg = milligrams per kilogram
NA = Not Applicable
RSL = Regional Screening Level
TPH = Total Petroleum Hydrocarbons
UST = Underground Storage Tank
VC = Vinyl Chloride
VOC = Volatile Organic Compound

Aerial Photo/Base Map Source : ESRI ArcGIS Online Service 2017

Source: Amec Foster Wheeler Environment & Infrastructure, Inc. February 18, 2018.

Figure 4

San Diego International Airport
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AMEC PHASE II ESI SOIL SAMPLES WITH RSL EXCEEDANCES

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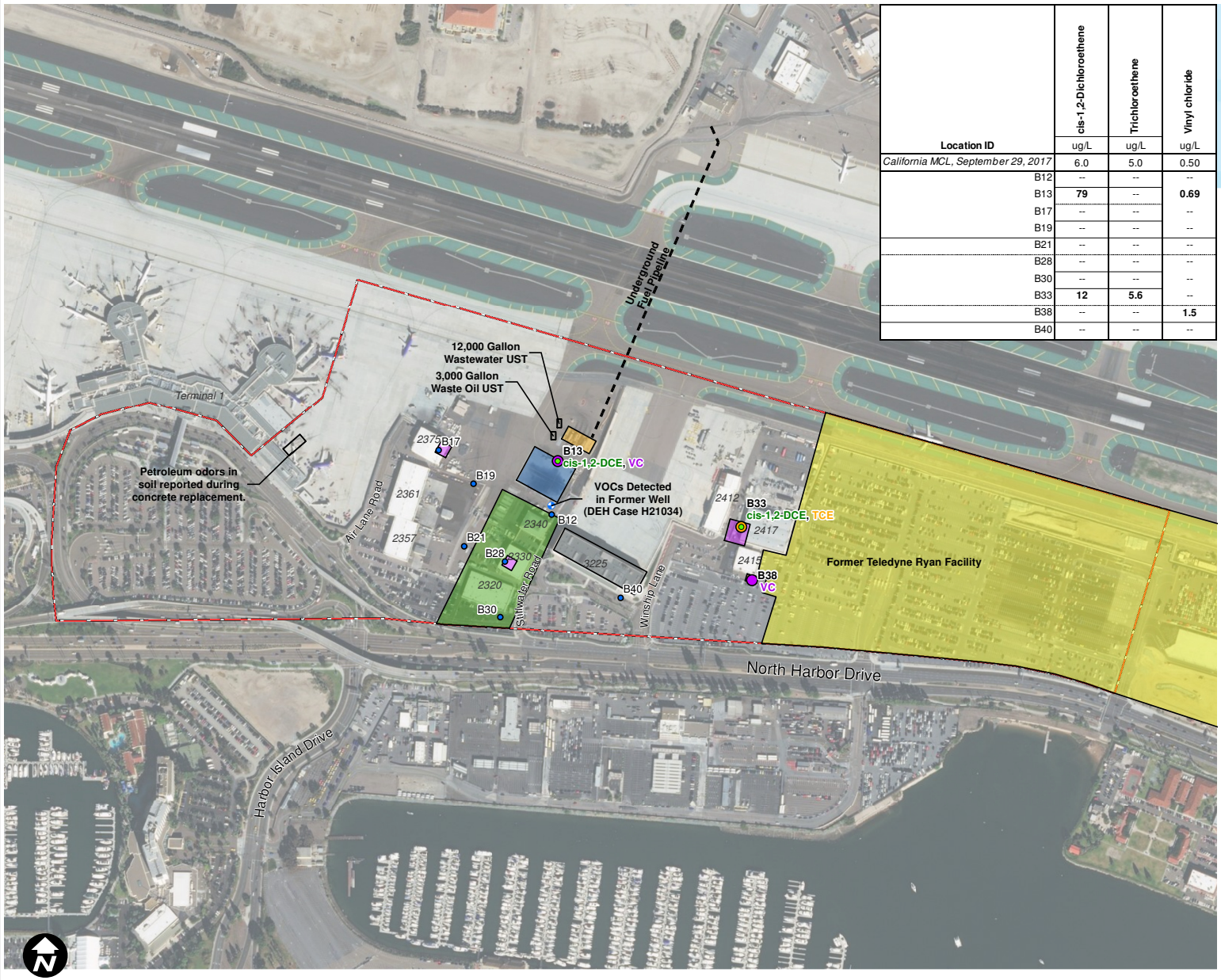
Groundwater was present beneath the site at depths between 8 to 10 feet below ground surface (bgs) and has been historically as high as 5 feet bgs. A number of VOCs were detected in groundwater at concentrations above their respective MCLs in the area north of the washdown pad, at the abandoned hydraulic lifts (east of Building 2417), and in the previously-described area of VOC contamination near former TDY Building 131 (south of Building 2415). **Figure 5** shows soil boring with groundwater sample locations and identifies those groundwater samples with MCL exceedances.

Kleinfelder Phase I and Phase II Studies

The following RECs were identified in the Kleinfelder Phase I ESA (**Figure 6**):

- Three potential groundwater monitoring wells were installed at the site, including two located on the north side of the Terminal 1 building, between the east and west rotundas (referred to as "MW-1 and MW-2"), and one located north of the western end of Terminal 1 West (referred to as "MW-3"). A geophysical survey was conducted to locate the three monitoring wells for the Kleinfelder Phase II ESA.
  - MW-1 and MW-2 were installed in May 1992 as part of an East and West Terminal Upgrade Project. At that time, soil and groundwater samples were collected at the well locations and analyzed for the presence of petroleum hydrocarbons, and benzene, toluene, ethylbenzene, and xylenes (BTEX). These constituents were not detected in the samples analyzed. The geophysical survey conducted for the Phase II ESA determined that MW-1 and MW-2 are not buried and are located near the expected locations, which are shown on Figure 6.
  - Limited information is available on MW-3. A letter dated July 14, 1994 from Soltek General Contractor to the Port of San Diego, transmitted a copy of a Well Completion Report associated with relocating a monitoring well on June 29, 1994 at the "East Terminal Baggage Claim" area, which indicates that the well was installed. There is no record of any data of any type, including depth to groundwater, having been collected from the well. Although there is no record of the well being destroyed, MW-3 was not found on the surface. However, the geophysical survey conducted for the Phase II ESA identified two anomalies beneath the concrete surface with similar dimensions to a monitoring well near the expected location of MW-3. The anomalies may indicate the presence of a well or the location of a well that has been destroyed. The location of the anomalies (representing the unconfirmed location of MW-3) is shown on Figure 6. There are no records suggesting a release or known or suspected contamination at or in the vicinity of the presumed location of MW-3. Soltek General Contractor is a construction company and not an environmental engineering or environmental science company. The participation of Soltek General Contractor in the installation of the well suggests that the well provided geotechnical information such as soil types or depth to groundwater related to construction the company was performing at that time.



Location ID	cis-1,2-Dichloroethene ug/L	Trichloroethene ug/L	Vinyl chloride ug/L
California MCL, September 29, 2017	6.0	5.0	0.50
B12	--	--	--
B13	**79**	--	**0.69**
B17	--	--	--
B19	--	--	--
B21	--	--	--
B28	--	--	--
B30	--	--	--
B33	**12**	**5.6**	--
B38	--	--	**1.5**
B40	--	--	--

LEGEND

- Soil Boring with Groundwater Sample Location
- Soil Boring with Groundwater Sample Location with cis-1,2-DCE and VC Exceeding MCL's (cis-1,2-DCE, VC)
- Soil Boring with Groundwater Sample Location with cis-1,2-DCE and TCE Exceeding MCL's (cis-1,2-DCE, TCE)
- Soil Boring with Groundwater Sample Location with VC Exceeding MCL's (VC)
- Approximate Location of Former Well
- Fuel Pipeline
- Phase I ESA and Phase II ESI Study Area
- Area of VOC contamination near former Teledyne Ryan Building 131.
- Former Commuter Terminal with Former USTs (DEH Case H02431)
- Former Lindbergh Field Fuel Farm (DEH Case H03605)
- Former Teledyne Ryan Facility (DEH Cases H00419-001 through -008)
- Fuel Station
- Hydraulic Lift
- Washdown Pad
- 2417 Building Number

0 250 500 1,000
In Feet

NOTES:
All locations are approximate.
-- = value did not exceed MCL
ug/L = micrograms per liter
DEH = San Diego County Department of Environmental Health
DCE = Dichloroethene
MCL = Maximum Contaminant Level
TCE = Trichloroethylene
UST = Underground Storage Tank
VC = Vinyl Chloride
VOC = Volatile Organic Compound

California MCLs established by the State Water Resources Control Board, updated September 29, 2017.

Aerial Photo/Base Map Source : ESRI ArcGIS Online Service 2017

Source: Amec Foster Wheeler Environment & Infrastructure, Inc. February 18, 2018.

Figure 5

San Diego International Airport
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AMEC PHASE II ESI GROUNDWATER SAMPLES WITH MCL EXCEEDANCES

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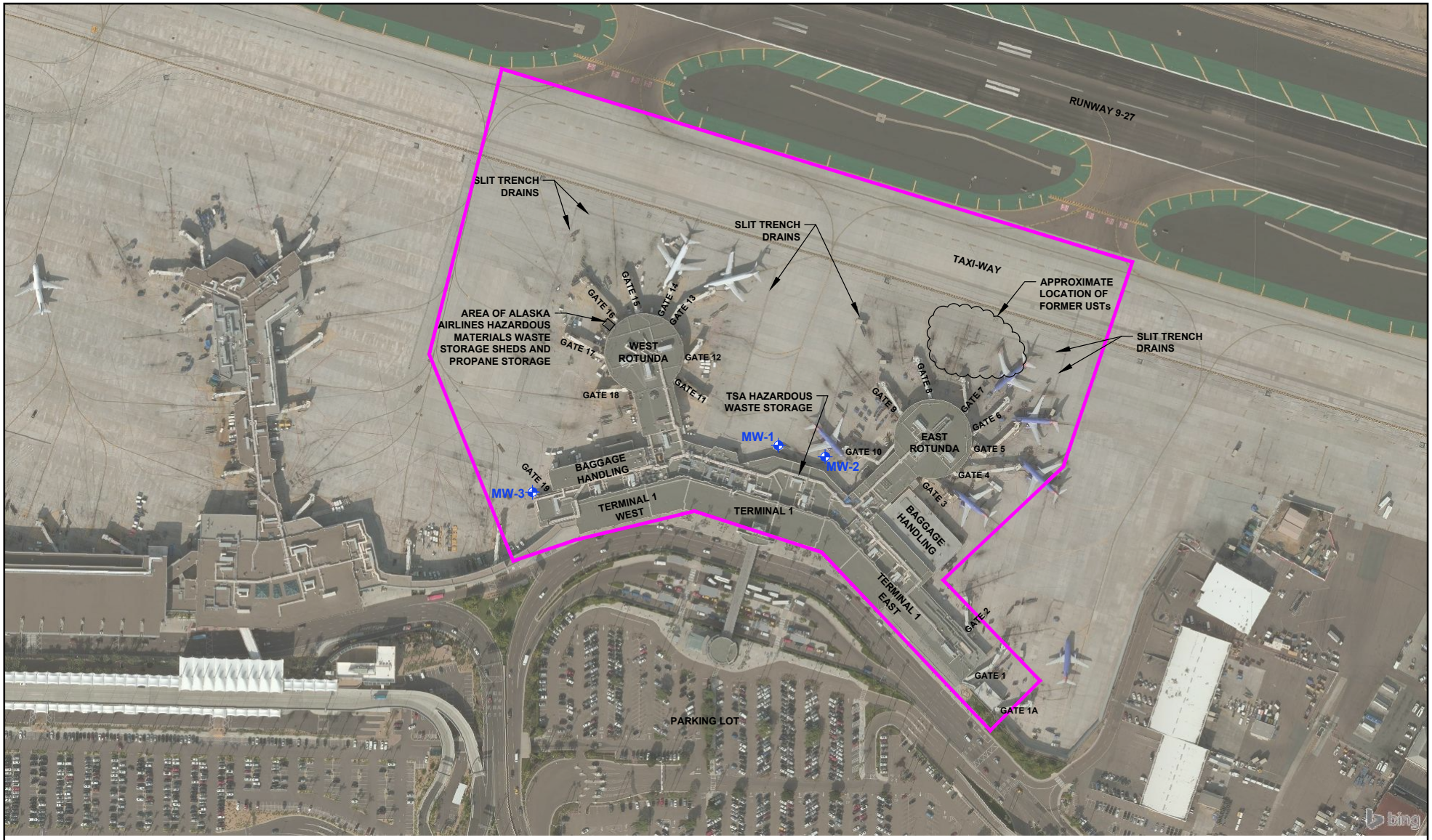

Source: Kleinfelder, October 3, 2017.

Figure 6

San Diego International Airport
Airfield Improvements and Terminal 1 Replacement Project

AREAS OF CONCERN IDENTIFIED IN THE KLEINFELDER PHASE I ESA

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- Long-term, on-going fuel spillage in the vicinity of the terminal gates from re-fueling of aircraft, with potential for contamination in the vicinity of storm drains and "slit" trench drains. This is associated with minor spills, typically less than 5 gallons, that occur occasionally, although accidentally, as part of aircraft fueling operations.
- Regional groundwater beneath the site has been impacted by long-term historical use of the area for industrial purposes, including SAN, Marine Corps Recruit Depot (MCRD) – San Diego, and other off-site facilities. As described further below, several on-going and completed remediation efforts have been implemented to address this contamination.

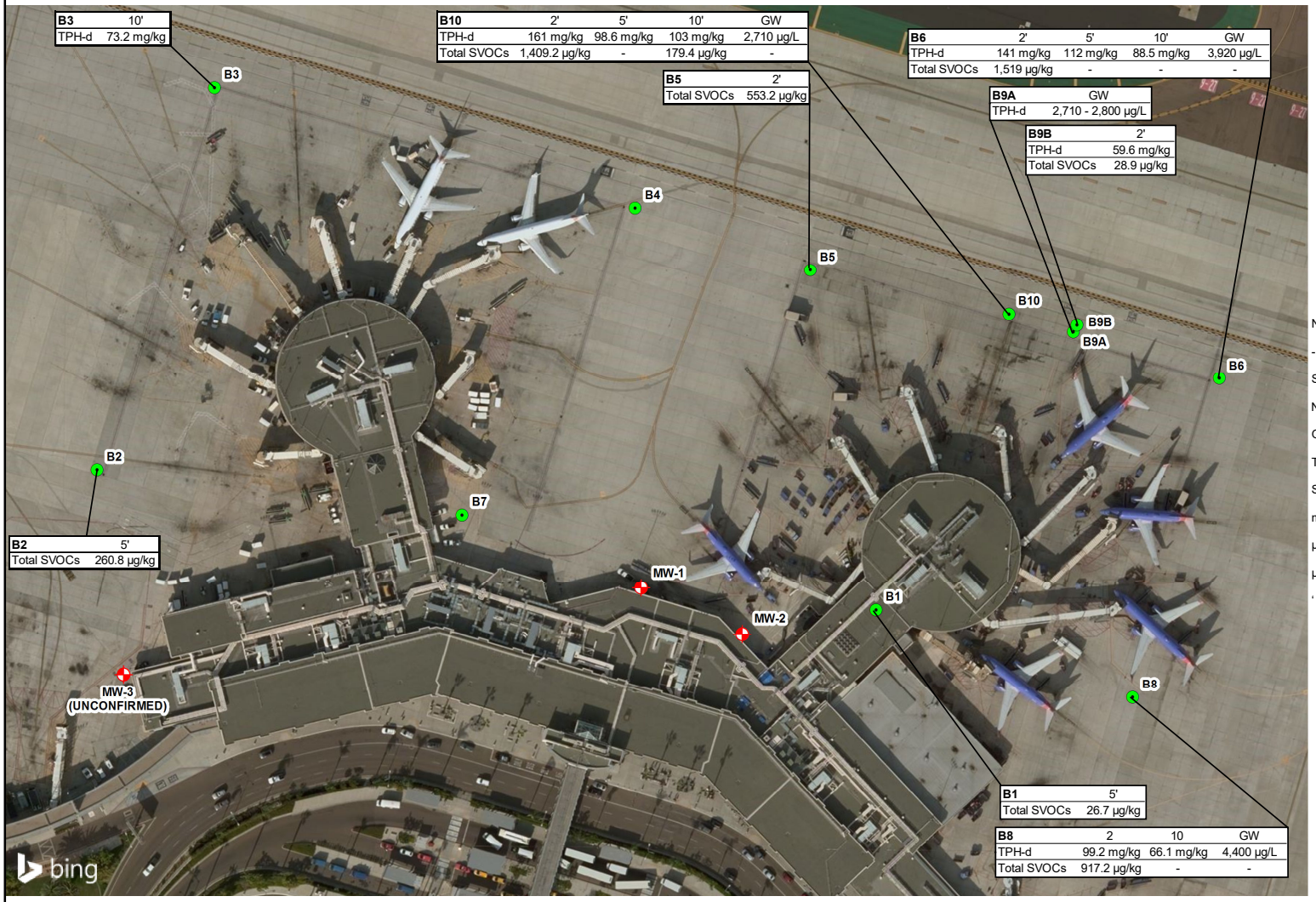
The following HREC was identified in the Kleinfelder Phase I ESA (Figure 6):

- Three USTs were reportedly removed from the area north-northwest of Gate 7 during apron reconstruction activities in 1992/1993. One of the USTs was removed with no reported contamination; thus, no formal case was opened. Two 300-gallon diesel USTs and associated soil contamination were removed, for which County DEH issued case closure.

The Kleinfelder Phase II ESA was conducted to evaluate the RECs and HREC identified in the Kleinfelder Phase I ESA for the purposes of redevelopment. Each soil and groundwater sample collected was analyzed for TPH, CAM Title 22 Metals, VOCs, SVOCs, and PCBs. The Kleinfelder Phase II ESA determined that soil and groundwater beneath the study area had been impacted by TPH and SVOCs. TPH and SVOCs in soil were widespread throughout the area, but were below the RSL. TPH and SVOCs in groundwater were isolated to the area around the former USTs (north of the existing Terminal 1 East Rotunda). The SVOC detected in groundwater did not exceed the MCL and, as described above, there are no TPH MCLs. The sources of the soil and groundwater contamination were determined to likely be from former USTs and surface leaks. Twelve total metals in soil, including arsenic, were detected above laboratory reporting limits, but no metals exceeded the California Code of Regulations (CCR) Title 22 total threshold limit concentration (TTLC) or 10 times the soluble threshold limit concentration (STLC) California hazardous waste limits. Additionally, as the concentrations were generally consistent among the various sampling locations, the Phase II ESA concluded that the concentrations of metals likely represent regional background concentrations. Constituent detections are shown on **Figure 7**.

PFAS Sampling and Analysis

Exposure to per- and polyfluoroalkyl substances (PFAS)-through drinking water has become an increasing water quality concern due to the tendency of PFASs to accumulate in groundwater. SAN is required by the Federal Aviation Administration (FAA) to use PFAS-containing aqueous film forming foam (AFFF) for fire suppression purposes. SAN must conduct tests of AFFF equipment annually, and as such, emergency and training operations can be a source of PFAS in soil and/or groundwater. However, since the early 2000s, AFFF used in all firefighting training activities at



LEGEND

- MONITORING WELL LOCATION
- SOIL BORING LOCATION
- SAMPLE LOCATION
- B1 5' — SAMPLE DEPTH
- Total SVOCs 26.7 µg/kg — RESULT UNITS
- SAMPLE RESULT

NOTES:

- – not detected above laboratory reporting limits

Sample results show detected TPH-D and total SVOCs

No PCBs or VOCs were detected above laboratory reporting limits

GW - groundwater

TPH-d – total petroleum hydrocarbons as diesel

SVOCs – semi-volatile organic compounds

mg/kg – milligrams per kilogram

µg/kg – micrograms per kilogram

µg/L – micrograms per liter

‘ – feet below bottom of concrete

0 60 120 240 Feet

Source: Kleinfelder, February 15, 2018.

Figure 7

San Diego International Airport
Airfield Improvements and Terminal 1 Replacement Project

KLEINFELDER PHASE II ESA SELECT SAMPLING RESULTS

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SAN has been captured and disposed of in the sanitary sewer, which has greatly reduced the potential for PFAS to impact soils and/or groundwater. SAN currently only stores and uses the most environmentally-friendly foam available that is certified by the FAA (namely, Chemguard 3% AFFF C-30-6-1MS-C).[8] Finally, SAN has acquired a "NoFoam System" that allows for annual AFFF testing without discharging foam, as allowed by a recent FAA CertAlert.[9] As mentioned, PFAS present in AFFF could potentially impact soils and/or groundwater. While SAN does not currently have a requirement to monitor and test for PFAS, PFAS were detected in groundwater as part of an environmental site assessment conducted in the vicinity of a former firefighting training area that has not been used for several decades.[10]

On March 20, 2019, the State Water Resources Control Board (SWRCB) issued Water Code Section 13267 Order for the Determination of the Presence of Per- and Polyfluoroalkyl Substances (Order WQ 2019-0005-DWQ)[11] requiring airports, including SAN, and landfills that have "accepted, stored, or used materials that may contain per- and polyfluoroalkyl substances (PFAS)" to submit a work plan for a one-time preliminary site investigation of PFAS impacts at the facility. In compliance with this PFAS Order, SAN developed a work plan for a preliminary investigation to determine if soil and/or groundwater is impacted by PFAS to help the San Diego RWQCB get an understanding of PFAS concentrations at SAN. The work plan was submitted to the San Diego RWQCB in late May 2019 and approved on July 22, 2019. The results of the investigation were reported to the RWQCB on December 10, 2019.[12] The investigation report noted that seven general areas of AFFF storage, use, and/or release at SAN had been identified in the May 2019 work plan as shown on **Figure 8**. Four of the areas were identified as having had releases of AFFF to land; the other three areas had documented AFFF storage only, with no reported releases to land. The four areas with AFFF releases to land were the former Firefighting Training Area, the former AFFF Testing Area, the current AFFF Testing Area, and the Remote Fueling Facility. On August 26 and 27, 2019, and October 8, 2019, direct-push technology (DPT) drilling equipment was used to advance 12 borings within the four PFAS release areas and install a temporary groundwater monitoring well within each boring location. Three soil samples and one groundwater sample were collected from each boring/temporary well and were submitted to an approved laboratory for analysis. The soil and groundwater samples were analyzed for perfluorooctanoic acid (PFOA), perfluorooctane sulfonate (PFOS), and perfluorobutanesulfonic acid (PFBS), and 20 additional PFAS compounds. The results showed PFOA, PFOS, and PFBS in soil and groundwater at the former Firefighting Training Area, the former AFFF Testing Area, and the current AFFF Testing Area. PFOA, PFOS, and PFBS were found in groundwater, but not soil, at the Remote Fueling Facility.

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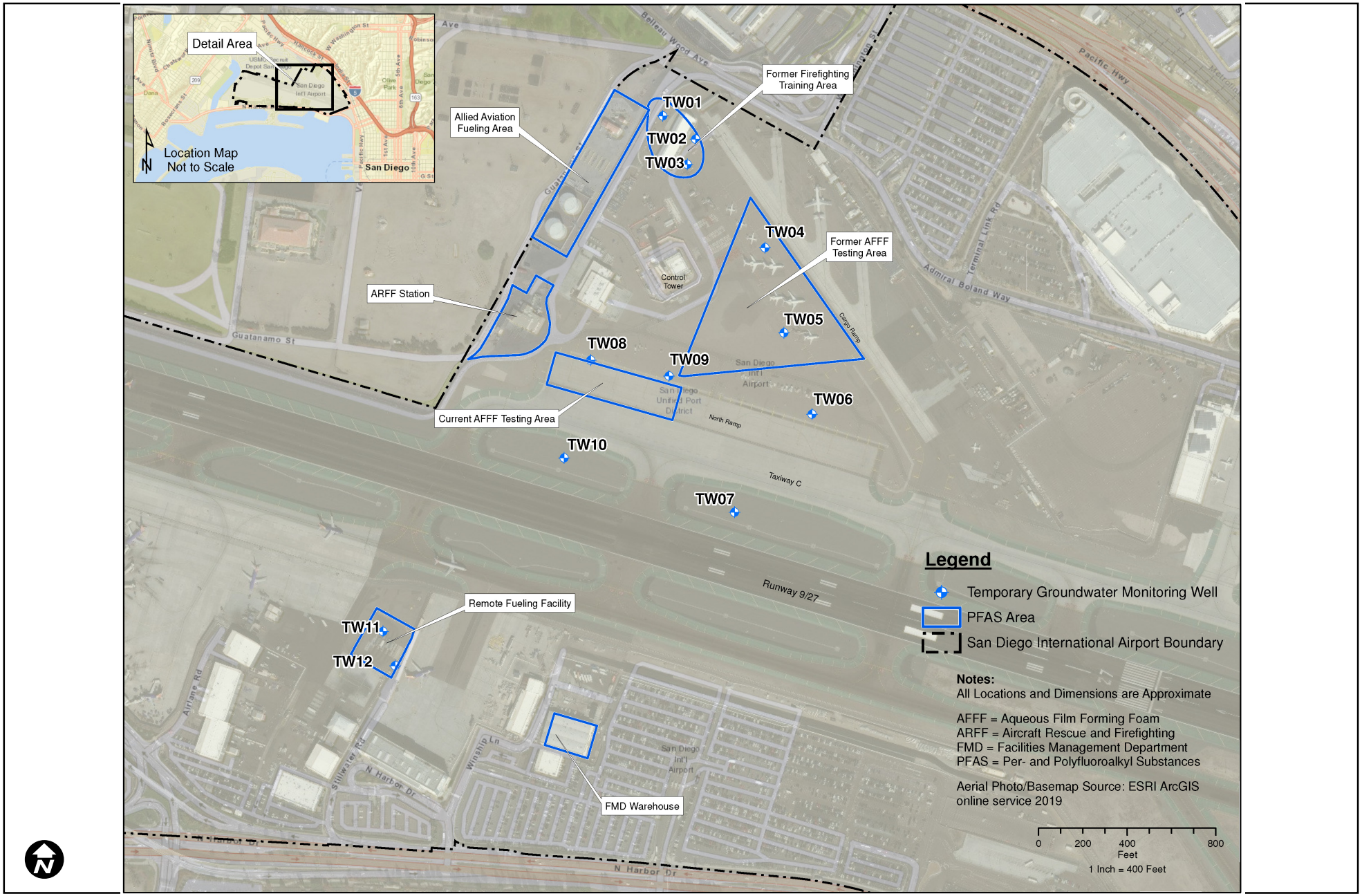
[8] Gilb, Richard, Manager – Environmental Affairs, San Diego County Regional Airport Authority, Personal Communication, April 9, 2021.

[9] U.S. Department of Transportation, Federal Aviation Administration, *National Part 139 CertAlert No. 190-01. Aqueous Film Forming Foam (AFFF) Testing at Certificated Part 139 Airports*, January 17, 2019. Available: https://www.faa.gov/airports/airport_safety/certalerts/media/part-139-cert-alert-19-01-AFFF.pdf.

[10] Group Delta Consultants, *Supplemental Site Investigation Report, North Side Support Facilities, San Diego International Airport, San Diego, CA*, March 12, 2019.

[11] California State Water Quality Control Board, *Water Code Section 13267 Order for the Determination of the Presence of Per- and Polyfluoroalkyl Substances Order WQ 2019-0005-DWQ*, March 20, 2019.

[12] Wood PLC Environment and Infrastructure Solutions, *Final Sampling and Analysis Report Water Code Section 13267 Order for The Determination of the Presence of Per- And Polyfluoroalkyl Substances at San Diego International Airport,* Prepared for San Diego County Regional Airport Authority, December 2019.



Source: Wood Environment & Infrastructure Solutions, Inc. December 2019

Figure 8

San Diego International Airport
Airfield Improvements and Terminal 1 Replacement Project

PFAS SAMPLING LOCATIONS

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As noted in the December 2019 report, the USEPA has issued drinking water Lifetime Health Advisories (LHAs) for PFOA and PFOS, both separately and in combination, of 70 nanograms per liter (ng/L). LHAs are non-promulgated concentrations of drinking water contaminants at or below which adverse health effects are not anticipated to occur over a lifetime. In August 2019, the SWRCB Division of Drinking Water issued Notification Levels (NLs) for drinking water only for PFOA and PFOS at 5.1 and 6.5 ng/L, respectively. The NLs are not promulgated standards, but are risk-based standards used to inform decision-making in the absence of maximum contaminant levels for drinking water. USEPA has also derived a risk-based RSL of 400,000 ng/L for PFBS in drinking water. The highest concentrations of PFOA, or PFOS, or PFOA+PFOS, or PFBS detected in the groundwater samples collected was 61,650 ng/L for PFOA+PFOS. According to the Water Quality Control Plan for the San Diego Basin, [13] groundwater in the area around SAN is exempted by the San Diego RWQCB from the municipal use designation, including use as drinking water, under the terms and conditions of State Board Resolution No. 88-63, "Sources of Drinking Water Policy."

The USEPA RSL calculator has an RSL of 16.4 milligrams per kilogram (mg/kg) for both PFOA and PFOS in soil at an industrial site and a RSL of 16,000 mg/kg for PFBS in soil at an industrial site. The highest concentrations of PFOA, or PFOS, or PFOA+PFOS, or PFBS detected in the soil samples collected was 0.903 mg/kg.

[13] California Regional Water Quality Control Board - San Diego Region, *Water Quality Control Plan for the San Diego Basin*, September 8, 1994 as amended. Available: https://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/.

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