



Matthew Rodriguez
Secretary for
Environmental Protection

California Regional Water Quality Control Board San Francisco Bay Region

1515 Clay Street, Suite 1400, Oakland, California 94612
(510) 622-2300 • FAX (510) 622-2460
<http://www.waterboards.ca.gov/sanfranciscobay>



Edmund G. Brown Jr.
Governor

December 13, 2011
File No. 2189.8009 (EKW)
GeoTracker Parent Facility ID: SL0608541147

Department of the Navy
Base Realignment and Closure Program Management Office West
Attn: Mr. Scott Anderson
1455 Frazee Road, Suite 900
San Diego, CA 92108-4310
E-mail: scott.d.anderson@navy.mil

SUBJECT: No Further Action for Site 20 Aboveground Storage Tanks (ASTs), Former Naval Air Station Moffett Field, Mountain View, Santa Clara County

Dear Mr. Anderson:

This letter confirms that based on the available information, and with the provision that the information provided is accurate and representative of site conditions, site investigation and corrective actions are complete and no further action (NFA) is required for the tank site summarized below.

Site Name	GeoTracker Case ID	Water Board Case No.
Site 20 ASTs	T10000003414	43D9066

This NFA status applies only to releases of petroleum fuel and fuel constituents associated with the site referenced above. While the information provided indicates that the above-referenced site is satisfactorily cleaned up to standards based on the land uses summarized below, we may reconsider these findings should land use change or new information be discovered regarding previously undetected contamination. The Water Board shall be notified of any changes in future land or groundwater use at this site.

Site Name	Land Use Basis for Cleanup
Site 20 ASTs	Industrial/Commercial

Furthermore, to ensure the protection of human health, certain land and/or groundwater uses require restriction at these sites to manage potential exposure to residual pollution in the soil, soil-gas, or groundwater. The required land and/or groundwater use restrictions are summarized below.

Site Name	Required Land and/or Groundwater Use Restrictions
Site 20 ASTs	No residential land use; no drinking water groundwater use

Any monitoring wells that will no longer be used must be properly destroyed pursuant to requirements of the Santa Clara Water District. For information regarding these requirements, please contact the Santa Clara Water District at (408) 265-2600.

Attached please find the site closure summary. Please contact Elizabeth Wells of my staff at (510) 622-2440 or ewells@waterboards.ca.gov if you have any questions regarding this matter.

Sincerely,

Bruce H. Wolfe
Executive Officer

Attachments: Site Closure Summary Form

Email Distribution:

Jim Whitcomb (Navy): james.h.whitcomb@navy.mil
Wilson Doctor (Navy): wilson.doctor@navy.mil
Ann Clarke (NASA): ann.clarke@nasa.gov
Donald Chuck (NASA): donald.m.chuck@nasa.gov
Jim Blamey (Santa Clara County Dept. of Environmental Health): jim.blamey@deh.sccgov.org
George Cook (Santa Clara Valley Water District): gcook@valleywater.org
Lynne Kilpatrick (City of Sunnyvale): lkilpatrick@ci.sunnyvale.ca.us
William Berry (RAB): wmeberry@comcast.net
Lenny Siegel (Center for Public Environmental Oversight): lennysiegel@gmail.com
Peter Strauss (PM Strauss & Associates): petestrauss1@comcast.net

SITE CLOSURE SUMMARY

Date: December 2, 2011

I. AGENCY INFORMATION	
Agency Name: SF Bay Regional Water Quality Control Board	Address: 1515 Clay Street, Suite 1400
City/State/Zip: Oakland, CA 94612	Phone: (510) 622-2440
Responsible Staff Person: Elizabeth Wells, P.E.	Title: Water Resource Control Engineer
Division: Groundwater Protection	Program: DoD

II. SITE AND FILE INFORMATION	
Site Name: Site 20 Aboveground Storage Tanks (ASTs)	
Parent Military Base: Former Naval Air Station Moffett Field	
Site Address: Between Bravo taxiway and Building 105, east of Zook Road, Former Naval Air Station Moffett Field, Mountain View, Santa Clara County, California 94035	
Site Latitude (decimal degrees): 37.4166	Longitude: -122.0539
Site Type: Military Cleanup Site	
WB Case No.: 43D9066	GeoTracker Case ID: T10000003414
WB File No. : 2189.8009	Paperless Office ID: SL0608541147

III. RESPONSIBLE PARTY:
Company/Agency: Base Realignment and Closure Program Management Office West Contact Name: Scott Anderson Contact Title: BRAC Environmental Coordinator Street Address: 1455 Frazee Road, Suite 900 City, State, Zip Code: San Diego, CA 92108 Tel. No.: (619) 532-0938 E-mail: scott.d.anderson@navy.mil
Company/Agency: Base Realignment and Closure Program Management Office West Contact Name: Wilson Doctor Contact Title: Remedial Project Manager Street Address: 1455 Frazee Road, Suite 900 City, State, Zip Code: San Diego, CA 92108 Tel. No.: (619) 532-0928 E-mail: wilson.doctor@navy.mil

SITE CLOSURE SUMMARY [page 2 of 8]

IV. SITE DESCRIPTION, LAND USE, AND BENEFICIAL USE	
<p>Site Size and Description: Site 20 consists of two former aboveground tanks. One AST, which stored either diesel fuel or firefighting foam, was located in a grassy area south of Bravo taxiway and north of former Building 112. The second AST was located immediately north of Building 105 and likely stored diesel fuel.</p>	
<p>Vicinity: The site is located in a secured area not opened to the public. The nearest surface water receptor is the Eastern Diked Marsh, located approximately 3,300 feet northwest of the site. There are no water supply wells located at Moffett Field.</p>	
<p>Site Vicinity Map Attached: Yes</p>	<p>Site Plan Map Attached: Yes</p>
<p>Current Site Use(s): Commercial/Industrial</p>	
<p>Future Land Use(s): Commercial/Industrial</p>	
<p>Beneficial Uses: Groundwater domestic and municipal beneficial use</p>	
<p>Beneficial Use Exceptions: None</p>	

V. RELEASE INFORMATION						
Source (e.g., UST, AGT, pipeline, sump, wash rack, etc.)	Capacity or dimensions	Contents	How Closed?	Date	Latitude (decimal degrees)	Longitude (decimal degrees)
AST south of Bravo taxiway	Unknown	Diesel fuel or firefighting foam	Removed	Unknown	37.4166	-122.0539
AST north of Building 105	Unknown	Diesel fuel	Removed	Unknown	37.4166	-122.0539

VI. SITE CHARACTERIZATION AND CONCEPTUAL SITE MODEL
<p>Cause and description of release: Site 20 was historically reported as several former aboveground storage tanks (ASTs) located south of Bravo taxiway and was previously investigated as one area. One AST likely stored diesel fuel or firefighting foam and the second AST likely stored diesel fuel.</p> <ul style="list-style-type: none"> • Prior to 1992, an investigation was conducted at the suspected location of the tanks to evaluate the distribution of fuel-related contaminants in soil and groundwater from historical fuel releases. Sampling was conducted at the suspected location of the former ASTs to evaluate whether fuels released from the ASTs had affected soil and groundwater directly under the tanks. In addition, soil borings were drilled and groundwater monitoring wells were installed north of the Bravo taxiway where fuel product was believed to have accumulated on the ground surface. Results from the investigation indicated localized areas of contamination in soil and groundwater. Contamination north of the taxiway will be addressed separately. • In 2001, a soil sample was collected beneath the suspected location of the Site 20 ASTs. Grab groundwater samples were collected upgradient and downgradient of the suspected former tank location. Soil and groundwater samples were analyzed for total petroleum hydrocarbons (TPH) characterized as gasoline (TPH-g); TPH-extractable; benzene, toluene, ethylbenzene and xylenes (BTEX); methyl tert-butyl ether (MTBE); and polynuclear aromatic hydrocarbons (PAHs). Concentrations of all analytes in soil were

SITE CLOSURE SUMMARY [page 3 of 8]

non-detect or less than cleanup standards. TPH-g (410 µg/L) was detected in groundwater at a concentration exceeding the cleanup standard. Concentrations of all other analytes in groundwater were not detected or detected at concentrations less than cleanup standards.

- Three groundwater monitoring wells subsequently were installed crossgradient and downgradient of the suspected location of the ASTs. Four rounds of quarterly monitoring were conducted in 2002 and 2003; concentrations of TPH-g in groundwater decreased to non-detect.

Based on review of a historical aerial photograph and maps of the site, the Navy determined that the previous investigation location did not match the locations of the ASTs shown in the aerial photograph. The photograph and maps indicate that the Site 20 ASTs are located in two separate areas: 1) north of Building 105 and 2) south of Bravo taxiway, approximately 80 feet east of the area previously investigated. Additional investigation was conducted in these two areas. Consideration for NFA is based on data from site investigations conducted at the two separate areas.

- Additional site investigation was conducted in 2009, including soil and grab groundwater sampling north of Building 105. Samples were analyzed for TPH-g, TPH-extractable, BTEX and PAHs. Chemicals in soil and groundwater were not detected or detected at concentrations less than cleanup standards. Soil and grab groundwater samples were also collected in the vicinity of the former AST located south of Bravo taxiway. Samples were analyzed for TPH-g, TPH-extractable, BTEX and PAHs. Chemicals in soil were not detected or detected at concentrations less than cleanup standards. TPH-g (320 µg/L) was detected in groundwater at a concentration exceeding the cleanup standard.
- In 2010, step-out borings were advanced in the vicinity of the AST located south of Bravo taxiway to characterize the extent of TPH-g in groundwater. Soil and grab groundwater samples were collected and analyzed for TPH-g and volatile organic compounds (VOCs). Chemicals in soil were not detected or detected at concentrations less than cleanup standards. TPH-g was not detected in groundwater. VOCs, including dichloroethene and trichloroethene, were detected in groundwater at concentrations exceeding cleanup standards; the VOCs detected and concentrations reported are typical of the regional Middlefield-Ellis-Whisman (MEW) VOC groundwater plume.

Groundwater (GW)	Depth to first GW: Approximately 5 feet bgs
	GW gradient direction: North/Northwest
	GW sampled?: Yes
GW monitoring wells	GW monitoring wells installed?: Yes
	Total number of monitoring wells used in support of closure decision: 3
	Status of MWs: One well will be retained for possible use in monitoring the regional chlorinated VOC groundwater plume. Destruction is recommended for the two wells that will not be used for groundwater gauging or monitoring.

SITE CLOSURE SUMMARY [page 4 of 8]

VII. SITE REMEDIATION AND TREATMENT						
<p>Describe basis for cleanup standards: Analytical results for soil were compared against 2008 EPA Regional Screening Levels (RSLs) for industrial land use. There are no RSLs for TPH. Therefore the San Francisco Water Board approved the use of the 2008 S.F. Water Board gross contaminant ceiling environmental screening level (ESL) for nuisance at industrial/commercial sites as the TPH cleanup standard for Moffett petroleum sites. Results for groundwater were compared against 2008 S.F. Water Board ESLs for groundwater that is a current or potential source of drinking water.</p>						
<p>Describe remediation efforts for soil and groundwater (e.g., depth of remediation, approach/technology used, confirmation sampling, etc.): Site investigation and characterization activities conducted at the site indicate that soil and groundwater have not been significantly impacted by a release from the ASTs and do not pose a threat to human health or the environment. No remedial action for soil and groundwater was conducted.</p>						
Treatment and Disposal of Affected Materials						
Material	Amount	Action			Date	
Soil	None	NA			NA	
Groundwater	None	NA			NS	
Free Product/Separate-Phase Petroleum Hydrocarbons						
Remaining after cleanup?		Amount		Where documented?		
No		NA		NA		
Pre- and Post-Remediation (Residual) Pollutant Concentrations						
POLLUTANT	SOIL (ppm)		GW (ppb)		SOIL VAPOR (ppb or ug/m ³)	
	Before	After	Before	After	Before	After
TPH-gasoline	NS	ND<1.3	NS	ND<8.6	NS	NS
TPH-diesel	NS	35	NS	ND<50	NS	NS
TPH-motor oil	NS	100	NS	ND<500	NS	NS
Benzene	NS	0.086	NS	ND<0.5	NS	NS
Toluene	NS	0.044	NS	ND<0.5	NS	NS
Ethylbenzene	NS	0.012	NS	ND<0.5	NS	NS
Xylenes	NS	0.022	NS	ND<1.5	NS	NS
MTBE	NS	ND<0.0065	NS	ND<5	NS	NS
Napthalene	NS	ND<0.0065	NS	ND<0.2	NS	NS
cis-1,2-Dichloroethene	NS	0.0031	NS	18	NS	NS
Trichloroethene	NS	0.0061	NS	10	NS	NS

SITE CLOSURE SUMMARY [page 5 of 8]

VIII. LIMITATIONS, RESTRICTIONS, AND POST-CLOSURE REQUIREMENTS

This no further action status applies only to releases of petroleum fuel and fuel constituents at the subject site. Cleanup standards for this site were based on commercial/industrial land use. Under the *Record of Decision for the NASA Ames Development Plan* (November 2002), land use is restricted to those uses outlined by Mitigated Alternative 5 in the *NASA Ames Development Plan, Final Programmatic Environmental Impact Statement* (July 2002). No residential land use and no groundwater use for drinking water is allowed.

POST-CLOSURE REQUIREMENTS

Water Board staff shall be notified of any changes in land or groundwater use at the site and may reconsider the NFA based on such changes.

SITE CLOSURE SUMMARY [page 6 of 8]

IX. CLOSURE CRITERIA CHECKLIST (include comments as necessary)
<p>1a) Pollutant sources are identified and evaluated</p> <ul style="list-style-type: none">√ <i>Leak/spill sources (tanks, sumps, pipelines, etc.) are identified and controlled</i>√ <i>The pollutant source zone (sorbed/entrained residual pollutants and free product that sustain groundwater & vapor plumes) is identified and delineated</i>
<p>Comments: None</p>
<p>1b) The site is adequately characterized</p> <ul style="list-style-type: none">√ <i>Site history, hydrology, and hydrogeology are characterized</i>√ <i>The nature & extent (lateral and vertical) of pollutants are characterized in soil, groundwater & soil gas, as necessary</i>
<p>Comments: None</p>
<p>1c) Exposure pathways, receptors, and potential risks, threats, and other environmental concerns are identified and assessed</p> <ul style="list-style-type: none">√ <i>Nearby receptors (wetlands, streams, wells, homes, schools, businesses, etc.) are identified</i>√ <i>Groundwater & vapor migration/exposure pathways, natural & artificial (storm drains, sewer lines, buried channels, abandoned wells, etc.) are assessed</i>√ <i>Reasonably anticipated land and water use scenarios have been considered</i>√ <i>Actual and potential risks to receptors and adverse affects to beneficial uses are assessed</i>
<p>Comments: None</p>
<p>2a) Pollutant sources are remediated to the extent feasible</p> <ul style="list-style-type: none">√ <i>The technical and economic feasibility of source remediation methods/technologies have been evaluated</i>√ <i>Feasible source remediation technologies have been implemented</i>√ <i>Appropriate source remediation performance monitoring has been conducted</i>√ <i>Source mass removal has been documented</i>√ <i>The effects of source remediation on groundwater/vapor plume behavior have been evaluated</i>
<p>Comments: None</p>
<p>2b) Unacceptable risks to human health, ecological health, and sensitive receptors, considering current and future land and water uses, are mitigated</p> <ul style="list-style-type: none">√ <i>Necessary & appropriate corrective actions have been implemented</i>√ <i>Confirmation sampling, monitoring, and/or risk management measures demonstrate that risks are mitigated</i>
<p>2c) Unacceptable threats to groundwater and surface water resources, considering existing and potential beneficial uses, are mitigated</p>

SITE CLOSURE SUMMARY [page 7 of 8]

<ul style="list-style-type: none"> √ <i>Necessary & appropriate corrective actions have been implemented</i> √ <i>Confirmation sampling, monitoring, and/or risk management measures demonstrate that threats are mitigated</i>
<p>Comments: None</p>
<p>3a) Groundwater plumes are stable or decreasing¹</p> <ul style="list-style-type: none"> √ <i>Appropriate plume monitoring has confirmed the lateral and vertical extent over time</i> √ <i>Spatial and temporal trends for pollutants, including parent and breakdown products, have been evaluated</i> √ <i>Spatial and temporal trends for natural attenuation indicators have been evaluated</i> √ <i>Evidence of breakdown to acceptable end products is documented</i> √ <i>Plume concentrations are decreasing and the plume is not moving or expanding</i>
<p>Comments: None</p>
<p>3b) Cleanup standards have been met or can be met in a reasonable timeframe</p> <ul style="list-style-type: none"> √ <i>The estimated timeframe to achieve cleanup standards throughout the affected area is evaluated</i> √ <i>The anticipated timeframe for beneficial use of the affected and nearby water resources is evaluated</i> √ <i>The potential to adversely affect beneficial uses is assessed considering cleanup and beneficial use timeframes, hydrogeologic conditions, and the CSM</i>
<p>Comments: Chlorinated VOCs were detected at elevated concentrations in groundwater. The VOCs detected and concentrations reported are typical of the regional MEW VOC plume; elevated concentrations of these VOCs are believed to be associated with the regional MEW VOC plume.</p>
<p>3c) Risk management measures are appropriate, documented, and do not require future Water Board oversight</p> <ul style="list-style-type: none"> √ <i>Necessary risk management measures (land use restrictions, engineered vapor barriers, soil management plans, etc.) are implemented and documented</i> √ <i>Risk management measures do not require future Water Board oversight</i>
<p>Comments: Cleanup standards for this site were based on commercial/industrial land use. Under the <i>Record of Decision for the NASA Ames Development Plan</i> (November 2002), land use is restricted to those uses outlined by Mitigated Alternative 5 in the <i>NASA Ames Development Plan, Final Programmatic Environmental Impact Statement</i> (July 2002). No residential land use and no groundwater use for drinking water is allowed.</p>

¹ ***For petroleum groundwater plumes, stability is a sufficient criterion. For solvent or other non-petroleum groundwater plumes, closure should be supported by evidence of a decreasing plume.***

SITE CLOSURE SUMMARY [page 8 of 8]

X. ADDITIONAL COMMENTS

Based on soil and groundwater sampling results for petroleum hydrocarbons, cleanup to industrial/commercial standards, and the restrictions on no residential use and no groundwater use for drinking water, this site does not pose a significant risk to human health, the environment, or water quality. In accordance with the "Regional Board Supplemental Instructions to State Water Board December 8, 1995, Interim Guidance on Required Cleanup at Low-Risk Fuel Sites" (Water Board, January 5, 1996), this site is considered a low-risk fuel site and petroleum present in soil and groundwater is expected to degrade.

XI. TECHNICAL REPORTS, CORRESPONDENCE, ETC., THAT THIS CLOSURE RECOMMENDATION WAS BASED UPON

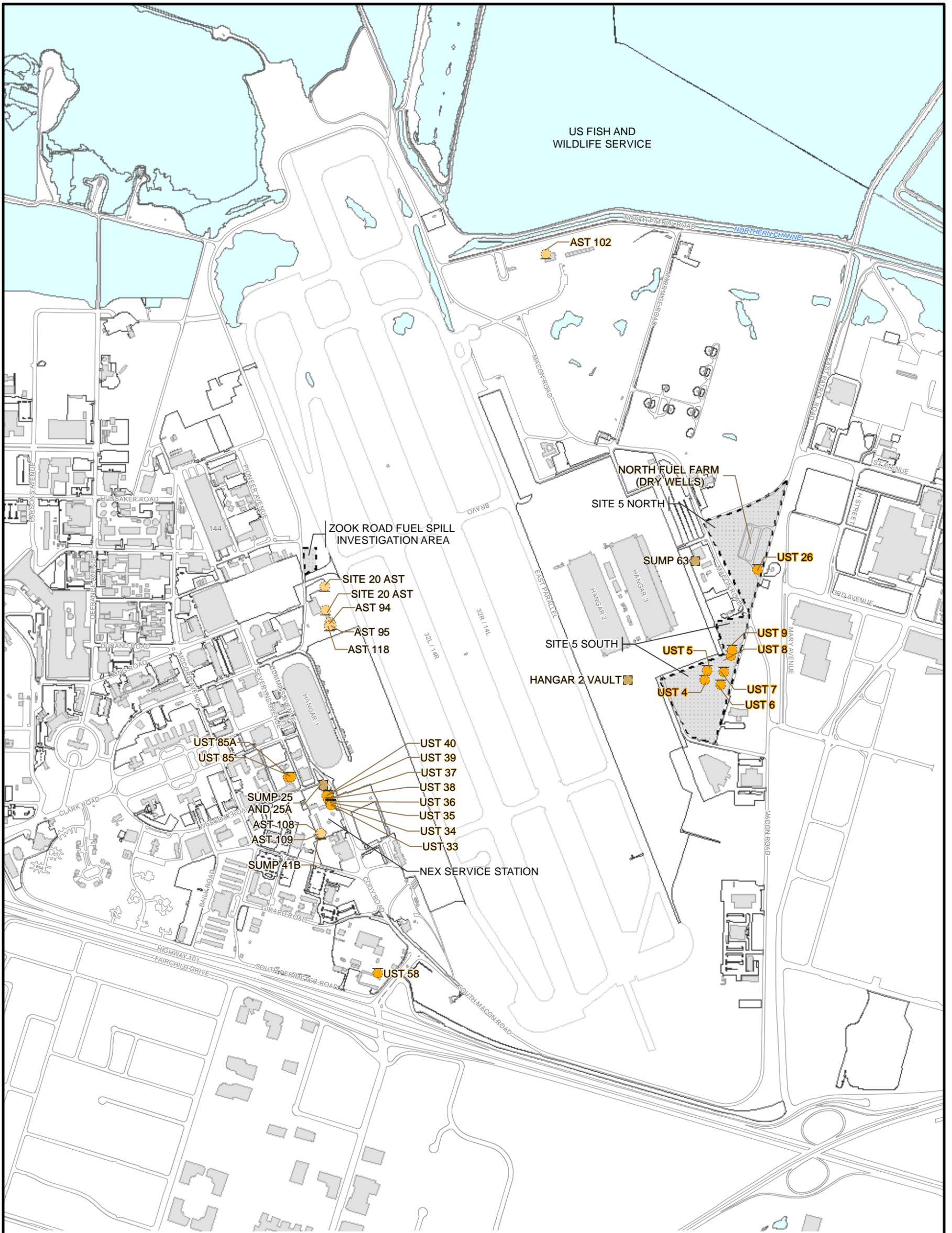
REPORTS ON FILE	Where is report(s) filed?: Water Board, Oakland
Draft Phase III Basewide Tank Closure Report Further Assessment Sites, Tetra Tech.	March 9, 2004
Final Completion Report and Request for Closure or No Further Action for Moffett Petroleum Sites, Tetra Tech.	June 24, 2011

Attachments:

- 1 - Site Vicinity Map
- 2 - Site Plan

Notes and Abbreviations:

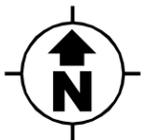
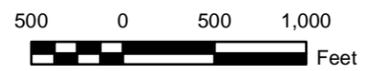
- GW – Groundwater
- TPH – Total Petroleum Hydrocarbons



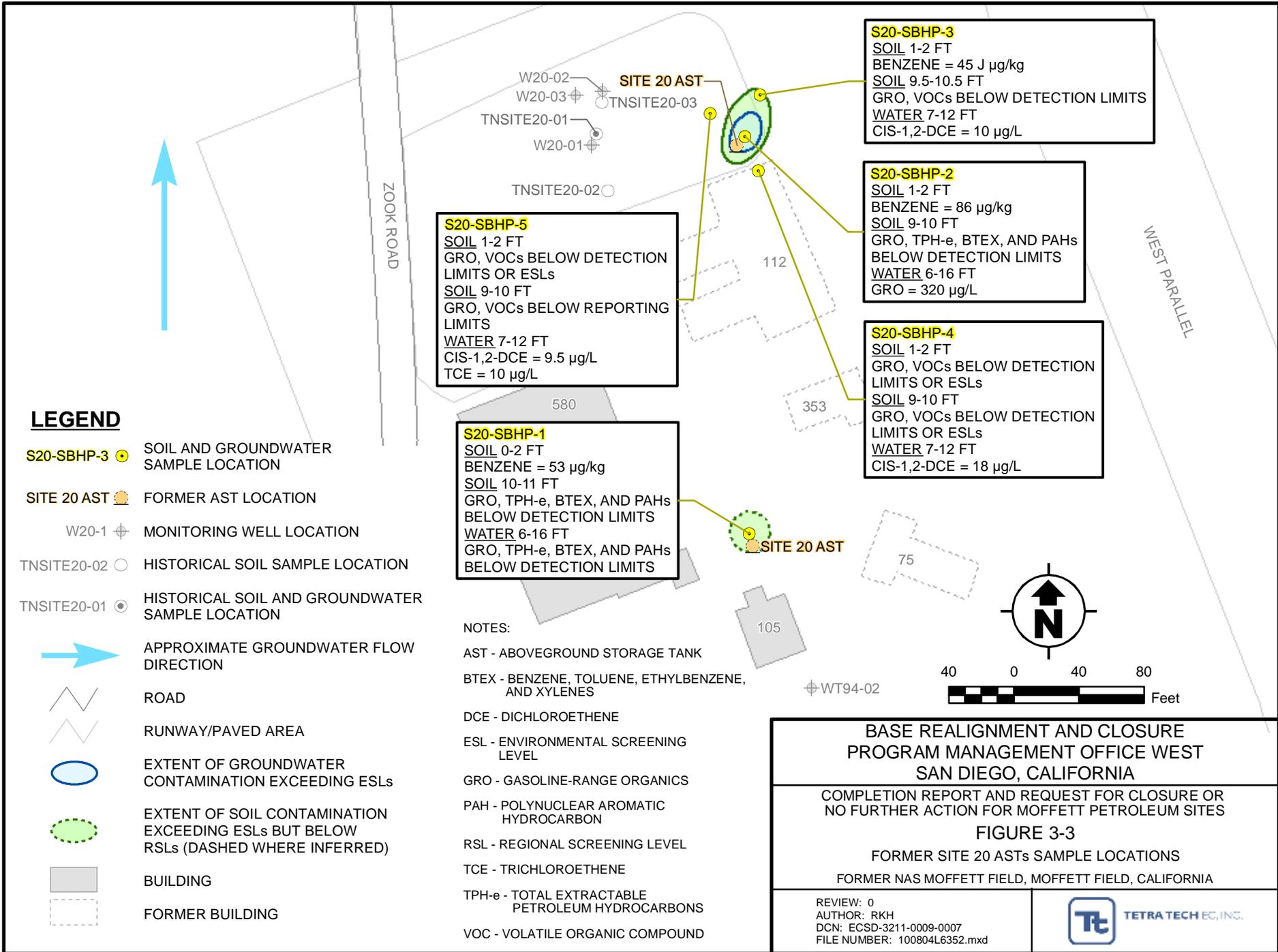
LEGEND

- AST 108 FORMER AST LOCATION
- UST 37 FORMER UST LOCATION
- SUMP 41B FORMER SUMP OR VAULT LOCATION
- ROAD
- RUNWAY
- BUILDING
- WATER

- NOTES:
- AST - ABOVEGROUND STORAGE TANK
 - UST - UNDERGROUND STORAGE TANK
 - NEX - NAVY EXCHANGE



<p>BASE REALIGNMENT AND CLOSURE PROGRAM MANAGEMENT OFFICE WEST SAN DIEGO, CALIFORNIA</p>	
<p>COMPLETION REPORT AND REQUEST FOR CLOSURE OR NO FURTHER ACTION FOR MOFFETT PETROLEUM SITES</p>	
<p>FIGURE 1-3</p>	
<p>PETROLEUM SITES FOR CLOSURE REQUEST</p>	
<p>FORMER NAS MOFFETT FIELD, MOFFETT FIELD, CALIFORNIA</p>	
<p>REVIEW: A AUTHOR: RKH DCN: ECSD-3211-0009-0007 FILE NUMBER: 100804L6344.mxd</p>	



**BASE REALIGNMENT AND CLOSURE
PROGRAM MANAGEMENT OFFICE WEST
SAN DIEGO, CALIFORNIA**

COMPLETION REPORT AND REQUEST FOR CLOSURE OR
NO FURTHER ACTION FOR MOFFETT PETROLEUM SITES

FIGURE 3-3

FORMER SITE 20 ASTs SAMPLE LOCATIONS
FORMER NAS MOFFETT FIELD, MOFFETT FIELD, CALIFORNIA

REVIEW: 0 AUTHOR: RKH DCN: ECSD-3211-0009-0007 FILE NUMBER: 100804L6352.mxd	 TETRA TECH, INC.
--	---