

Summary Report

Aerial Photograph Anomaly APHO 4
Probable Soil Stains
(Also known as SAIC Anomaly 22)
Marine Corps Air Station, El Toro, California

28 July 1999

Prepared by
Southwest Division, Naval Facilities Engineering Command
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TRANSMITTAL

Date: 4 January 2000

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To: Diane Silva
Code 01LS.DS

Subj: **ENVIRONMENTAL COMPLIANCE (Non-CERCLA)**
Administrative Record Materials
Marine Corps Air Station, El Toro

Installation: Marine Corps Air Station, El Toro

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Summary Report

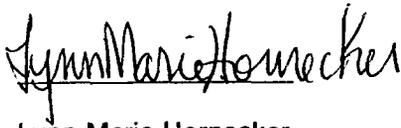
Aerial Photograph Anomaly APHO 4 Probable Soil Stains

(Also known as SAIC Anomaly 22)

Marine Corps Air Station, El Toro, California

28 July 1999

Prepared by:



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Section 1

Introduction

The purpose of this Summary Report is to present information pertaining to the aerial photograph anomaly, designated as APHO 4 in the Base Realignment and Closure Cleanup Plan (BCP), in the vicinity of the Former Tank Farm 4 at the Marine Corps Air Station (MCAS), El Toro. APHO 4 was identified by Science Applications International Corporation (SAIC) as SAIC 22 during a review of historical aerial photographs of the Station. The anomaly is described as probable stains in the Tank Farm 4 vicinity. APHO 4 (SAIC 22) was identified on an aerial photograph dated 1946.

The Marine Corps Air Station, El Toro, also known as the Station, comprises approximately 4,700 acres and is located in eastern Orange County approximately 45 miles southeast of Los Angeles, California. APHO 4 and Tank Farm 4 are shown on Figure 1. APHO 4 and Tank Farm 4 are located in the northeast section of the Station near N 8th Street, N 9th Street, and M Street. The surface area of the anomaly is comparable to the area of a 700-foot diameter circle.

The Station was closed on 2 July 1999 in accordance with the Base Realignment and Closure Act of 1993 (BRAC III). APHO 4 is located within parcels tentatively identified for future use as golf course areas or aviation/industrial related uses according to *The Airport and Open Space Plan, Year 2020, Concept C (County of Orange, August 1998)*.

This Summary Report includes a description of information collected during the investigation of nearby Environmental Locations of Concern, an evaluation of historical records, and the results of the visual inspections of the site. Based upon the review of this information, probable stains observed on the historical aerial photograph were probably not hazardous substances and may have been water from irrigation of the grounds.

Based upon the review of recently collected field data and historical documentation, it is recommended that *no further action status* be designated for APHO 4 (SAIC 22) in the next Base Realignment and Closure Cleanup Plan (BCP) Update.

Section 2

Field Inspections and Historical Records

APHO 4 (SAIC 22), identified on a photograph dated 29 December 1946, is described by SAIC as follows: *Probable soil stains (ST) occur in the southwestern portion of Tank Farm 4, near N 8th Street and O Street. Additional investigation is recommended.*

The annotated photograph of 1946 that is included in the SAIC report has a callout pointing to the general area of Tank Farm 4. There is also a callout on the same photograph that points to an area in the southwestern section of Tank Farm 4. Both callouts indicate stains (ST), and the area of APHO 4, as shown on Figure 1, includes both callouts from the SAIC report. Tank Farm 4 is actually located near N 8th Street and M Street (not N 8th Street and O Street, as described in the SAIC report).

2.1 Field Inspections

Tank Farm 4 Vicinity

The vicinity of APHO 4 and Tank Farm 4 was visually inspected by the Navy in July 1999. The area immediately north and northwest of Tank Farm 4 is unpaved, while the area to the south and southwest is paved with portland cement concrete.

Photographs of the vicinity of APHO 4 and former Tank Farm 4 are presented in the Appendix. No soil stains or discolored areas were observed on the unpaved or paved surfaces surrounding the tank farm during the inspections of July 1999.

2.2 Environmental Program Records

Table 1. Sampling Activities at or near APHO 4.

| Location of Concern Identification Number | Status | NFA or other Decision Document(s) | Comments |
|--|--------|---|--|
| <i>Tank Farm 4 Vicinity Soil Sampling</i> | | | |
| USTs 196, 197, 198, 199, 200, 201, 202, 203, 216, 217, 218, UST T-3, And UST T-2 | NFA. | OCHCA Letter dated 13 November 1996 | All tanks at the Former Tank Farm 4 were removed in 1996 with oversight by the Orange County Health Care Agency. UST T-2 (southwest of Tank Farm 4, adjacent to parking apron) was investigated during the RFA as SWMU 18. |
| UST T-10 | NFA. | OCHCA Letter dated 11 July 1997 | UST T-10 was removed in 1997 with oversight by the Orange County Health Care Agency. UST T-10 was investigated during the RFA as SWMU 108. |
| | | | |
| <i>Ground Water Data</i> | | | |
| Three monitoring wells were constructed along the perimeter of Tank Farm 4 | NFA. | | Three wells, TF4MW-01, TF4MW-02, and TF4MW- 03, were constructed in 1996. Five sampling events were completed during the period from 1996 through 1998. Petroleum hydrocarbons, as gasoline and diesel, were detected at low concentrations (1 to 10 milligrams per liter). MTBE was not detected. Benzene was detected at levels of 0 to 340 micrograms per liter. Ground water monitoring reports have been submitted to the RWQCB Santa Ana Region. |

Tank Sites

Eleven former fuel storage tanks and two fuel recovery tanks were removed from the Tank Farm 4 facility in 1996 by American Processing Company, Incorporated. Tank Farm 4 included a southwest section (adjacent to the parking apron) with eight fuel storage tanks and one fuel recovery tank and northeast section (adjacent to N 9th Street) with three fuel storage tanks and one fuel recovery tank.

UST T-2, one of the fuel recovery tanks, was located near the southwestern area of Tank Farm 4 adjacent to the parking apron. The vicinity of the former UST Site T-2 appears to coincide with the narrative description of APHO 4 (SAIC 22) in the SAIC documentation. The maps in the SAIC documentation appear to show areas located both in the southwestern vicinity of Tank Farm 4 and near the northeastern section of Tank Farm 4.

A fuel recovery tank, UST T-10, was removed from the area northwest of Tank Farm 4 in 1997.

All tank removal and confirmation sampling activities were conducted with oversight by the Orange County Health Care Agency (OCHCA), and regulatory closure has been achieved for all tanks within the former Tank Farm 4 facility and the adjacent site, UST Site T-10. Copies of the OCHCA correspondence are presented in the Appendix.

Resource Conservation and Recovery Act Facility Assessment (RFA)

The former UST Site T-10 was investigated during the Resource Conservation and Recovery Act Facility Assessment (RFA) as Solid Waste Management Unit (SWMU) Number 118 and the results of the inspections and sampling visit are published in the *Installation Restoration Program, Final Resource Conservation and Recovery Act Facility Assessment Report for Marine Corps Air Station, El Toro, California* (Jacobs Engineering Group, 1993). Additionally, UST Site T-2 was investigated as SWMU 18 during the RFA. Extracts from the RFA documentation are presented in the Appendix.

Adjacent Installation Restoration Program (IRP) Sites

Bee Canyon Wash, located more than 1,000 feet northwest of Tank Farm 4, was investigated as part of Installation Restoration Program (IRP) Site 25 during the Remedial Investigation activities. IRP Site 25 includes Bee Canyon Wash and other surface drainages. Surface runoff from the APHO 4 vicinity is conveyed through storm

drains that eventually discharge to Bee Canyon Wash. Surface water quality in Bee Canyon Wash is monitored under the Station's National Pollutant Discharge Elimination System (NPDES) Permit for storm water, and a Record of Decision for No Action was signed for IRP Site 25 in September 1997.

BRAC Cleanup Plan (BCP) Information

The BCP (Tables 3-1a, 3-1b, and 3-2) describe the aerial photograph anomaly sites, and the tables indicate that no further action status has not been achieved for APHO 4. Extracts from the BCP are presented in the Appendix. Table 3-2 includes a description of APHO 4 that is not consistent with the SAIC description, "*Miscellaneous equipment is stored along all sides of this building. Portions of the ground surface along the east and west sides of the building are unpaved. Surface runoff flows in a southwesterly direction.*" It is recommended that the narrative for Table 3-2 be revised as follows: "APHO 4 coincides approximately with the location of the former Tank Farm 4."

Storm Water Pollution Prevention Plan

The Station's environmental compliance program management plans were acquired and reviewed in order to identify any locations at or near APHO 4 that may have been designated for storage or usage of hazardous materials or hazardous wastes. The Storm Water Pollution Prevention Plan (SWPPP) was reviewed and extracts from the SWPPP for the vicinity of APHO 4 are presented in the Appendix of this report.

2.3 Historical Property Records

Property records including the Station's plant account data base were acquired and reviewed, and information pertaining to structures located near APHO 4 is summarized in Table 2.

**Table 2. MCAS El Toro Property Records.
APHO 4 Vicinity Buildings.**

| Building Identification Number | Year of acquisition or construction | Type of Use | Comments |
|---------------------------------------|--|---------------------------------|---------------------------------|
| <i>APHO 4 Vicinity</i> | | | |
| 1538 | 1945 | Filling Station Building/Office | Fuel Farm 4 Office |
| 139 | 1943 | Field Shop/Warehouse | 3 rd Marine Air Wing |

2.4 Ground Water Conditions

Ground water conditions have been investigated in the vicinity of APHO 4 during the Remedial Investigation of the groundwater as Installation Restoration Program (IRP) Site 18 and during the verification of conditions at former Tank Farm 4. The wells that were constructed around the perimeter of Tank Farm 4 also encircle the anomaly APHO 4. Ground water is located approximately 205 feet below ground surface based upon measurements from these wells. Low concentrations of petroleum hydrocarbons, including benzene, have been detected in the wells adjacent to Tank Farm 4. Selected information pertaining to the wells at Tank Farm 4 is presented in the Appendix, and a conceptual site model is shown on Figure 2.

The nearest Installation Restoration Program (IRP) monitoring wells are located more than 1,000 feet northwest of APHO 4 at IRP Site 20 – the former Hobby Shop. IRP Site 20 achieved no further action status in 1997 when the No Action Record of Decision was signed.

Section 3 *Findings and Recommendations*

The following findings are based upon information collected during the record search activities and from observations during the visual inspections of the APHO 4 vicinity:

- SAIC identified APHO 4 (also known as SAIC 22) as probable soil stains at the Tank Farm 4 vicinity on a photograph dated 1946. Tank Farm 4 is located in the northeast section of the Station adjacent to the north end of the north-south runway.
- The APHO 4 description in Table 3-2 in the BCP is inconsistent with the SAIC description and revision of the description in the BCP update as follows is recommended: *"APHO 4 coincides approximately with the location of the former Tank Farm 4."*
- All tanks were removed from Tank Farm 4 in 1996 and one nearby fuel recovery tank was removed in 1997. All tanks and confirmation sampling activities were conducted with oversight by the Orange County Health Care Agency (OCHCA), and OCHCA designated no further action status for these sites in letters dated 13 November 1996 and 11 July 1997.
- Three monitoring wells were constructed along the perimeter of Tank Farm 4 in 1996, and five sampling events were completed. Low concentrations of petroleum hydrocarbons and benzene were detected in the ground water beneath Tank Farm 4.
- The APHO 4 vicinity was visually inspected by Navy representatives in July 1999,

and no evidence of stained soils or discolored pavement was observed.

Based upon the results of the field sampling activities at the former Tank Farm 4 and UST T-10 and the results of ground water monitoring activities at the perimeter wells surrounding the former Tank Farm 4, the absence of evidence of a significant release of petroleum hydrocarbons, and the findings of the visual inspections of the APHO 4 vicinity, it is recommended that *no further action status* be designated for APHO 4 (also known as SAIC 22) and that *no further action status* be documented in the next BCP Update.

Section 4

References and/or Sources of Information

American Processing Company, Incorporated. 1996. Closure Report, Underground Storage Tank Removals at Fuel Farm 4, United States Marine Corps Air Station, El Toro, California. [Navy Contract N68711-94-C-0697]

California Environmental Protection Agency, Department of Toxic Substances Control. 1999. Correspondence. Letter to Marine Corps Air Station, El Toro dated May 12, 1999 with Comments on Technical Memorandum, Aerial Photograph Anomalies, Marine Corps Air Station, El Toro.

CDM Federal Programs Corporation. 1998. Final Groundwater Monitoring Report, October 1997 Sampling Round, Groundwater Monitoring Program for Marine Corps Air Station, El Toro. [Navy Contract N68711-96-D-2029, Delivery Order 5]

County of Orange. 1997. Alternative A, El Toro Community Reuse Plan, 1997 Working Map, Land Uses/Conveyances, Gross Acres. [Prepared by P&D Consultants for the County of Orange, March 1997.]

County of Orange. 1998. The Airport and Open Space Plan, Year 2020, Concept C. August. [prepared by the MCAS El Toro Local Redevelopment Authority]

Integrated Environmental Management (IEM). 1997. Storm Water Pollution Prevention Plan (SWPPP) for Marine Corps Air Station, El Toro, El Toro, California. July. [Contract No. N68711-96-D-2059, Delivery Order Number 0002]
{*Annotation: The IEM planning document included the acquisition and review of historical and current plans of facilities and utilities. Extracts from the IEM report are presented in the Appendix.*}

Jacobs Engineering Group (JEG). 1993. Installation Restoration Program, Final Resource Conservation and Recovery Act Facility Assessment Report for Marine Corps Air Station, El Toro, California. [Navy Contract N68711-89-D-9296, Contract Task Order 193]

OHM Remediation Services Corporation. 1997. Draft Groundwater Monitoring Report, Petroleum Storage Facilities at Various Locations, Marine Corps Air Station, El Toro, California. April.

OHM Remediation Services Corporation. 1997. Technical Memorandum, Groundwater Monitoring Report, Petroleum Storage Facilities at Various Locations, Marine Corps Air Station, El Toro, California. November.

Science Applications International Corporation (SAIC). 1993. Final Report, Aerial Photograph Assessment, MCAS El Toro, Contract N68711-91-D-4658, Delivery Order 0002, SAIC Project No. 01-0892-0817.

Southwest Division, Naval Facilities Engineering Command. 1999. Technical Memorandum, Aerial Photograph Anomalies, Marine Corps Air Station, El Toro, California. April.

Southwest Division, Naval Facilities Engineering Command. 1998. Technical Memorandum, Groundwater Data Summary, Petroleum Storage Facilities at Various Locations, Marine Corps Air Station, El Toro, California. September.

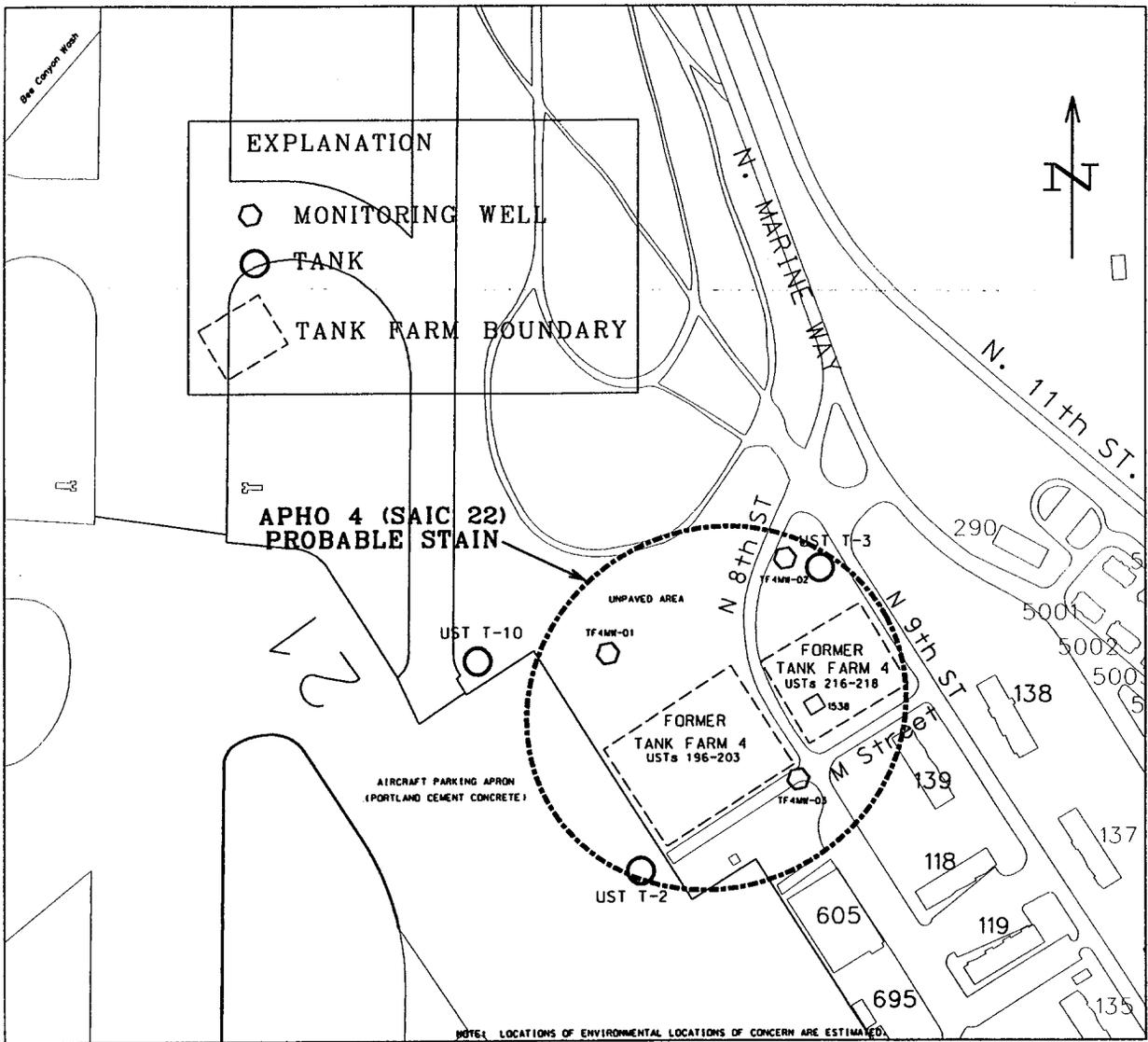
United States Environmental Protection Agency. 1991. Site Analysis, El Toro MCAS, Orange County, California.

United States Marine Corps Air Station, El Toro. 1999. Base Realignment and Closure (BRAC) Cleanup Plan.

United States Marine Corps Air Station, El Toro. Circa 1946-1999. Station Property Records and Historical Photographs.

U.S. Marine Corps Air Station, El Toro. 1997. Draft Final Record of Decision, Operable Units 2A and 3A, No Action Sites, Marine Corps Air Station, El Toro, California. September.

Figures



APPROXIMATE SCALE:
1 inch = 350 feet

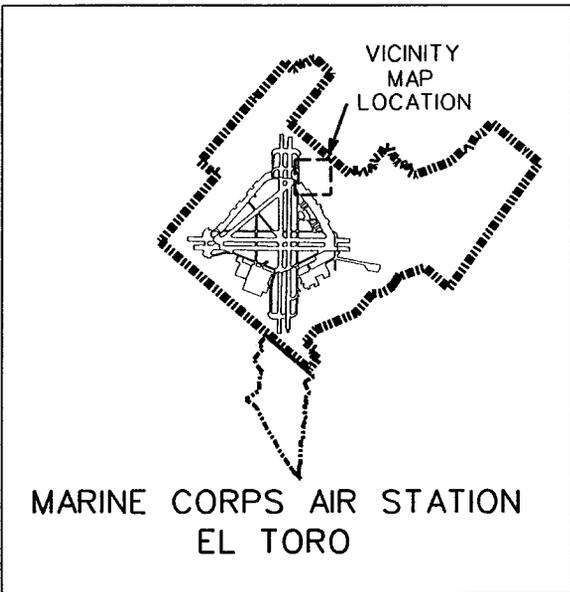
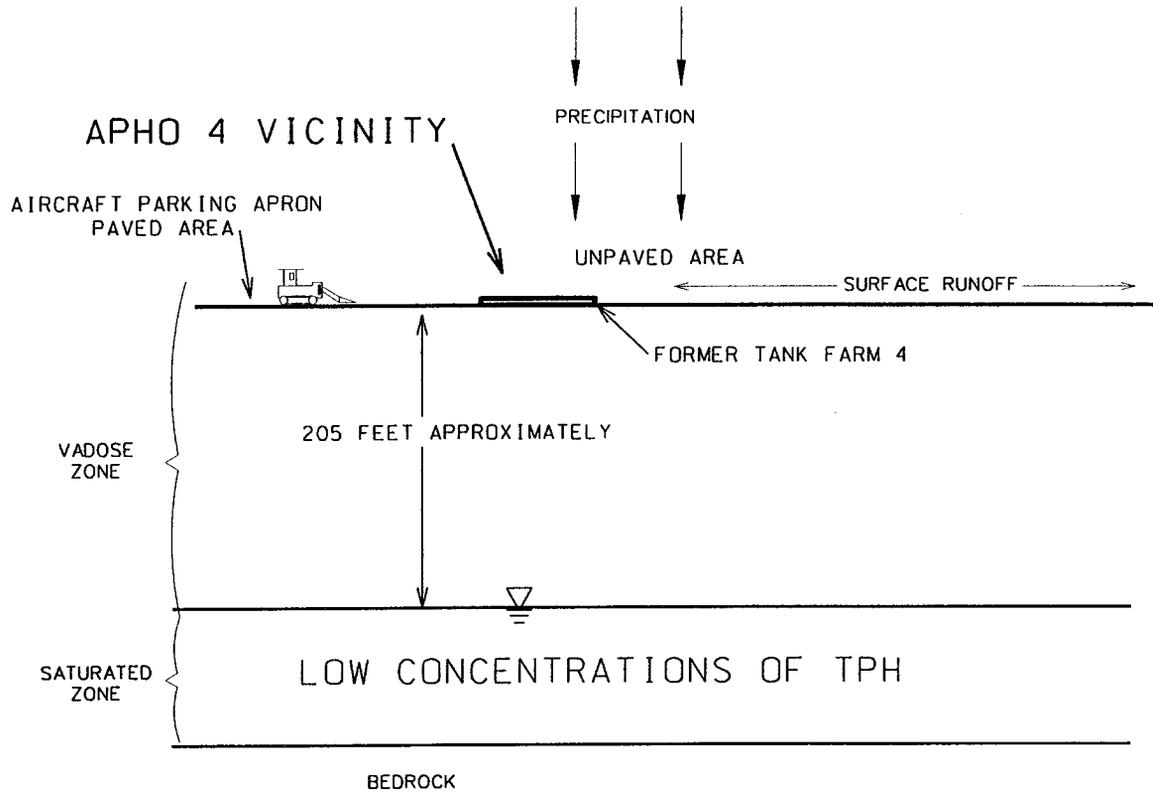


Figure 1.
AERIAL PHOTOGRAPH ANOMALY PROGRAM
APHO 4 VICINITY MAP
MARINE CORPS AIR STATION, EL TORO

FILE: APH4MDL.dgn 2July1999



LEGEND:

RECEPTORS:



WORKERS



PETROLEUM IMPACTED SOILS

TPH

Total Petroleum Hydrocarbons

PATHWAYS:



GROUND WATER

NOTE: DRAWING IS NOT TO SCALE.

Figure 2.

AERIAL PHOTOGRAPH ANOMALY PROGRAM

APHO 4 CONCEPTUAL SITE MODEL

MARINE CORPS AIR STATION, EL TORO

Appendix

Site Photographs and Other Documentation

Site Photographs

Check List Form

Exhibits

Extracts from Base Realignment and Closure Cleanup Plan (BCP)

Extracts from SAIC Study

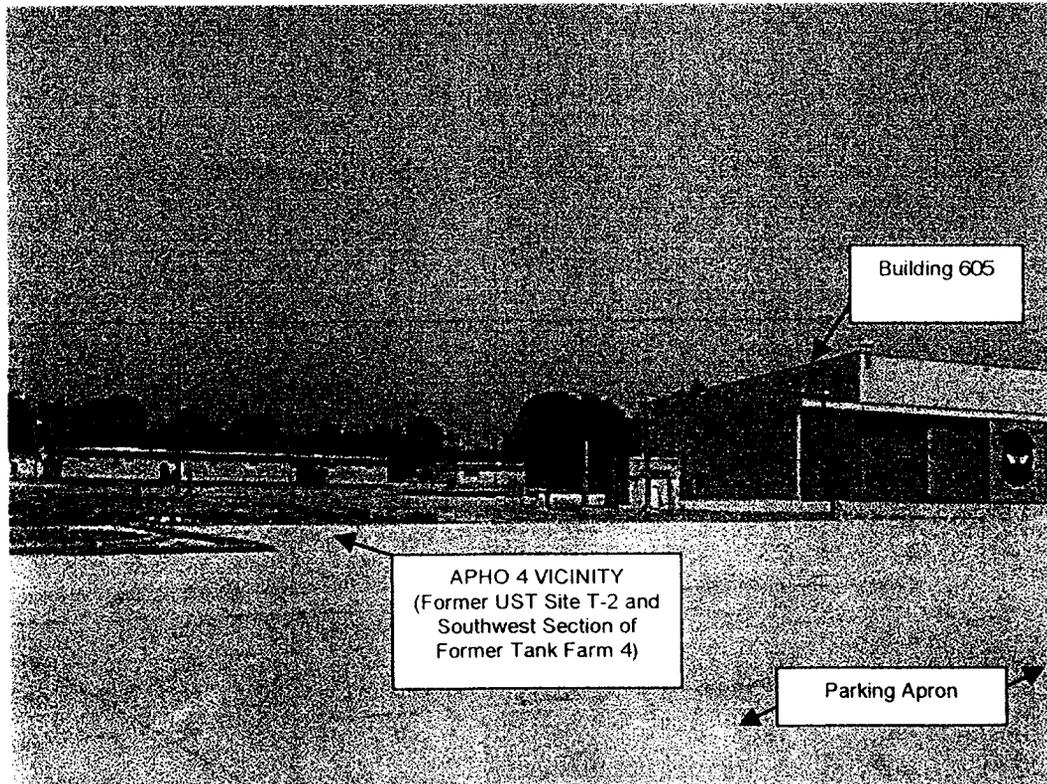
Extracts from SWPPP

No Further Action Documents (Closure Letters) for Tank Sites
-USTs 196, 197, 198, 199, 200, 201, 202, and 203 and 216, 217, and 218,
and T-2 and T-3
-UST T-10

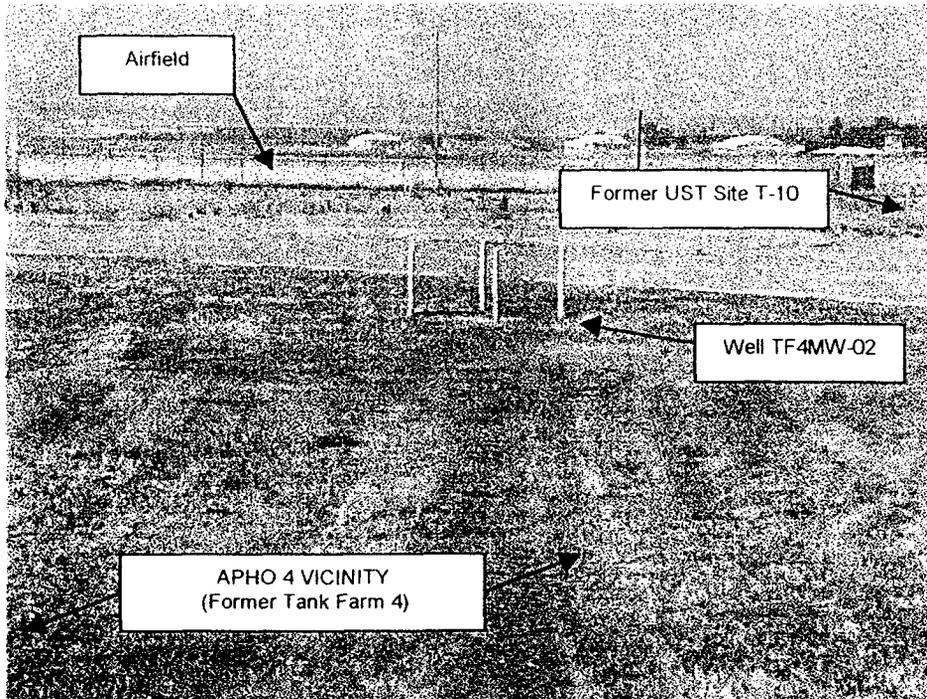
Extracts from RFA Documentation (JEG, 1993)

Extracts from Groundwater Monitoring Report (OHM, 1997)

Photograph 1. APHO 4 (SAIC 22) Vicinity
View from Parking Apron Looking Northeast
Aerial Photograph Anomaly Program
Marine Corps Air Station, El Toro
Date of Photograph: July 1999



Photograph 2. APHO 4 (SAIC 22) Vicinity
View from Northeast Section of Tank Farm 4 Looking Southwest
Aerial Photograph Anomaly Program
Marine Corps Air Station, El Toro
Date of Photograph: July 1999

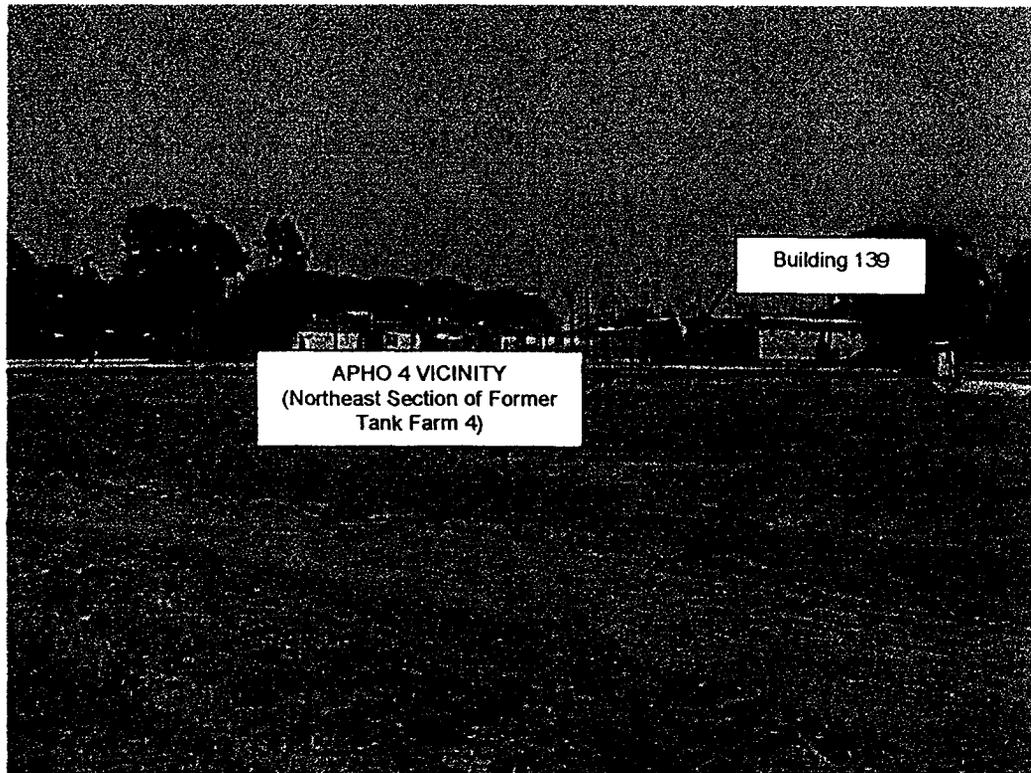


**Photograph 3. APHO 4 (SAIC 22) Vicinity
View from Northeast Section of Tank Farm 4 Looking Northeast**

Aerial Photograph Anomaly Program

Marine Corps Air Station, El Toro

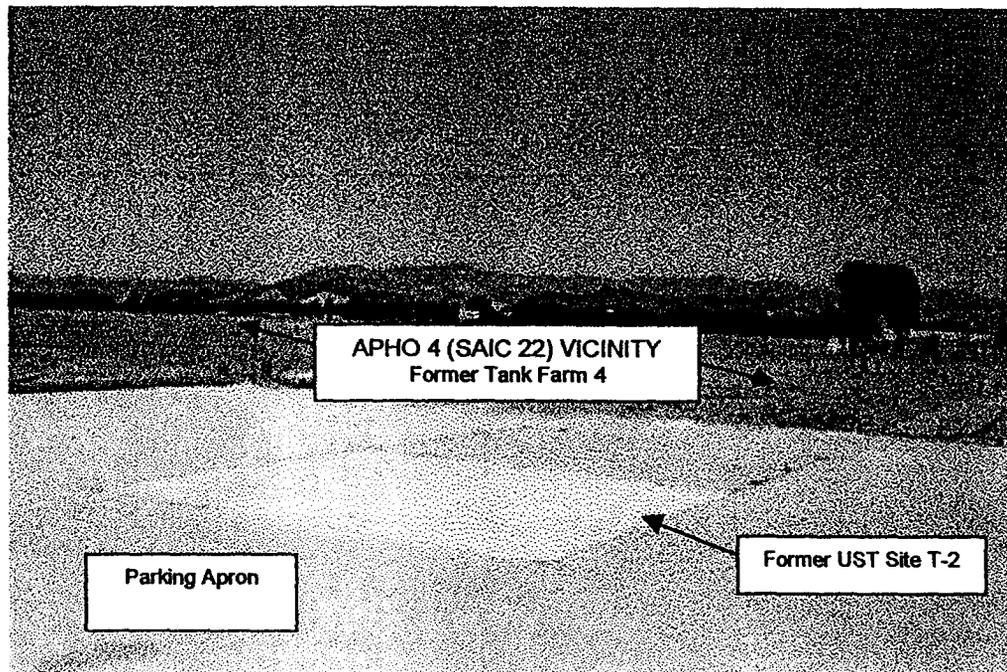
Date of Photograph: July 1999



**APHO 4 VICINITY
(Northeast Section of Former
Tank Farm 4)**

Building 139

Photograph 4. APHO 4 (SAIC 22) Vicinity
View from Southwest Section of Tank Farm 4 Looking North
Aerial Photograph Anomaly Program
Marine Corps Air Station, El Toro
Date of Photograph: July 1999



CHECK LIST

Aerial Photograph Anomaly Program, Marine Corps Air Station, El Toro

Anomaly Identification Information:

Date of Photograph: 29 December 1946

| APHO (from the BRAC Cleanup Plan) | SAIC | EPA |
|-----------------------------------|------|-----|
| 4 | 22 | |

Recommendation: No Further Action Status

Anomaly Description (from source document(s) *Site Analysis, El Toro MCAS* (EPA, 1991) or *Final Report, Aerial Photograph Assessment* (SAIC, 1993)):

SAIC 22: *Probable soil stains (ST) occur in the southwestern portion of Tank Farm 4, near N 8th Street and O Street. Additional investigation is recommended.*

Visual Inspection Date (s): 1, 9, 12, and 21 July 1999.

Participant(s) (with affiliation(s)) in inspection(s):

Lynn Marie Homecker
US Navy

Scott Kehe
US Navy

Current Site Conditions: *The APHO 4 vicinity is generally unpaved and includes the former Tank Farm 4 site. Tank Farm 4 included two groups of tanks, one group located adjacent to the aircraft parking apron and one group located to the northeast. All tanks have been removed from the former Tank Farm 4 facility, and UST T-10 was removed from the area northwest of Tank Farm 4. The former Tank Farm 4 facility and most of the adjacent areas, except for the aircraft parking apron and access roads, are covered with grasses. There is a paved parking lot located northeast of the northeast section of Tank Farm 4. There is a surface drainage channel northwest of APHO 4, and the surface runoff is eventually conveyed to Bee Canyon Wash. No stains were observed on the paved area of the parking apron, and no areas of wet soils or soil stains were observed on the unpaved areas of APHO 4.*

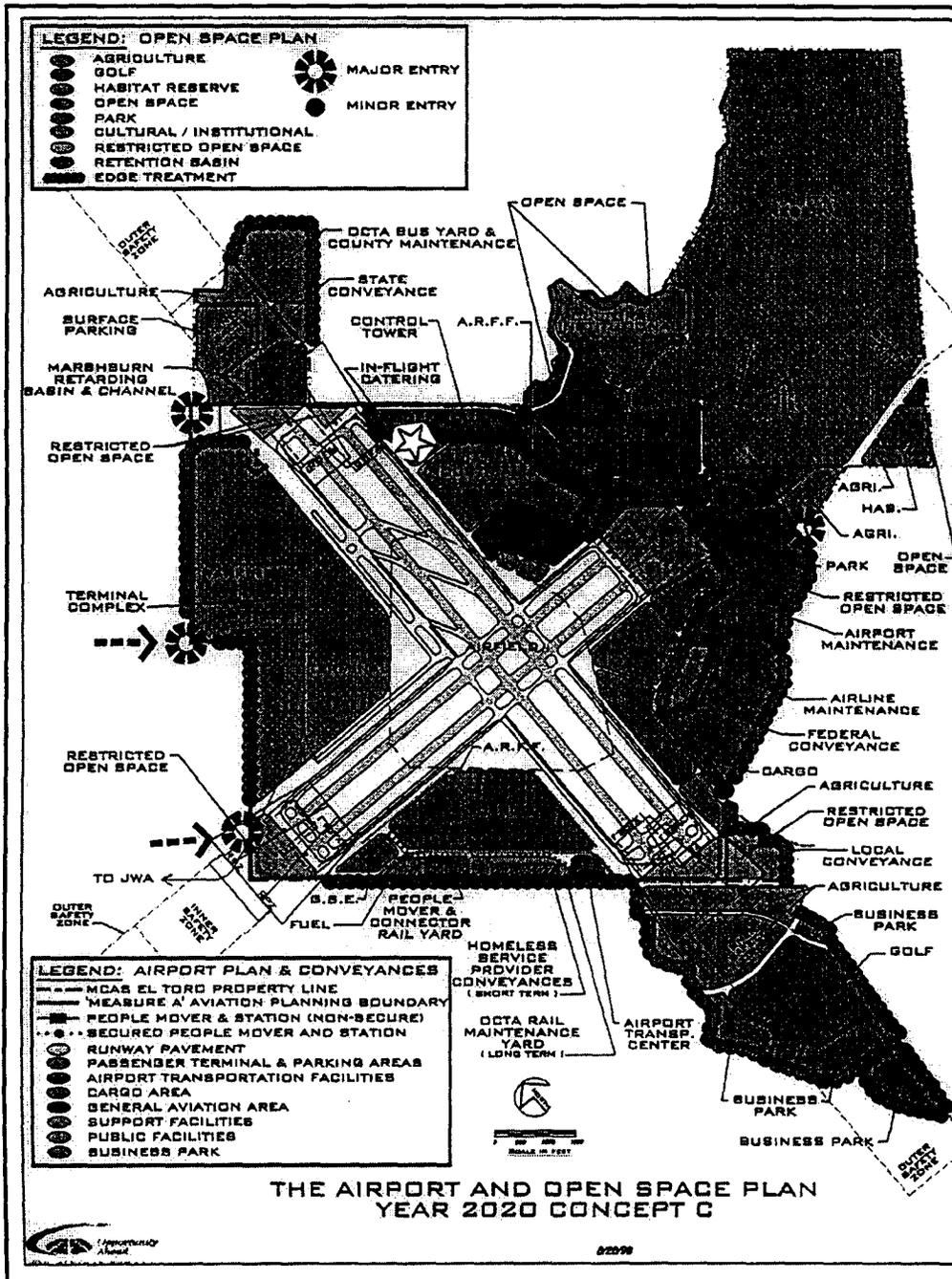
Is there visual evidence of the anomaly identified in the photograph present at the site?
No.

Is there evidence of past releases? *No.*

Are there indications of potential or current releases? *No.*

Description of photograph(s): *Photographs of APHO 4 vicinity, including the former Tank Farm 4 facility and adjacent areas.*

Date of preparation of check list: 22 July 1999



NOTE: ANNOTATIONS MADE BY THE WRITER OF THE APHO 4 REPORT ARE IDENTIFIED WITH A STAR SYMBOL: ☆

Exhibit 1.
AERIAL PHOTOGRAPH ANOMALY PROGRAM
Tentative Reuse Plan
The Airport and Open Space Plan, Year 2020, Concept C
MARINE CORPS AIR STATION, EL TORO



Exhibit 2.

AERIAL PHOTOGRAPH ANOMALY PROGRAM

**Extract from 1994 Aerial
Photograph**

MARINE CORPS AIR STATION, EL TORO

United States Marine Corps

EXTRACTS

Base Realignment and Closure Cleanup Plan (BCP)



**For
Marine Corps Air Station
El Toro, CA**

March 1999

Table 3-2
Aerial Photograph Features/Anomalies
(Sheet 1 of 7)

| Database Tracking | SAIC Anomaly ID No. | LRA Reuse Parcel | Point of Reference | Year | SAIC Observations ¹ | SAIC Comments ² | Comments | ECP Area Type |
|-------------------|---------------------|------------------|---------------------|------|--------------------------------|----------------------------|--|---------------|
| APHO 1 | 7 | 32 | Tank Farm 3 | 1946 | ST | C | The stains appear adjacent to the southeastern side of Tank Farm 3 where a former fuel bladder may have been located. Also see anomalies 113, 173, 190, 227, 235, and 272. | 7 |
| APHO 2 | 14 | 42 | B 136 | 1946 | OS, D | C | Miscellaneous equipment is stored along the southeast side of B 135. The ground surface is paved with asphalt, and surface runoff flows in a southwest direction. | 7 |
| APHO 3 | 21 | 43 | B 120 | 1946 | OS, D | C | Miscellaneous equipment is stored along the southeast side of B 120. The ground surface is paved with asphalt, and surface runoff flows in a southwest direction. | 7 |
| <u>APHO 4</u> | 22 | 23 | Tank Farm 4 | 1946 | ST | C | Miscellaneous equipment is stored along all sides of this building. Portions of the ground surface along the east and west sides of the building are unpaved. Surface runoff flows in a southwesterly direction. | 7 |
| APHO 5 | 25 | 32 | B 50 | 1946 | OS | C | This area is commonly used for open storage. The ground surface is unpaved. | 7 |
| APHO 6 | 39 | 29 | B 306 | 1946 | IM | C | Unknown impoundments. Additional investigation recommended. | 7 |
| APHO 7 | 46 | 29 | B 1389 | 1946 | WS, ST, OS | C | The liquid is probably surface runoff. | 7 |
| APHO 8 | 52 | 7 | Golf Course Hole 12 | 1946 | OS, R, EX, FA | C | Portions of this storage area has been covered by the extension of runways 34-L and 34-R. | 7 |
| APHO 9 | 53 | 23 | Agua Chinon Wash | 1946 | LQ | C | The liquid could be surface runoff flowing into Agua Chinon Wash. | 7 |

A. 10050 000495

EXTRACTS

Final Report
Aerial Photograph Assessment
MCAS El Toro
Contract No. N68711-91-D-4658
Delivery Order 0002
SAIC Project No. 01-0892-02-0817

Submitted to:

Naval Facilities Engineering Command
Southwest Division
1220 Pacific Highway, Room 18
San Diego, CA 92132-5181

Submitted by:

Science Applications International Corporation
Engineering Sciences Division
10260 Campus Point Drive, MS F1
San Diego, CA 92121

October 25, 1993

c 18. There is a trench (TR) and fill area (FA) about 1000 feet south of Tank 293 (Water Reservoir). The trench is oriented nearly east-west, and is about 900 feet long. Spoil material (FA) extends about 500 feet to the west, along the trench alignment. There is a large area of disturbed ground (DG) south of the trench. It should be verified that the trench is wholly contained by the present IR program field investigation for the Original Landfill (Site 3).

b 19. There is a large area of stained (ST) soil in the vicinity of the Original Landfill (DG). The Site 3 investigation appears to encompass the area; no additional investigation is recommended at this time.

c 20. There are three areas of apparent extraction (EXT) at the mouth of Agua Chinon Wash. These areas may have been used for waste disposal. Additional investigation is recommended if contamination is detected near, or downgradient of the site, in areas of interest to the IR program.

c 21. An open storage (OS) area on the northwest side of Building 120, near N 8th Street and O Street, contains possible drums (D). Additional investigation is recommended.

→ c 22. Probable soil stains (ST) occur in the southwestern portion of Tank Farm No. 4, near N 8th Street and O Street. Additional investigation is recommended.

a 23. There are stains (ST): adjacent to the aircraft parking apron about 200 feet northeast of Building 12; at S 1st Street and K Street; and between Buildings 10 and 11, on S 4th Place.

c 24. Seven (7) possible vertical tanks (VT) are noted on the north side of Trabuco Road, west of Gate No. 1. These may be silos, however, the existence and use of the suspected tanks should be verified, and if necessary, the area investigated.

c 25. There is an open storage (OS) area, perhaps related to construction activities, between F and G Streets and S 1st and S 3rd Streets. If construction-related, the site may have contained a variety of paints, solvents, and other potential contaminants. Additional investigation is advised.

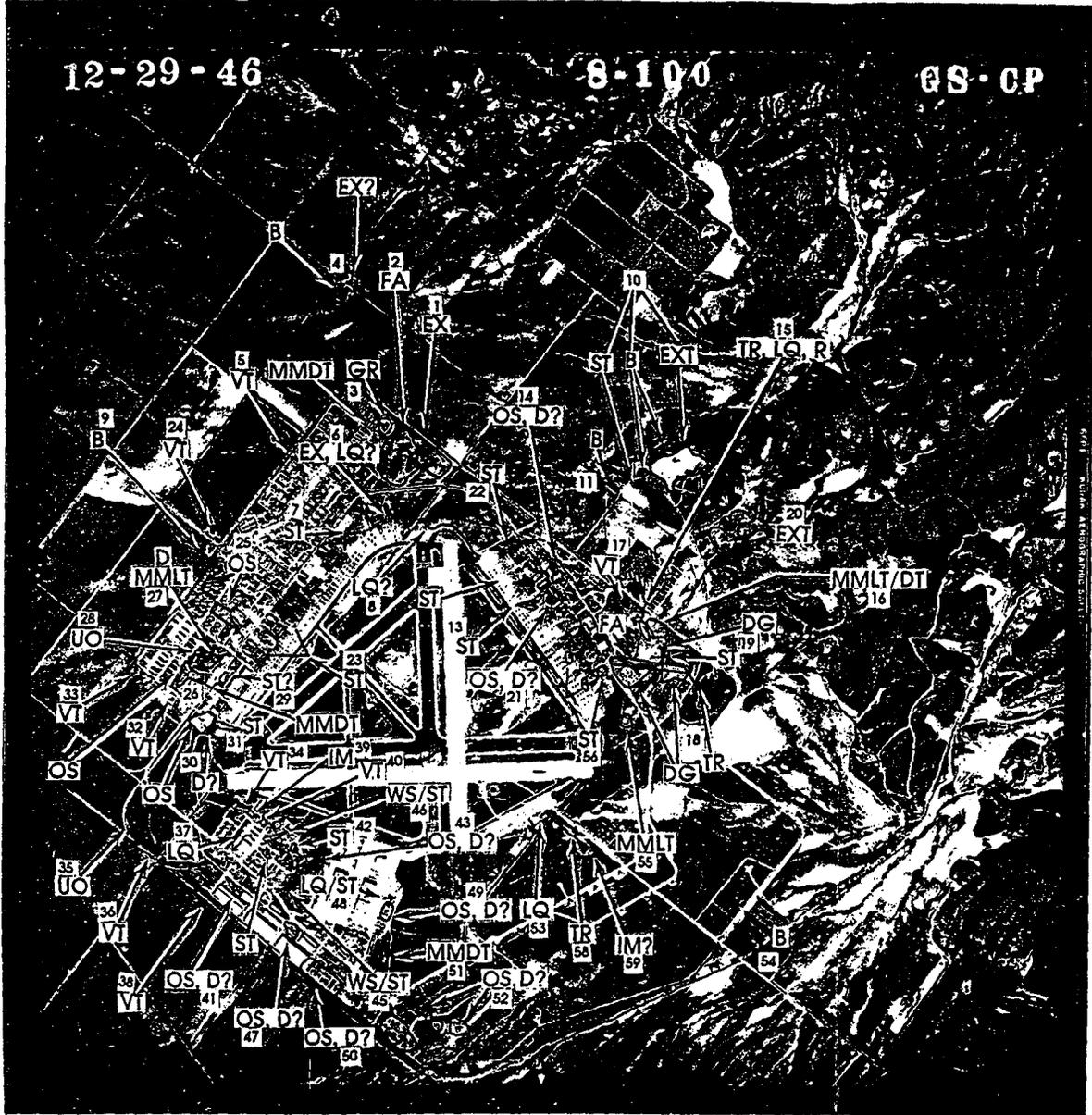
c 26, a 27, and c 28. These sites are located on the northwesterly sides of Buildings 25, 27, 29, and 31 between S 5th and S 8th Streets and G Street and West Marine Avenue. The area contains open storage (OS) areas with possible drums (D), light- and dark-toned mounded material (MMLT and MMDT), unidentified materials, and unidentified objects (UO) that may be mounds or drums. Additional investigation of these areas is recommended.

a 29. There appears to be stained (ST) soil on the southwest side of Building 241, near S 5th Street and West Marine Way. Additional investigation is recommended.

12-29-46

8-100

GS-CP



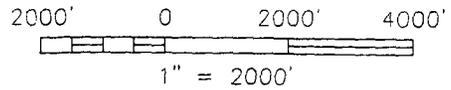
Aerial Photographic Interpretation
 MCAS El Toro
 Santa Ana, California

1946
 Figure 2
 Sheet 1 of 1
 December 29, 1946
 Photo Number GS-CP-8-100
 Source:
 U.S. Geological Survey

Prepared for:
 Southwest Division
 Naval Facilities Engineering Command
 Contract N68711-92-D-4658

LEGEND:

| SYMBOL | DESCRIPTION | SYMBOL | DESCRIPTION |
|--------|------------------|--------|---------------------|
| B | Building | IM | Impoundment |
| D | Drums | LQ | Liquid |
| DB | Debris | LT | Light-Toned |
| DG | Disturbed Ground | M | Material |
| DK | Dark-Toned | MM | Mounded Material |
| EX | Excavation | OS | Open Storage |
| EXT | Extraction | R | Refuse |
| FA | Fill Area | ST | Stain |
| FBR | Fuel Bladder | TR | Trench |
| GR | Graded Area | UO | Unidentified Object |
| GS | Ground Scar | VT | Vertical Tank |
| HT | Horizontal Tank | WS | Wet Soil |



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EXTRACTS

**STORM WATER POLLUTION PREVENTION PLAN
(SWPPP)**

FOR

**MARINE CORPS AIR STATION EL TORO
EL TORO, CALIFORNIA**

**CONTRACT NO. N68711-96-D-2059
DELIVERY ORDER NO. 0002**

VOLUME 1

Note: Annotations made by the
writer of the APHO 4 SUMMARY
REPORT are identified with the
symbol: 

JULY, 1997

INTEGRATED ENVIRONMENTAL MANAGEMENT, INC.

5.11 DRAINAGE BASIN 11

This drainage basin comprises some of the buildings in Areas 12 and 13. It has an area of about 54 acres.

5.11.1 Buildings of Limited Concern

The following buildings do not use, handle, transport or store significant quantities of industrial materials nor do they generate significant amounts of liquid or solid industrial pollutants. They do not appear to be of concern to the quality of storm water discharge:

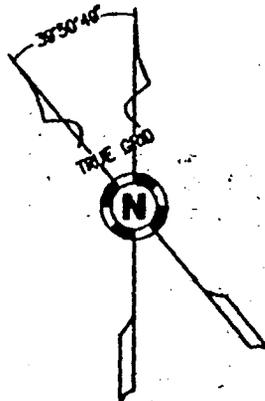
| TABLE 5-13 BASIN 11 BUILDINGS OF LIMITED CONCERN | | |
|--|----------------------------------|-------------|
| BLDG # | DESCRIPTION | TENANT |
| 118* | Maintenance Hanger 01/ 02 Space | HMM-364 |
| 137 | Storage | MAG-11 |
| 138 | Electronics Maintenance Division | Station/G-6 |
| 139 | 3 rd MAW Embarkation | MWHS-3 |
| ☆ 196-218* | Tank Farm #4 | Vacant |
| 290 | General Storage | MAG-11 |
| 767 | Billboard | MAG-11 |

- * Buildings with an asterisk indicate facilities which were not involved in any industrial activities or did not store any hazardous materials at the time of our field observations. However, these facilities appear to have been involved in activities of potential concern in the past. If activities of concern resume in the future, site specific BMPs should be adopted. These facilities/activities should be reviewed on an annual basis in order to update this plan as necessary.

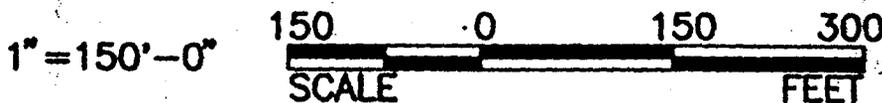


KEY PLAN

SCALE: NONE



EXTRACTS



IF LESS THAN 22X34 IT IS A REDUCED PRINT SCALE ACCORDINGLY

IEM
ATED ENVIRONMENTAL MANAGEMENT, INC.

SUITE 412 • TUSTIN, CALIFORNIA 92680

(714) 731-5977 • (714) 731-5978

DEPARTMENT OF THE NAVY NAVAL FACILITIES ENGINEERING COMMAND

EL TORO **SOUTHWEST DIVISION**

CALIFORNIA

MARINE CORPS AIR STATION

EL TORO, CA.

CHK.

ENGR.

DATE

"MCAS" EL TORO

FP

AREA 12 - STORM DRAINS

DATE

SIZE

CODE IDENT. NO.

NAVFAC. DRAWING NO.

D

DATE

CONT. CONTR. NO.

XXXXX

DER NAVFAC

SCALE

SPEC.

SHEET

OF

No Further Action Documents



**COUNTY OF ORANGE
HEALTH CARE AGENCY**

**PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH**

TOM URAM
DIRECTOR

HUGH F. STALLWORTH, M.D.
HEALTH OFFICER

ROBERT E. MERRYMAN, REHS, MPH
DEPUTY DIRECTOR

MAILING ADDRESS:
2009 EAST EDINGER AVENUE
SANTA ANA, CA 92705-4170

TELEPHONE: (714) 667-3600
FAX: (714) 917-0149

November 13, 1996

LT Hope Katcharian
Director, Environmental Engineering Division
Commanding General
AC/S Environmental IAU
Marine Corps Air Station El Toro
P.O. Box 95001
Santa Ana, CA 92709-5001

Subject: **Completion of Tank Removal Project**

RE: Marine Corps Air Station El Toro
Fuel Farm #4
(Tanks #196, 197, 198, 199, 200, 201, 202, 203, 216, 217, 218 and two recovery [tank])
Santa Ana, CA 92709

Dear Lt. Katcharian:

This is in response to your request for a confirmation of the completion of the tank removal project. With the provision that the results for the soil samples obtained during the tank removal on July 2, 30 and 31, 1996, were accurate and representative of existing conditions, it is the position of this office that no significant soil contamination has occurred at the above noted facility location.

It should be pointed out that this letter does not relieve you of any responsibilities mandated under the California Health and Safety Code if additional or previously unidentified contamination is discovered at the subject site.

If you have any questions regarding this matter, please contact Arghavan Rashidi-Fard at (714) 667-3713.

Sincerely,

William J. Diekmann, M.S., REHS
Supervising Hazardous Waste Specialist
Hazardous Materials Management Section
Environmental Health Division

cc: Larry Vitale, Santa Ana Regional Water Quality Control Board



**COUNTY OF ORANGE
HEALTH CARE AGENCY**

**PUBLIC HEALTH
DIVISION OF ENVIRONMENTAL HEALTH**

**TOM URAM
DIRECTOR**

**HUGH F. STALLWORTH, M.D.
HEALTH OFFICER**

**JACK MILLER, REHS
DEPUTY DIRECTOR**

**MAILING ADDRESS
2009 EAST EDINGER AVENUE
SANTA ANA, CA 92705-4720**

**TELEPHONE: (714) 667-3600
FAX: (714) 972-0740**

July 11, 1997

LT. Hope Katcharian
Director, Environmental Engineering Division
Commanding General
AC/S Environmental IAU
Marine Corps Air Station El Toro
P.O. Box 95001
Santa Ana, CA 92709-5001

Subject: Completion of Tank Removal Project

**RE: Marine Corps Air Station El Toro
Tank #T-10
Santa Ana, CA 92709**

Dear Lt. Katcharian:

This is in response to your request for a confirmation of the completion of the tank removal project. With the provision that the results for the soil samples obtained during the tank removal on March 6, 1997, were accurate and representative of existing conditions, it is the position of this office that no significant soil contamination has occurred at the above noted facility location.

It should be pointed out that this letter does not relieve you of any responsibilities mandated under the California Health and Safety Code if additional or previously unidentified contamination is discovered at the subject site.

If you have any questions regarding this matter, please contact Arghavan Rashidi-Fard at (714) 667-3713.

Sincerely,

**William J. Diekmann, M.S., REHS
Supervising Hazardous Waste Specialist
Hazardous Materials Management Section
Environmental Health Division**

cc: Larry Vitale, Santa Ana Regional Water Quality Control Board

MARINE CORPS AIR STATION EL TORO
EL TORO, CALIFORNIA
INSTALLATION RESTORATION PROGRAM
FINAL RESOURCE CONSERVATION
AND RECOVERY ACT (RCRA)
FACILITY ASSESSMENT REPORT

VOLUME I

16 July 1993

EXTRACTS

PREPARED BY:
Southwest Division, Naval Facilities
Engineering Command
1220 Pacific Highway
San Diego, California 92132-5190

THROUGH:
CONTRACT #N68711-89-D-9296
CTO #193
DOCUMENT CONTROL NO:
CLE-C01-01F193-S2-0001

WITH:
Jacobs Engineering Group Inc.
3655 Nobel Drive, Suite 200
San Diego, California 92122

In association with:
International Technology Corporation
CH2M HILL

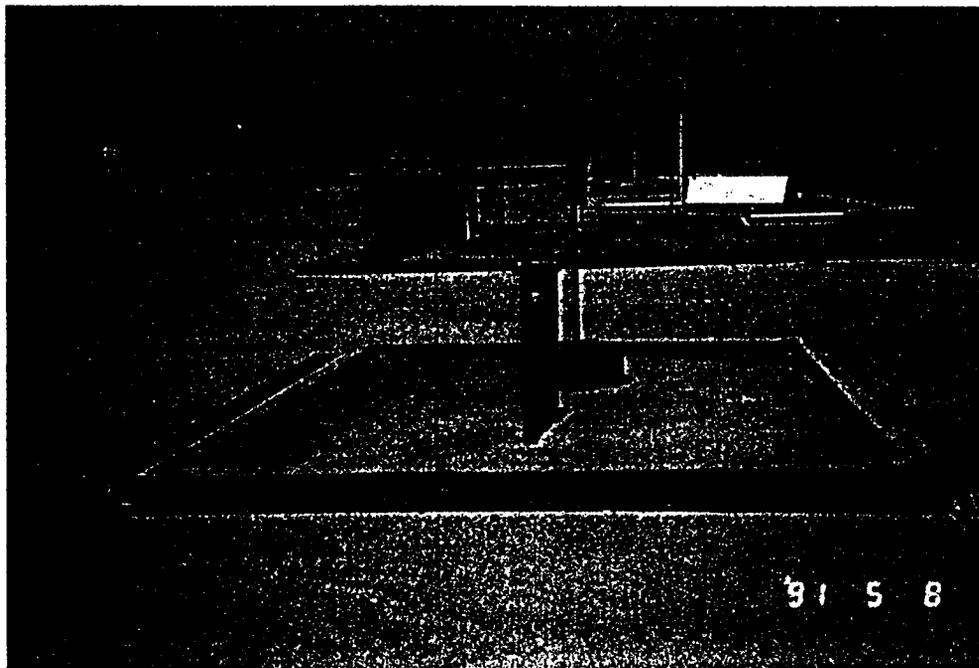
**Evaluation Form
SWMU/Area of Concern
Number 18**

Name: Underground Storage Tank T-02

Location: Tank Farm 4

Size: 2,000 gallons, fiberglass-coated steel

Date of Site Visit: 8 May 1991



Period of Operation

Installed in 1988
Currently active

**Evaluation Form
SWMU/Area of Concern
Number 18**

Unit Characteristics

Tank T-02 is a 2,000-gallon, fiberglass-coated steel, underground spill containment tank. It is located about 10 ft south of the southwestern corner of Tank Farm 4. Tank T-02 is identified by a 10 x 15 ft concrete pad surrounded by a 6-in. concrete berm. Because Tank T-02 is located underground, the physical condition of the tank could not be visually observed. The tank is part of a spill containment system for spills that may occur as the material in the tanks at Tank Farm 4 is pumped into vacuum trucks.

The spill containment system consists of a bermed area where trucks are parked for loading. The containment area is sloped so that all spillage or runoff flows toward the end where the spill containment tank is located. This end of the containment area has an adjustable, metal barrier, which is used to control the desired path of flow. When the pumps are in use, the metal barrier is placed across a runoff opening so that all flow is directed toward the drain leading to the spill containment tank. When the pumps are not being used, the gate is placed across the drain, thus allowing storm runoff to flow out of the spill containment area.

Waste Characteristics

JP-5

Potential Migration Pathways

Subsurface soil

Evidence of Release

None observed

Exposure Potential

Authorized on-Station personnel

**Evaluation Form
SWMU/Area of Concern
Number 18**

Recommendations

This UST was installed at the Station in 1988. As a spill containment tank, it is normally empty. In addition, there is no evidence from either the PR or the VSI of a release from this tank. Based on these considerations, no further action is recommended for this SWMU/AOC.

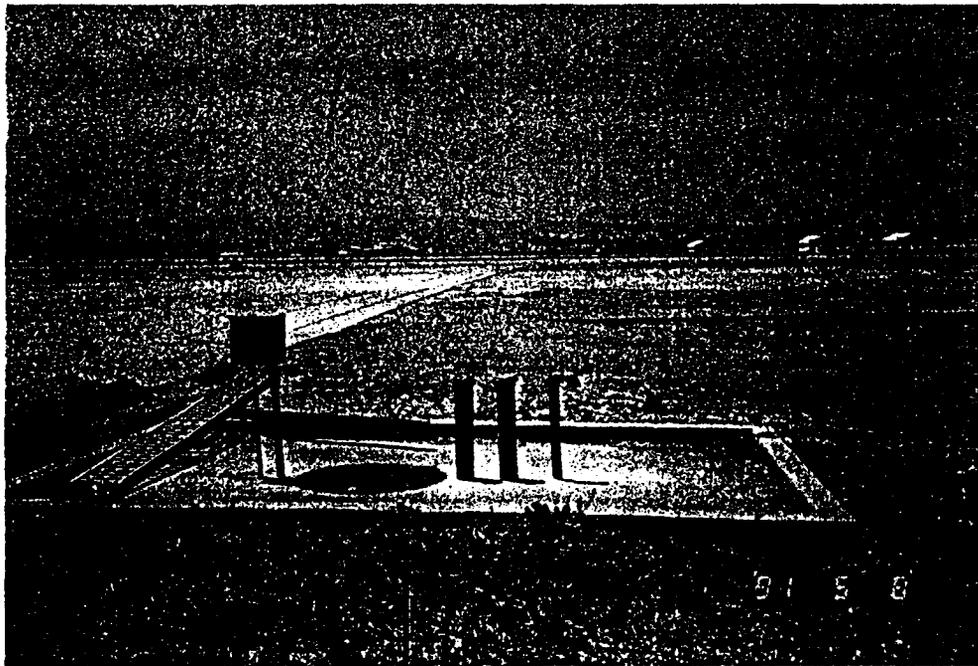
**Evaluation Form
SWMU/Area of Concern
Number 108**

Name: Underground Storage Tank T-10

Location: Northwest of Tank Farm #4

Size: 1,000 gallons

Date of Site Visit: 08 May 91



Period of Operation

Installed in 1988

Currently active

**Evaluation Form
SWMU/Area of Concern
Number 108**

Unit Characteristics

Tank T-10 is located near the flightline and the northern taxiway for runway 16-L. The tank is situated in a small, unpaved area approximately 215 ft north of Tank 196. T-10 is a 1,000-gallon fiberglass coated steel tank for storage of fuel slop. The tank was installed in 1988 and is currently active. The ground surface at the tank location consists of a 10-ft x 15-ft concrete pad with a concrete berm. No significant cracks or stains were observed on the concrete pad or berm. The concrete pad is bordered on all sides by unpaved soil. No stains were observed on the unpaved areas around the concrete pad. A section of tarmac is located approximately 4 ft south of the concrete pad. This paved area is used as a storage area for fuel pumping equipment and above ground tanks.

Waste Characteristics

Fuel slop

Possible Migration Pathways

Soil

Evidence of Release

None observed

Exposure Potential

Authorized on-Station personnel

Recommendations

This UST was recently installed at the station in 1988. There is no evidence of a release from this tank from either the PR or the VSI. Based on the recent installation date for this tank, no further action is recommended for this SWMU/AOC.

Technical Memorandum

EXTRACTS

*Groundwater Monitoring Report
Petroleum Storage Facilities at Various Locations
Marine Corps Air Station
El Toro, California*

SWDIV Contract No. N68711-93-D-1459, Delivery Order No. 0050

OHM Project No. 18292

Document Control No. SW4356

Revision 0

November 5, 1997



**OHM Remediation
Services Corp.**

1202 Kettner Boulevard
San Diego, California 92101

Prepared by:



Julie Diebenow
Senior Hydrogeologist

Approved by:



William Sedlak
Senior Project Manager

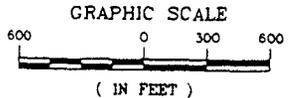
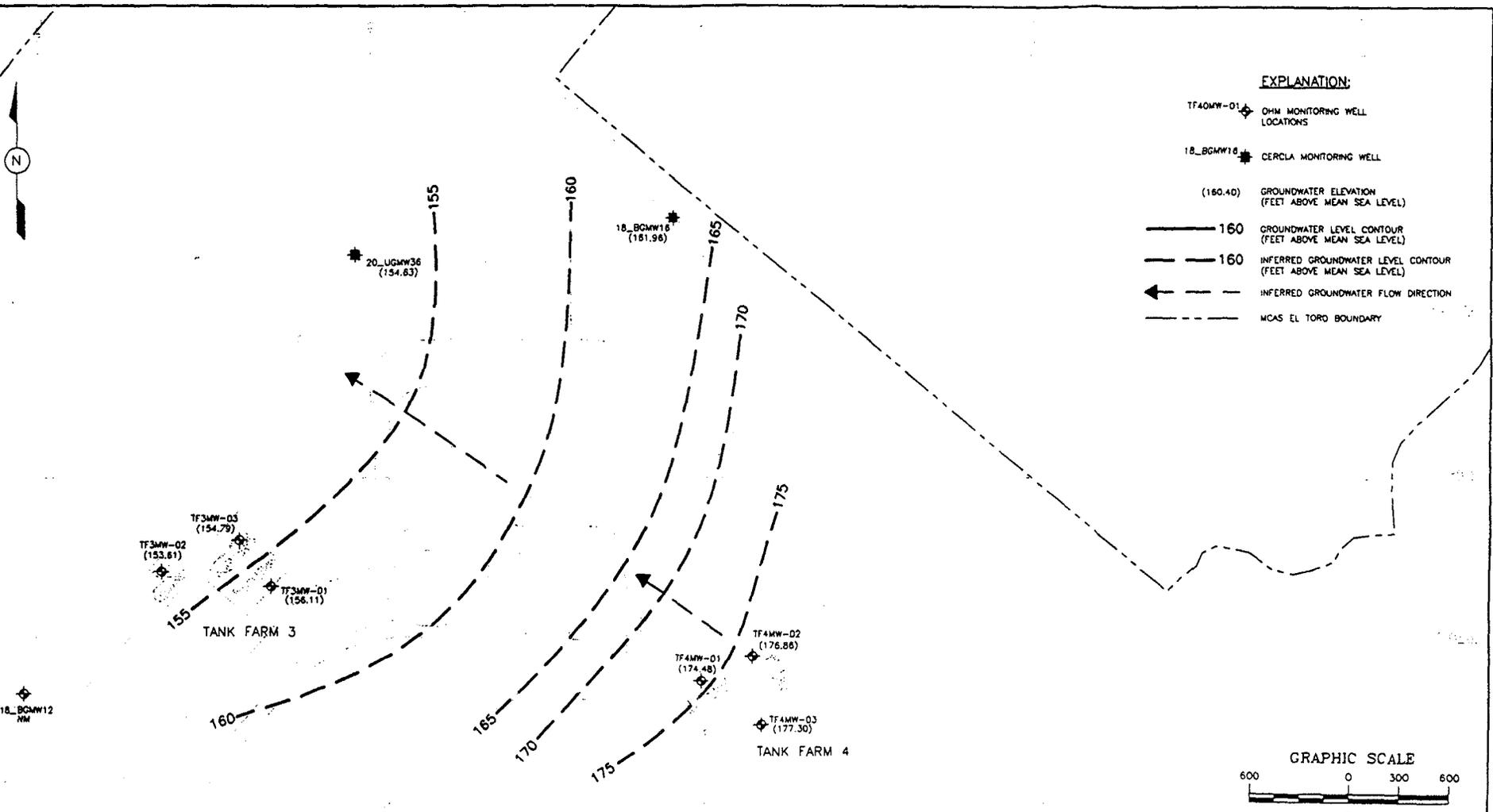
Table 2-2
Water Level Measurements and Groundwater Elevations
MCAS El Toro, Santa Ana, California

| Well Number | Date Measured | Screen Interval (feet bgs) | Depth to Water (feet bgs) | TOC Elevation (feet msl) | Ground Surface Elevation (feet msl) | Water Elevation (feet msl) |
|-----------------|---------------|----------------------------|---------------------------|--------------------------|-------------------------------------|----------------------------|
| TF3MW-02 | 13-Aug-96 | 159-199 | 165.95 | 318.38 | 319.36 | 152.43 |
| | 12-Sep-96 | | 166.10 | 318.38 | 319.36 | 152.28 |
| | 13-Dec-96 | | 166.02 | 318.38 | 319.36 | 152.36 |
| | 15-Jan-97 | | 165.70 | 318.38 | 319.36 | 152.68 |
| | 28-Mar-97 | | 164.77 | 318.38 | 319.36 | 153.61 |
| | 20-May-97 | | 164.94 | 318.38 | 319.36 | 153.44 |
| TF3MW-03 | 27-Aug-96 | 165.5-205.5 | 193.50 | 329.13 | 329.92 | 135.63 |
| | 18-Sep-96 | | 175.60 | 329.13 | 329.92 | 153.53 |
| | 13-Dec-96 | | 175.53 | 329.13 | 329.92 | 153.60 |
| | 15-Jan-97 | | 175.33 | 329.13 | 329.92 | 153.80 |
| | 16-Jan-97 | | 175.33 | 329.13 | 329.92 | 153.80 |
| | 28-Mar-97 | | 174.34 | 329.13 | 329.92 | 154.79 |
| | 20-May-97 | | 174.58 | 329.13 | 329.92 | 154.55 |
| <u>TF4MW-01</u> | 9-Sep-96 | 201-241 | 206.04 | 378.84 | 379.29 | 172.80 |
| | 27-Sep-96 | | 205.91 | 378.84 | 379.29 | 172.93 |
| | 16-Dec-96 | | 205.62 | 378.84 | 379.29 | 173.22 |
| | 31-Dec-96 | | 205.29 | 378.84 | 379.29 | 173.55 |
| | 28-Mar-94 | | 204.36 | 378.84 | 379.29 | 174.48 |
| | 20-May-97 | | 204.02 | 378.84 | 379.29 | 174.82 |
| <u>TF4MW-02</u> | 16-Sep-96 | 201-241 | 210.80 | 384.97 | 385.27 | 174.17 |
| | 4-Oct-96 | | 208.28 | 384.97 | 385.27 | 176.69 |
| | 16-Dec-96 | | 209.20 | 384.97 | 385.27 | 175.77 |
| | 31-Dec-96 | | 208.84 | 384.97 | 385.27 | 176.13 |
| | 28-Mar-97 | | 208.11 | 384.97 | 385.27 | 176.86 |
| | 20-May-97 | | 208.54 | 384.97 | 385.27 | 176.43 |
| <u>TF4MW-03</u> | 3-Sep-96 | 202.5-242.5 | 208.42 | 384.07 | 384.53 | 175.65 |
| | 3-Oct-96 | | 209.64 | 384.07 | 384.53 | 174.43 |
| | 16-Dec-96 | | 208.00 | 384.07 | 384.53 | 176.07 |
| | 6-Jan-97 | | 207.71 | 384.07 | 384.53 | 176.36 |
| | 28-Mar-97 | | 206.77 | 384.07 | 384.53 | 177.30 |
| | 20-May-97 | | 206.22 | 384.07 | 384.53 | 177.85 |
| 18_BGMW12 | 16-Dec-96 | 165-205 NM NM | 154.54 | 304.48 | 304.89 | 149.94 |
| | 28-Mar-97 | | | | | |
| | 20-May-97 | | | | | |
| 18_BGMW16 | 2-Oct-96 | 223-263 | 216.18 | 376.58 | 375.82 | 160.40 |
| | 16-Dec-96 | | 216.04 | 376.58 | 375.82 | 160.54 |
| | 30-Dec-96 | | 215.60 | 376.58 | 375.82 | 160.98 |
| | 28-Mar-97 | | 214.62 | 376.58 | 375.82 | 161.96 |
| | 20-May-97 | | 214.69 | 376.58 | 375.82 | 161.89 |
| 20_UGMW36 | 7-Oct-96 | 183-223 | 184.76 | 338.70 | 338.12 | 153.94 |
| | 16-Dec-96 | | 185.52 | 338.70 | 338.12 | 153.18 |
| | 30-Dec-96 | | 185.11 | 338.70 | 338.12 | 153.59 |
| | 28-Mar-97 | | 184.07 | 338.70 | 338.12 | 154.63 |
| | 20-May-97 | | 184.10 | 338.70 | 338.12 | 154.60 |



EXPLANATION:

- TF40MW-01 OHM MONITORING WELL LOCATIONS
- 18_BGMW18 CERCLA MONITORING WELL
- (160.40) GROUNDWATER ELEVATION (FEET ABOVE MEAN SEA LEVEL)
- 160 GROUNDWATER LEVEL CONTOUR (FEET ABOVE MEAN SEA LEVEL)
- 160 INFERRED GROUNDWATER LEVEL CONTOUR (FEET ABOVE MEAN SEA LEVEL)
- INFERRED GROUNDWATER FLOW DIRECTION
- MCAS EL TORO BOUNDARY



TANK FARMS 3 AND 4 SURVEY DATA

| WELL LOCATIONS | NAD 83 NORTHING | NAD 83 EASTING | TOP OF CASING ELEVATION (feet msl) | GROUND SURFACE ELEVATION (feet msl) | SCREEN INTERVAL (feet bgs) |
|----------------|-----------------|----------------|------------------------------------|-------------------------------------|----------------------------|
| TF3MW-01 | 2195332.55 | 6110359.68 | 322.86 | 333.45 | 169.5-209.5 |
| TF3MW-02 | 2195422.13 | 6109697.18 | 318.59 | 319.36 | 159-199 |
| TF3MW-03 | 2195616.10 | 6110170.46 | 329.13 | 329.92 | 165.5-205.5 |
| TF4MW-01 | 2194744.18 | 6112988.30 | 378.84 | 379.29 | 201-241 |
| TF4MW-02 | 2194900.25 | 6113277.27 | 384.70 | 385.27 | 207-247 |
| TF4MW-03 | 2194479.50 | 6113332.33 | 384.07 | 384.53 | 202.5-242.5 |
| 18_BGMW12 | 2194672.84 | 6108873.29 | 304.48 | 304.89 | 185-205 |
| 18_BGMW18 | 2197566.29 | 6112784.33 | 376.58 | 375.82 | 223-263 |
| 20_UGMW36 | 2197362.81 | 6110662.10 | 336.70 | 336.12 | 183-223 |

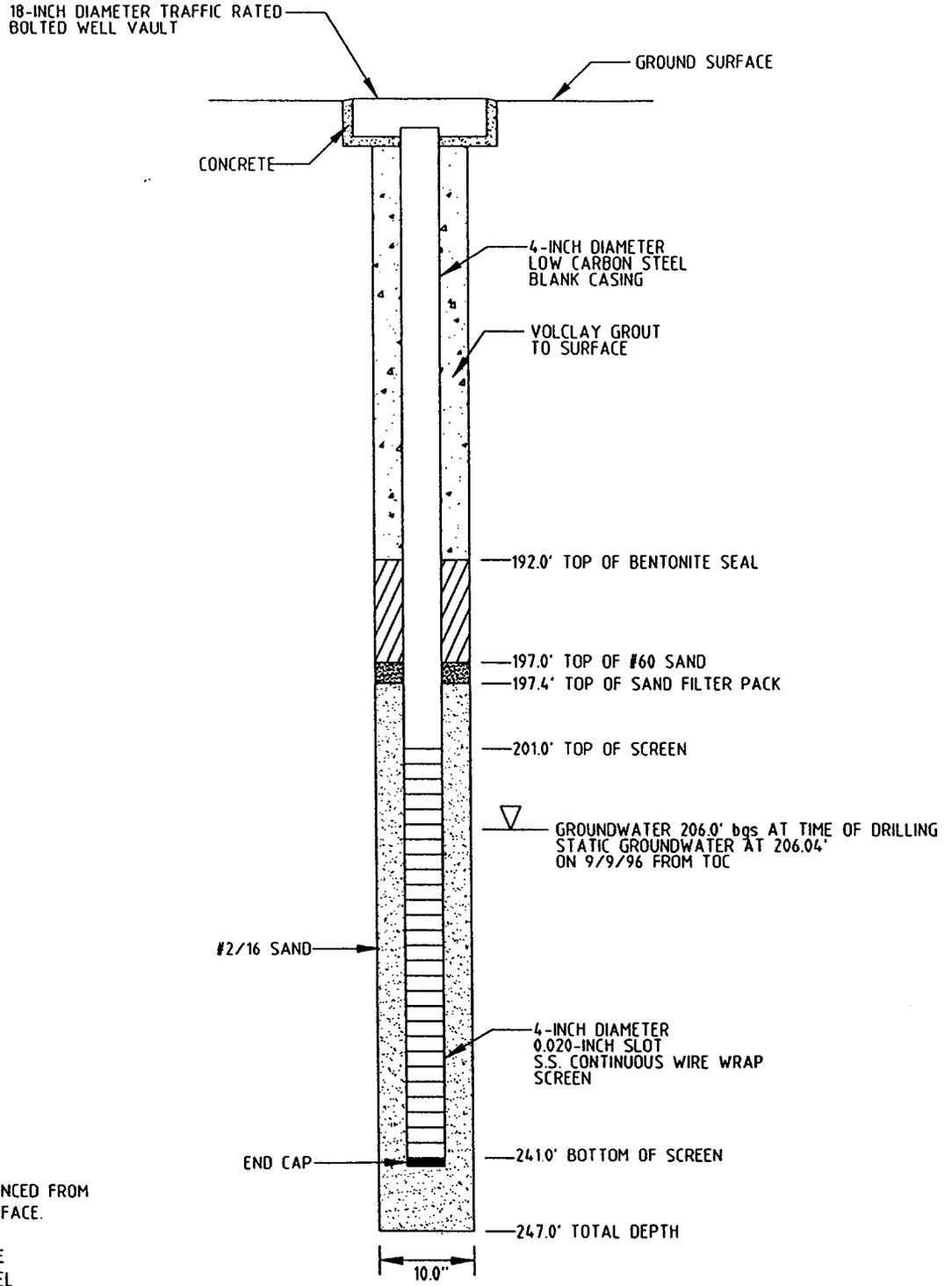
msl - mean sea level
bgs - below ground surface

| REV. NO. | DESCRIPTION | DATE | APPROVED |
|----------|-------------|------|----------|
| | | | |
| | | | |
| | | | |
| | | | |

| | | | |
|---|-------------------------|---|-------------------------------|
| CONTRACT NAME SWDIV | | OHM Remediation Services Corp. <small>a Subsidiary of OHM Corporation San Diego, CA</small> | |
| DRAWN BY R. PIRMOZADIAN | DATE 09/12/97 | TANK FARMS 3 AND 4 GROUNDWATER CONTOUR MAP MARCH 28, 1997 | |
| CHECKED BY | DATE | | |
| APPROVED BY | DATE | MARINE CORPS AIR STATION EL TORO, CALIFORNIA | |
| PROJECT MANAGER | DATE | | |
| AUTOCAD FILE NO. 18292045.DWG | | SCALE 1" = 600' | SHEET OF 1 1 |
| DOCUMENT CONTROL NO. SW4356 | | DRW PROJECT NO. 18292 | DRAWING NO. FIG 6-2 |

Well Construction TF4MW-01

| | | |
|-----------------------|----------------------|--------------------------------------|
| Project MCAS/EL TORO | Northing 2194744.18 | Drilling Company LAYNE ENVIRONMENTAL |
| Project Number 18292 | Easting 6112968.30 | Drill Rig AIR PERCUSSION |
| Client SWDIV | TOC Elevation 378.84 | Begin Drilling 7/10/96 |
| Location TANK FARM 4 | GS Elevation 379.29 | End Drilling 7/12/96 |
| Geologist A. SIDDIQUI | DIAGRAM NOT TO SCALE | |
| | | Well Completion Date 9/6/96 |

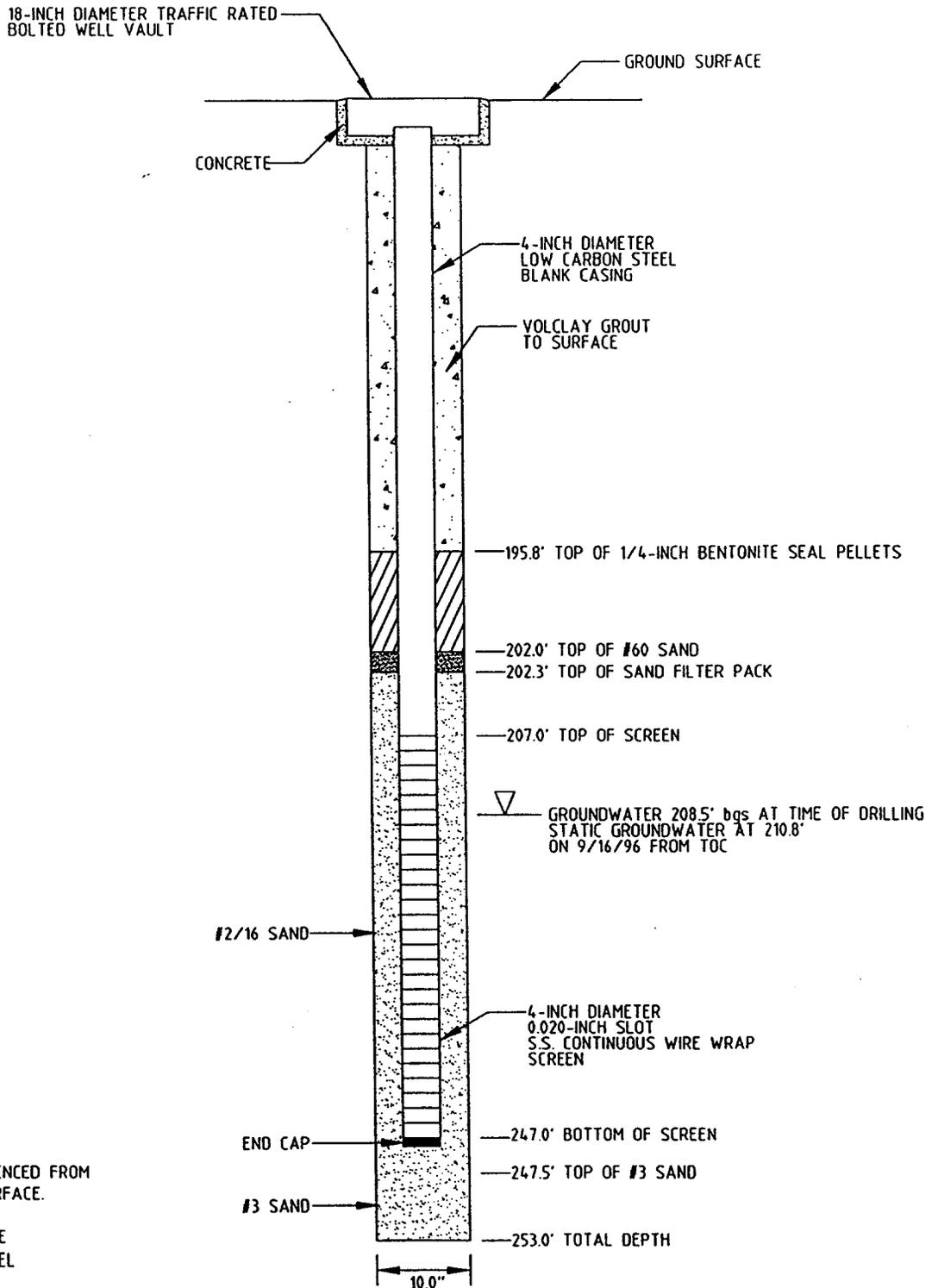


NOTES:
 DEPTHS ARE REFERENCED FROM 0 FEET GROUND SURFACE.
 TOC=TOP OF CASING
 GS=GROUND SURFACE
 S.S.=STAINLESS STEEL

R0 0:14:37:02 2/18/97 10:07:46 K:\PROJECTS\18292\TF4\TF4MW-01

Well Construction TF4MW-02

| | | | |
|-----------------------|----------------------|--|------------------------------|
| Project MCAS/EL TORO | Northing 2194900.25 | Drilling Company WATER DEVELOPMENT CORP. | |
| Project Number 18292 | Easting 6113277.27 | Drill Rig AIR PERCUSSION | Begin Drilling 7/12/96 |
| Client SWDIV | TOC Elevation 384.97 | | End Drilling 7/17/96 |
| Location TANK FARM 4 | GS Elevation 385.27 | | Well Completion Date 9/11/96 |
| Geologist A. SIDDIQUI | DIAGRAM NOT TO SCALE | | |



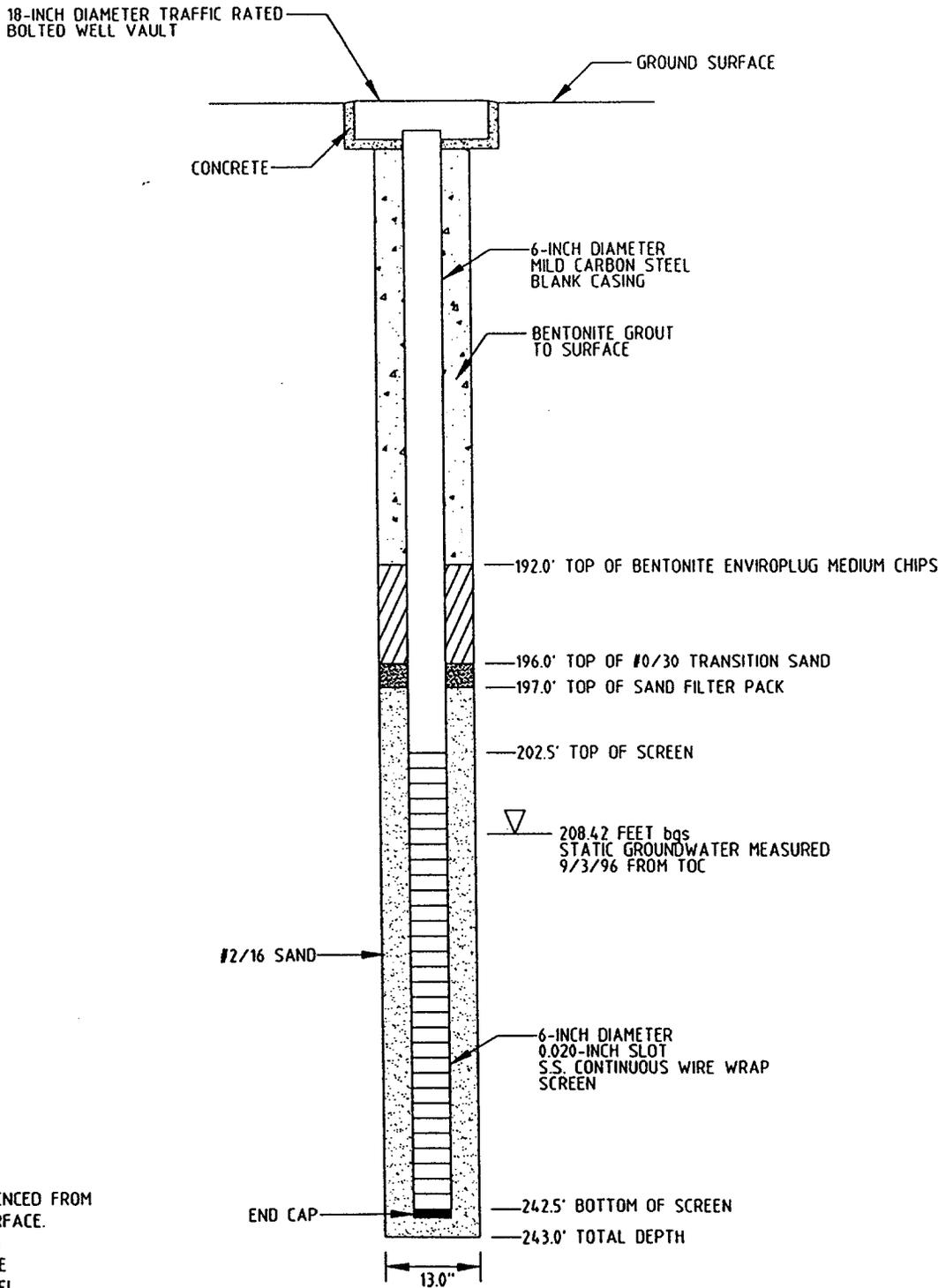
NOTES:

DEPTHS ARE REFERENCED FROM 0 FEET GROUND SURFACE.
 TOC=TOP OF CASING
 GS=GROUND SURFACE
 S.S.=STAINLESS STEEL

R0 0:14:44:20 2/18/97 10:08:19 K:\PROJECTS\18292\TF4\TF4MW-02

Well Construction TF4MW-03

| | | |
|-----------------------|----------------------|------------------------------------|
| Project MCAS/EL TORO | Northing 2194479.50 | Drilling Company WEST HAZMAT |
| Project Number 18292 | Easting 6113332.33 | Drill Rig AIR ROTARY CASING HAMMER |
| Client SWDIV | TOC Elevation 384.07 | Begin Drilling 7/17/96 |
| Location TANK FARM 4 | GS Elevation 384.53 | End Drilling 7/24/96 |
| Geologist A. SIDDIQUI | DIAGRAM NOT TO SCALE | |
| | | Well Completion Date 8/6/96 |



NOTES:

DEPTHS ARE REFERENCED FROM 0 FEET GROUND SURFACE.
 TOC=TOP OF CASING
 GS=GROUND SURFACE
 S.S.=STAINLESS STEEL

R0 0:13:45:18 2/18/97 10:08:55 K:\PROJECTS\18292\TF4\TF4MW-03