

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
SAN FRANCISCO BAY REGION

ORDER NO. R2-2008-0076

SITE CLEANUP REQUIREMENTS AND RESCISSION OF ORDER NO. R2-2003-0019 FOR:

PACIFIC ATLANTIC TERMINALS LLC  
MARTINEZ TERMINAL

for the property located at

2801 WATERFRONT ROAD  
MARTINEZ  
CONTRA COSTA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region (Board), finds that:

**FINDINGS**

- 1) **Site Location:** The 255-acre property is located at 2801 Waterfront Road in the City of Martinez near the south shore of the Carquinez Strait (Figure 1).
- 2) **Site History and Ownership:** Pacific Atlantic Terminals LLC, (Discharger) presently owns and operates the Martinez Terminal Facility (Facility), a bulk petroleum storage, transfer, and blending facility. The Facility is presently used to store refined and unrefined petroleum product.

Shore Terminals, LLC owned and operated the Facility from October 8, 1998, through September 30, 2005. In January 2001, Shore Terminals, LLC became a wholly owned subsidiary of Kaneb Pipeline Operating Partnership, L.P. located in Richardson, Texas. On July 1, 2005, Valero L.P. acquired Kaneb Pipeline Operating Partnership, L.P.

Wickland Oil Martinez Limited Partnership (Wickland) owned and operated the Facility from August 20, 1991 until October 7, 1998.

Martinez Terminals Limited (MTL) owned and operated the Facility from November 18, 1987 to August 20, 1991. The MTL partnership terminated after transferring ownership to Wickland.

Landsea Terminal, Incorporated (LTI) owned and operated the Facility prior to November 18, 1987. LTI went into bankruptcy, and the Facility was purchased by MTL at a foreclosure sale on November 18, 1987.

- 3) **Named Dischargers:** Pacific Atlantic Terminals LLC is named as a Discharger because it is the current owner of the property and operator of the Facility, and owned the property during or after the time of the activities that resulted in a discharge.

If additional information is submitted indicating that other parties caused or permitted any waste to be discharged on the site where it entered or could have entered waters of the State, the Board will consider adding those parties to this order.

- 4) **Purpose of Order:** The purpose of this Order is to: 1) provide a schedule associated with remedial actions at the site; 2) require remedial action of soil and groundwater; and 3) rescind the previous Site Cleanup Requirements.
- 5) **Regulatory Status:** This site has been subject to the following Board orders:
- a) Site Cleanup Requirements Order No. 93-062 adopted in June 1993 that rescinded Order No. 92-144.
  - b) Site Cleanup Requirements Order No. R2-2003-0019 adopted in February 2003 that rescinded Order No. 93-062.
  - c) Waste Discharge Requirements for a Class II surface impoundment. The requirements are included in Board Order No. R2-2002-0023 that was adopted in February 2002 and that rescinded Order No. 93-125. A rescission of WDR Order No. R2-2002-023 is currently in preparation because the Class II surface impoundment was removed and clean-closed in 2007.
- 6) **Geological Setting:** The geologic setting in and near the tank farm area consists of exposed bedrock. A hill on the northwestern portion of the Facility is the surface expression of a northwest-trending bedrock ridge that extends across the Facility and is the location of the crude oil tank farm. This Chico Formation underlies the site and dips 50 degrees to the southwest and consists of alternating beds of sandstone, siltstone, and claystone. Varying degrees of weathering and fracturing have been noted in core samples of the bedrock. When the property was developed in the mid-1970s, the area north and northeast of the tank farm area was filled with dredge sediments, clayey sediment of unknown origin, and bedrock excavated from the central and western portion of the Facility. Fill of varying thickness (up to 7 feet thick) and compositions covers the areas immediately west and east of the tank farm. Further to the east and west, the sandy silt to silty sand fill is underlain by interbedded clay (some with a high organic content) and peat.
- 7) **Surface Water:** The Facility is located 0.5 miles from the south shore of the Carquinez Strait. Pacheco Slough is located about 0.5 miles to the east of the Facility.
- 8) **Groundwater:** 72 groundwater monitoring wells and piezometers are included in the site's groundwater monitoring program. Depth to water ranges from 1 to 18 ft across the Facility with a northeasterly flow direction in the northwestern portion of the Facility. A

northwest/southeast trending groundwater ridge exists in the southeastern portion of the Facility.

- 9) **Petroleum Hydrocarbon and Oxygenate Contamination Sources:** Soil and groundwater at the site have been impacted by petroleum hydrocarbons and oxygenates that were released from underground fuel dispensing piping associated with the former truck rack operation, and surface releases associated with the storage and dispensing of petroleum products. The truck rack has not been operated since 2002 and the associated underground piping is no longer used. The primary contaminants of concern are the result of releases of gasoline and diesel to the surface and subsurface.
- 10) **Extent of Hydrocarbon Contamination:** Investigations of soil and groundwater contamination have been conducted at the Facility since 1988. Three areas of petroleum impacts have been identified: the central area, the southwest area, and a recent release of gasoline just west of the central area. These areas are referred to herein as the “cleanup areas” at the Facility. Locations of the cleanup areas at the Facility are shown on Figure 2. The extent of each cleanup area is described below.

Central Area The center of the site contains free-phase hydrocarbons that are currently being remediated. The extent of the free-phase hydrocarbons and associated dissolved-phase petroleum hydrocarbons and oxygenates have been defined during previous site investigations. Prior to 2004, free-phase hydrocarbons were detected consistently in wells P-5, P-9, and P-10 and at times in wells P-4 and W-4. A remedial system consisting of recirculation enhanced bioremediation and passive product removal from extraction well EX-2 was implemented in 2004. Additional wells were installed in 2006 to better assess the extent of separate phase hydrocarbons, including wells ACA-3 and ACA-4. Free-phase hydrocarbons remain only in wells EX-2, ACA-3, P-10, and W-4. MTBE is the constituent that extends the furthest from the source area; Figure 3 shows the extent of MTBE.

As of December 2007, the following maximum concentrations were detected in monitoring wells in the central area:

<b>Constituent</b>	<b>Concentration (mg/L)</b>	<b>Well</b>
Free Product	N/A	P-10, W-4, ACA-3, and EX-2
Benzene	2.5	EX-1
Toluene	0.11	EX-1
Ethylbenzene	0.7	EX-1
Total Xylenes	0.98	EX-1
TPHgasoline	63	W-1
TPHdiesel	1.3	W-1
MTBE	92	W-1
TBA	44	W-1

Southwest Area Free-phase hydrocarbons were detected in the southwestern area of the facility during the early investigations (1988 – 1993). A product extraction trench system

was installed in the area in 1995. The free-phase hydrocarbons were removed to the extent practicable, and this product extraction trench is no longer operating. In 2003, elevated concentrations of TPHg, BTEX, and MTBE were detected in the area. Investigations have defined the TPHg and BTEX extent to a limited area downgradient of Tank No. T-40; MTBE extends further toward the marshland in the southwest area (Figure 3). Evidence of a release has not been found and the dissolved-phase concentrations have begun to decrease.

Constituent	Max. Concentration in 2003/2004 (mg/L)	Well	Concentration in well P-18 December 2007 (mg/L)	Max. Concentration in December 2007 (mg/L)	Well
Free Product	None observed		None observed		
Benzene	10	P-18	0.025	0.025	P-18
Toluene	18	P-18	0.11	0.11	P-18
Ethylbenzene	2.9	P-18	0.15	0.15	P-18
Total Xylenes	20	P-18	1.2	1.2	P-18
TPHgasoline	100	P-18	8.1	8.1	P-18
MTBE	59	P-18	0.042	71	MW-14
TBA	na	P-18	<0.009	120	MW-14

Recent gasoline release Approximately 7,050 gallons of gasoline were released from an aboveground petroleum storage tank in the northeastern Refined Product Tank Farm in September 2007. An emergency response was performed immediately to remove visible product on the ground and in shallow soil. Approximately 6000 gallons were recovered and/or removed via excavation of impacted soil during initial emergency response actions. In October 2007, an investigation was performed to identify the extent of free-phase and dissolved phase hydrocarbons in the release area. Results of the investigation suggest that significant migration of free-phase or dissolved phase hydrocarbons had not occurred beyond the initial release area. Directly following the investigation, a cutoff trench was installed to limit further migration.

11) **Current Remedial Efforts:** Remedial efforts have been implemented in all three cleanup areas as follows:

Central Area A recirculation enhanced bioremediation system was installed in the central area in January 2004. The system consists of three extraction wells (EX-1, EX-2, and MW-3), a bioreactor to remove hydrocarbon mass from the extracted groundwater, an oxygenation unit to augment the water with oxygen and nutrients (nitrogen, potassium, phosphates), and a re-injection trench into which the augmented water is discharged. The system operated continuously for six months, reinjecting augmented water at a rate between 6 and 8 gpm and successfully flushing free-phase petroleum product from the bedrock into the downgradient sandy unit. This allowed the installation of a passive skimming system in well EX-2 to remove the product. The reinjection system was throttled back to about 1 gpm for the next two years and the cleanup focused on product removal. More than 1000 gallons of free-

phase hydrocarbons have been removed since June 2004. Re-injection was terminated in 2007 to allow for the coordination and clean-closure of the surface impoundment. Re-initiation of the re-injection system is being coordinated with the cleanup effort for the recent gasoline release.

Southwest Area A phytoremediation system was installed in June 2007 in the southwest area to contain and remove MTBE-impacted groundwater. A groundwater extraction system was implemented in February 2008 to stop groundwater from entering the adjacent marsh. The extraction system will be operated until the tree roots are sufficiently established to achieve containment independently.

Recent Gasoline Release A groundwater and free-phase product cutoff trench was installed in October 2007. To date, no free-phase hydrocarbons other than a sheen have been detected in the trench. Groundwater extraction from the trench is planned, with enhancement and re-injection of the treated water into the central area recirculation trench. Extracted groundwater will be treated by a bioreactor and/or carbon to remove hydrogen mass, sent to the bioaugmentation unit for oxygenation and addition of nutrients, and re-injected into the central area recirculation trench area to promote in-situ degradation of the residual hydrocarbons in that area.

- 12) **Basin Plan** The Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) is the Board's master water quality control planning document. It designates beneficial uses and water quality objectives for surface waters and groundwater. It also includes programs of implementation to achieve water quality objectives. The Basin Plan was duly adopted by the Water Board approved by the State Water Resources Control Board (State Board), U.S. EPA, and the Office of Administrative Law where required.

The existing and potential beneficial uses of Carquinez Strait and contiguous water bodies are:

- a) Contact water recreation;
- b) Non-contact water recreation;
- c) Wildlife habitat;
- d) Preservation of rare and endangered species;
- e) Estuarine habitat;
- f) Fish migration and spawning;
- g) Industrial service supply;
- h) Navigation-commercial and sport fishing;
- i) Shellfish harvesting; and
- j) Municipal and domestic Supply.

The existing and potential beneficial uses of the groundwater in the vicinity of the site include:

- a) Municipal and domestic Supply;

- b) Industrial process and service supply; and
- c) Agricultural supply.

13) **Resolutions:**

- a) **State Water Resources Control Board Resolution No. 68-16** State Water Resources Control Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California" applies to this discharge and requires attainment of background levels of water quality, or the highest level of water quality which is reasonable if background levels of water quality cannot be restored. Cleanup levels other than background must be consistent with the maximum benefit to the people of the State, not unreasonably affect present and anticipated beneficial uses of such water, and not result in exceedance of applicable water quality objectives. This Order and its requirements are consistent with Resolution No. 68-16.
- b) **State Water Resources Control Board Resolution No. 92-49:** State Water Resources Control Board Resolution No. 92-49, "Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under California Water Code Section 13304" applies to this discharge. This Order and its requirements are consistent with the provisions of Resolution No. 92-49, as amended.

14) **Preliminary Cleanup Goals:** The Discharger will need to make assumptions about future cleanup standards for soil and groundwater, in order to determine the necessary extent of remedial investigation, interim remedial actions, and the draft remedial action plan. Pending the establishment of site-specific cleanup standards, the following preliminary cleanup goals should be used for these purposes:

- a. Groundwater: Applicable water quality objectives (e.g., lower of primary (toxicity) and secondary (taste and odor) maximum contaminant levels, (or MCLs) in the absence of a chemical-specific objective, risk-based levels (e.g., equivalent drinking water levels based on toxicity and taste and odor concerns).
- b. Soil: Applicable screening levels such as those compiled in the Board's draft Environmental Screening Levels (ESLs) document or its equivalent. Soil screening levels are intended to address a full range of exposure pathways, including direct exposure, indoor air impacts, nuisance, and leaching to groundwater.

15) **Basis for California Water Code Section 13304 Order:** California Water Code Section 13304 authorizes the Board to issue orders requiring a discharger to cleanup and abate waste where the discharger has caused or permitted waste to be discharged or deposited where it is or probably will be discharged into waters of the State and creates or threatens to create a condition of pollution or nuisance. The Discharger has caused or permitted waste to be discharged into waters of the State that have created and threaten to create a condition of pollution or nuisance.

- 16) **Cost Recovery:** Pursuant to California Water Code Section 13304, the Discharger is hereby notified that the Board is entitled to, and may seek reimbursement for, all reasonable costs actually incurred by the Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, required by this order.
- 17) **CEQA:** This action is an order to enforce the laws and regulations administered by the Board. As such, this action is categorically exempt from the provisions of the California Environmental Quality Act (CEQA) pursuant to Section 15321 of the Resources Agency Guidelines.
- 18) **Notification:** The Board has notified the Discharger and all interested agencies and persons of its intent under California Water Code Section 13304 to prescribe site cleanup requirements for the discharge, and has provided them with an opportunity to submit their written comments.
- 19) **Public Hearing:** The Board, at a public meeting, heard and considered all comments pertaining to this discharge.

**IT IS HEREBY ORDERED**, pursuant to Section 13304 of the California Water Code, that the Discharger (or its agents, successors, or assigns) shall cleanup and abate the effects described in the above findings as follows:

### **PROHIBITIONS**

- 1) The discharge of wastes or hazardous substances in a manner that will degrade water quality or adversely affect beneficial uses of waters of the State is prohibited.
- 2) Further significant migration of wastes or hazardous substances through surface or subsurface transport to waters of the State is prohibited.
- 3) As required by State Water Resources Control Board General Permit No. CAS000001 for the Discharge of Storm Water Associated with Industrial Activities, the discharge of contaminant-impacted stormwater from the site is prohibited.
- 4) Activities associated with the subsurface investigation and cleanup that will cause significant adverse migration of wastes or hazardous substances are prohibited.
- 5) The storage, handling, treatment, or disposal of polluted soil or groundwater shall not create a nuisance as defined in California Water Code Section 13050(m).

### **TASKS**

- 1) **REMEDIAL ACTION PLAN INCLUDING DRAFT CLEANUP STANDARDS**

COMPLIANCE DATE: September 19, 2008

Submit a technical report acceptable to the Executive Officer containing the following elements for each of three cleanup areas:

- a. Summary of results of previous investigations;
- b. Evaluation of the installed remedial actions to date;
- c. Health and environment risk analysis for current and post-cleanup exposures;
- d. Documentation of remedial actions and recommended cleanup standards; and
- e. Implementation tasks and time schedule.

Items a) and b) shall be consistent with the guidance provided by Subpart F of the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Part 300), and Health and Safety Code Section 25356.1(c), and State Board Resolution No. 92-49 as amended ("Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304").

Item d) shall consider the preliminary cleanup goals for soil and groundwater identified in finding 14 and shall address the attainability of background levels of water quality (see finding 13(a)).

It may be that some degree of residual pollution (that which cannot reasonably be removed) may have to remain in place. The Executive Officer will determine reasonable removal for each cleanup area based on applicable laws and regulations, including State Board Resolution No. 92-49.

Additionally, the Discharger shall inform the public of the currently of any proposed cleanup actions for the Site. If the public is concerned about proposed cleanup actions, a public meeting shall be held and revisions may be needed to the RAP prior to the technical report being considered acceptable to the Executive Officer.

## 2) **REMEDIAL ACTION PLAN IMPLEMENTATION REPORT**

COMPLIANCE DATE: February 19, 2009

Submit a technical report acceptable to the Executive Officer documenting completion of work approved as part of Task 1.

## 3) **FIVE-YEAR STATUS REPORT**

**COMPLIANCE DATE: Five years after Implementation of Final Remedial Action Plan (February 19, 2014)**



The Discharger shall submit a technical report to the Executive Officer evaluating the effectiveness of cleanup actions in each cleanup area. The report shall include:

- a) Comparison of contaminant concentration trends with cleanup standards; and
- b) Additional remedial actions proposed to meet cleanup standards (if applicable) including time schedule.

4) **PROPOSED CURTAILMENT**

**COMPLIANCE DATE: 60 days prior to proposed curtailment**

The Discharger shall submit a technical report acceptable to the Executive Officer containing a proposal to curtail remediation. Curtailment includes system closure (e.g., well abandonment), system suspension (e.g., cease extraction but wells retained), and significant system modification (e.g., major reduction in extraction rates, closure of individual extraction wells within extraction network). The report shall include the rationale for curtailment. Proposals for final closure shall demonstrate that cleanup standards have been met, contaminant concentrations are stable, and contaminant migration potential is minimal.

5) **IMPLEMENTATION OF CURTAILMENT**

**COMPLIANCE DATE: 60 days after Executive Officer approval**

The Discharger shall submit a technical report acceptable to the Executive Officer documenting completion of the tasks identified in Task 4.

- 6) **Delayed Compliance:** If the Discharger is delayed, interrupted, or prevented from meeting one or more of the completion dates specified for the above tasks, the Discharger shall promptly notify the Executive Officer and the Board may consider revision to this Order. The Discharger may request, individually or jointly and in writing, a time extension. The extension request shall be submitted at least fifteen (15) days in advance of the due date and shall include justification for the delay including the good faith effort performed to achieve compliance with the due date. The extension request shall also include a proposed time schedule with new performance dates and the due date in question and all subsequent dates dependent upon the extension. Approval of any properly submitted extension request shall be within the sole discretion of the Board or Executive Officer.

**PROVISIONS**

- 1) **Operation and Maintenance (O&M):** The Discharger shall maintain in good working order and operate as efficiently as possible any facility or control system installed to achieve compliance with the requirements of this Order.

- 2) **Discharges:** If any hazardous substance is discharged in or on any waters of the state, or discharged and deposited, or probably will be discharged in or on any waters of the state, the Discharger shall:
  - a) Report such discharge to the State Office of Emergency Services at (800) 852-7550.
  - b) File a written report with the Board within five working days that shall contain information relative to the following:
    - i) The nature of waste or pollutant;
    - ii) The quantity involved and the duration of incident;
    - iii) The cause of the spill;
    - iv) The estimated size of the affected area;
    - v) The corrective measures that have been taken or planned, and a schedule of these measures;
    - vi) The persons/agencies notified; and
    - vii) A copy of the OES notification report.
- 3) **Stormwater:** The Discharger shall comply with the State's General Stormwater Permits for both industrial activities and construction activities (currently Order Numbers 97-03-DWQ and 99-08-DWQ, respectively).
- 4) **Contractor/Consultant Qualifications:** All technical documents shall be signed by and stamped with the seal of a California registered geologist, a California certified engineering geologist or hydrogeologist, or a California registered civil engineer.
- 5) **Lab Qualifications:** All samples shall be analyzed by State-certified laboratories or laboratories accepted by the Board using approved U.S. EPA methods for the type of analysis to be performed. All laboratories shall maintain quality assurance/quality control (QA/QC) records for Board review. This provision does not apply to analyses that can only reasonably be performed on-site (e.g., temperature).
- 6) **Document Distribution:** Copies of all correspondence, technical reports, and other documents pertaining to compliance with this Order shall be provided to the Contra Costa County Health Department. The Executive Officer may modify this distribution list as needed.
- 7) **Electronic Reporting:** The State Board adopted regulations requiring electronic report and data submittal to Geotracker. Starting July 1, 2005, parties responsible for cleanup of

pollution at sites overseen by the Board's Site Cleanup Program are required to submit over the internet, the following information electronically:

- a. Groundwater analytical data;
- b. Surveyed locations of monitoring wells;
- c. Boring logs describing monitoring well construction; and
- d. Portable data format (PDF) copies of all reports (the document, in its entirety [signature pages, text, figures, tables, etc.] shall be saved as a single PDF file).

Note that the Discharger is still responsible for submitting one hard copy of all reports pursuant to this Order.

- 8) **Self-Monitoring Program:** The Discharger shall comply with the Self-Monitoring Program as attached to this Order and as may be amended by the Executive Officer.
- 9) **Access to Site and Records:** In accordance with California Water Code Section 13267(c), the Discharger shall permit the Board or its authorized representative:
  - c) Entry upon premises in which any contamination source exists, or may potentially exist, or in which any required records are kept, which are relevant to this Order;
  - d) Entry upon tank facility premises to conduct periodic inspections;
  - e) Access to copy any records required to be kept under the requirements of this Order;
  - f) Inspection of any monitoring or remediation facilities installed in response to this Order; and
  - g) Sampling of any groundwater or soil, which is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the Discharger.
- 10) **Cost Recovery:** The Discharger shall be liable, pursuant to California Water Code Section 13304 and Health and Safety Code Section 25270.9 to the Board for all reasonable costs actually incurred by the Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, required by this Order. If the site addressed by this Order is enrolled in a State Board-managed reimbursement program, reimbursement shall be made pursuant to this Order and according to the procedures established in that program. Any disputes raised by the Discharger over reimbursement amounts or methods used in that program shall be consistent with the dispute resolution procedures for that program.
- 11) **Reporting of Changed Owner or Operator:** The Discharger shall file a report on any changes in site occupancy or ownership associated with the property described in this Order.

12) **San Francisco Regional Water Quality Control Board Resolution No. 88-160:** Board Resolution No. 88-160 allows discharges of extracted, treated groundwater from site cleanups to surface waters only if it has been demonstrated that neither reclamation nor discharge to the sanitary sewer is technically and economically feasible.

13) **Periodic SCR Review:** The Board will review this Order periodically and may revise it when necessary. The Discharger may request revisions and, upon review, the Executive Officer may recommend that the Board revise these requirements.

14) **Rescind Order R2-2003-0019:** Board Order No. R2-2003-0019 is hereby rescinded.

I, Bruce H. Wolfe, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on August 13, 2008.

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Bruce H. Wolfe  
Executive Officer

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FAILURE TO COMPLY WITH THE REQUIREMENTS OF THIS ORDER MAY SUBJECT YOU TO ENFORCEMENT ACTION, INCLUDING BUT NOT LIMITED TO: IMPOSITION OF ADMINISTRATIVE CIVIL LIABILITY UNDER WATER CODE SECTIONS 13268 OR 13350, OR REFERRAL TO THE ATTORNEY GENERAL FOR INJUNCTIVE RELIEF OR CIVIL OR CRIMINAL LIABILITY

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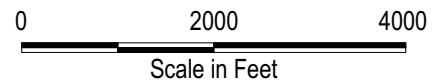
- Attachments: Figure 1. Site Location Map  
Figure 2. Site Plan Identifying Cleanup Areas  
Figure 3. Extent of MTBE in Groundwater in Each Cleanup Area  
Self-Monitoring and Reporting Program



Base map prepared from the USGS 7.5-minute quadrangle of Vine Hill, California, photo revised 1980.



**CALIFORNIA**



## Facility Location Map

Site Cleanup Requirements  
Pacific Atlantic Terminals - Martinez Facility  
Martinez, California



Ash Creek Associates, Inc.  
Environmental and Geotechnical Consultants

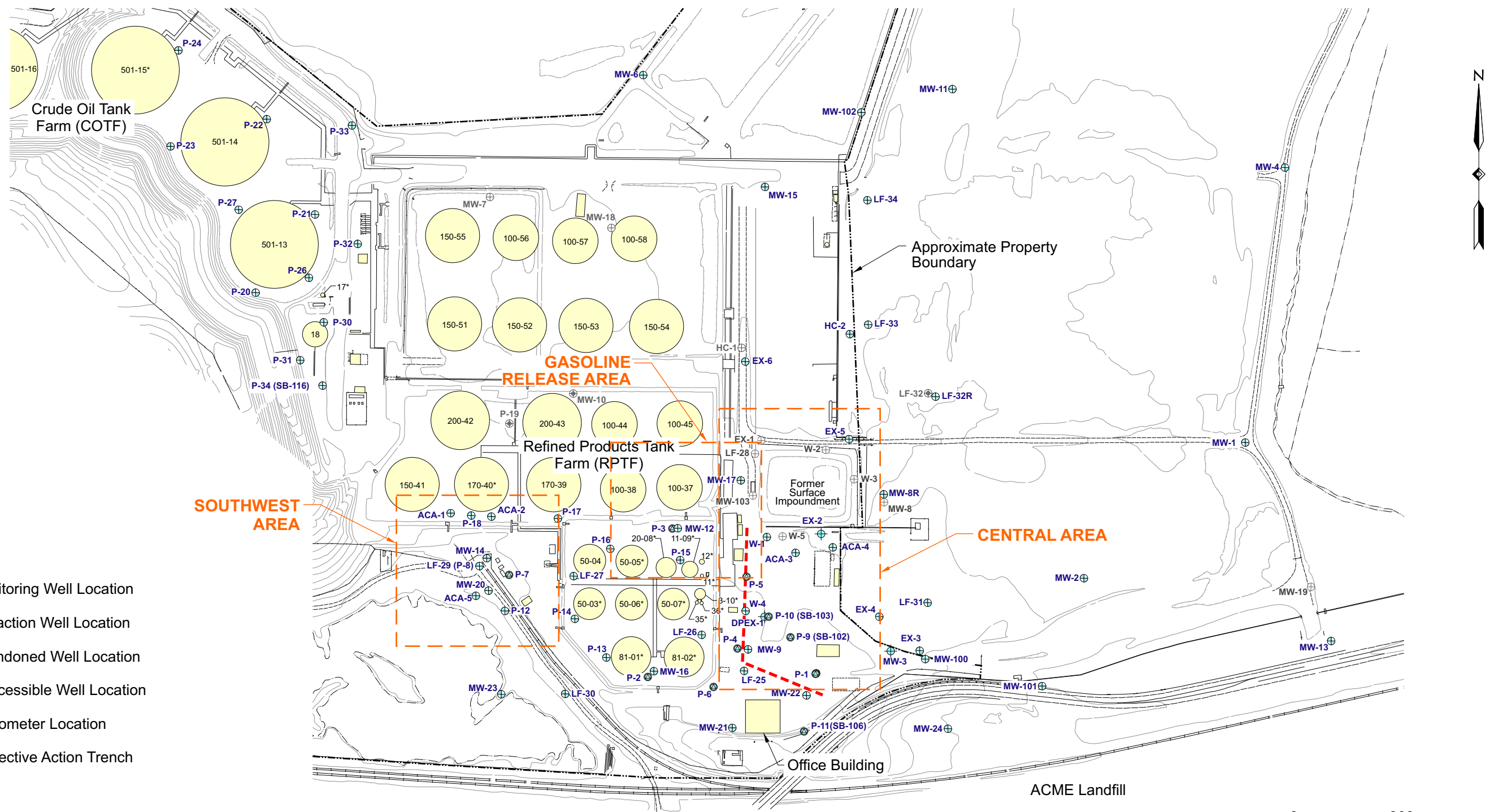
Project Number 1008-02

May 2008

Figure

1



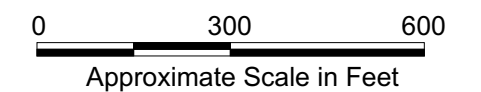


**Legend:**

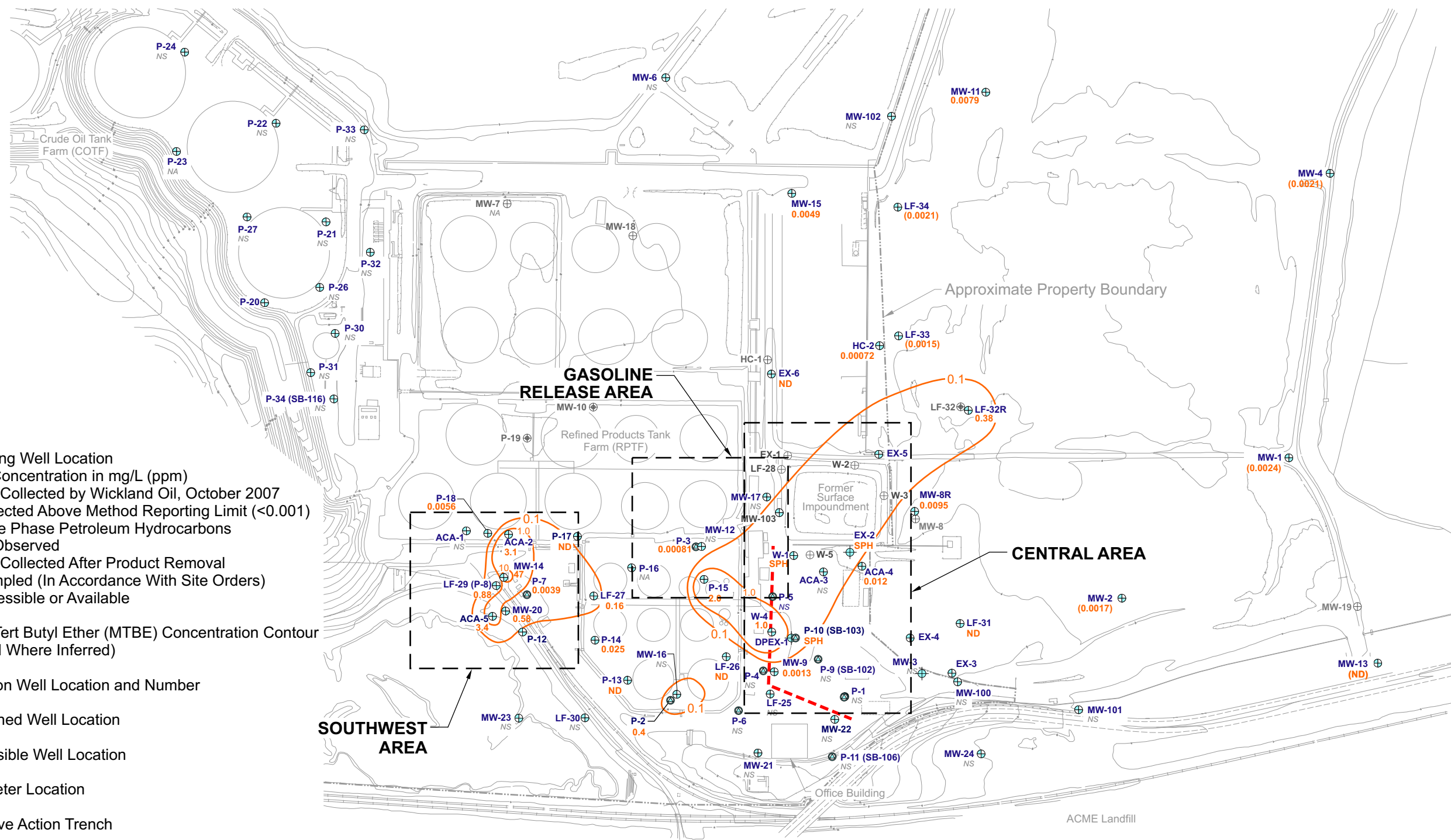
- MW-17 ⊕ Monitoring Well Location
- EX-2 ⊕ Extraction Well Location
- MW-19 ⊕ Abandoned Well Location
- MW-10 ⊕ Inaccessible Well Location
- P-1 ⊕ Piezometer Location
- Corrective Action Trench

**Notes:**

1. Not shown on this figure:
  - Tank #16 located to the west of tank #15; vadose zone piezometer P-25 is located on the northeastern side of tank #16
  - Groundwater monitoring well MW-5 located approximately 1,240 feet north of well MW-4.
2. Location of MW-8R, installed by Levine-Fricke-Recon in February 2001, is approximate.
3. Base map prepared from a Hart Crowser AutoCAD Site Plan, Dated 4/29/04.
4. Single bottom tanks without leak detection are noted with an asterisk (\*) on site plan.



<b>Cleanup Areas</b>		
Site Cleanup Requirements Pacific Atlantic Terminals - Martinez Facility Martinez, California		
Ash Creek Associates, Inc. <small>Environmental and Geotechnical Consultants</small>	Project Number <b>1008-02</b> May 2008	Figure <b>2</b>

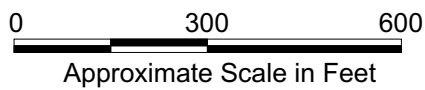


**Legend:**

- P-18 ⊕ Monitoring Well Location
- 0.0056  
(0.0024) Sample Concentration in mg/L (ppm)  
Sample Collected by Wickland Oil, October 2007
- ND Not Detected Above Method Reporting Limit (<0.001)
- SPH Separate Phase Petroleum Hydrocarbons
- SHEEN Sheen Observed
- \* Sample Collected After Product Removal
- NS Not Sampled (In Accordance With Site Orders)
- NA Not Accessible or Available
- 0.1 Methyl Tert Butyl Ether (MTBE) Concentration Contour  
(Dashed Where Inferred)
- EX-2 ⊕ Extraction Well Location and Number
- MW-19 ⊕ Abandoned Well Location
- MW-10 ⊕ Inaccessible Well Location
- P-1 ⊕ Piezometer Location
- Corrective Action Trench

**Notes:**

1. Not shown on this figure:
  - Tank #16 located to the west of tank #15; vadose zone piezometer P-25 is located on the northeastern side of tank #16
  - Groundwater monitoring well MW-5 located approximately 1,240 feet north of well MW-4.
2. Location of MW-8R, installed by Levine-Fricke-Recon in February 2001, is approximate.
3. Base map prepared from a Hart Crowser AutoCAD Site Plan, Dated 4/29/04.



**MTBE Groundwater Concentrations,  
March 2008**  
Site Cleanup Requirements  
Pacific Atlantic Terminals - Martinez Facility  
Martinez, California

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM FOR

PACIFIC ATLANTIC TERMINALS, LLC

For the:

MARTINEZ TERMINAL,  
MARTINEZ, CONTRA COSTA COUNTY

1. **Authority and Purpose:** The Board requires the technical reports specified in this Self-Monitoring Program (SMP) pursuant to Water Code Sections 13267 and 13304. This SMP is intended to document compliance with Board Order No. R2-2008-0076 (Site Cleanup Requirements).
2. **Monitoring Requirements:** Pacific Atlantic Terminals, LLC, (Discharger) must perform monitoring (water level measurement, observations, and analytical sampling) according to Table SMP-1, which specifies monitoring location ID, frequencies, parameters, and analytes. The site location is shown on Figure 1, and monitoring locations are shown in Figures 2 and Figures 3. The Discharger must sample any new monitoring wells at least semi-annually and analyze groundwater samples for the same constituents as shown in Table SMP-1. The Discharger may propose changes in the above table; any proposed changes are subject to Executive Officer approval.
3. **Reporting Requirements:** The Discharger must submit self-monitoring reports (SMRs) to Board staff in accordance with the following schedule. Reports due at the same time may be combined into one report for convenience, as long as monitoring activities and results pertaining to each monitoring period are clearly distinguishable.

<b>Reporting Frequency</b>	<b>Report Due Dates</b>
Semi-Annual	<b>February 28, August 30</b>

At a minimum, each SMR must include the following information:

- a. **Transmittal Letter:** A cover letter transmitting the essential points must be included with each monitoring report. The transmittal letter must discuss any violations during the reporting period and actions taken or planned to correct the problem. The letter must also certify the completion of all monitoring requirements. The letter must be signed by the Discharger's principal executive officer or his/her duly authorized representative, and must include a statement by the official, under penalty of perjury, that the report is true and correct to the best of the official's knowledge.



- b. **Graphic Presentation:** The following maps, figures, and graphs (if applicable) must be included in each SMR to visually present data collected pursuant to this SMP:
- (1) Plan-view maps showing all monitoring and sampling locations, surface water bodies, and site/property boundaries
  - (2) Groundwater level/piezometric surface contour maps for each groundwater-bearing zone of interest showing inferred groundwater gradients and flow directions under/around each waste management unit, based upon the past and present water level elevations and pertinent visual observations
  - (3) Post-plot maps with analyte concentration posted adjacent to each sampling location and/or iso-concentration contour maps displaying analyte concentrations and sample locations
  - (5) Any other maps, figures, photographs, cross-sections, graphs, and charts necessary to visually demonstrate the appropriateness and effectiveness of sampling, monitoring, characterization, investigation, or remediation activities relative to the goals of this SMP.

In addition, the annual report will include concentration vs. time graphs for key sampling parameters for select sampling locations.

- c. **Tabular Presentation:** The following data (if applicable) must be presented in tabular form and included in each SMR to show a chronological history and allow quick and easy reference:
- (1) Well designations
  - (2) Well construction (including top of well casing elevation, total well depth, screen interval depth below ground surface, and screen interval elevation)
  - (3) Groundwater depths
  - (4) Groundwater elevations
  - (5) Horizontal groundwater gradients
  - (6) Depth to phase-separated product, where present
  - (7) Phase-separated product thicknesses
  - (8) Current analytical results (including analytical method and detection limits for each constituent)
  - (9) Historical analytical results (including at least the past five years unless otherwise requested)
  - (10) Measurement dates
  - (11) Groundwater extraction, including:
    - (a) Average daily extraction rate
    - (b) Total volume extracted for monitoring period
    - (c) Cumulative total volume extracted since system inception
  - (12) Evaluation of Remedial System performance.
- d. **Discussion:** Discussion of the following information, based on field and laboratory data results, must be provided in each SMR:
- (1) Data Interpretations
  - (2) Conclusions

- (3) Recommendations
  - (4) Newly implemented or planned investigations & remedial measures
  - (5) Data anomalies
  - (6) Variations from protocols
  - (7) Condition of wells
  - (8) Explanation why monitoring could not be performed at any required location
- e. **Appendices:** The following information must be provided as appendices in electronic format (PDF format). Hard copies of the following information should be submitted only if requested otherwise by Board staff.
- (1) New boring and well logs
  - (2) Field sheets documenting method and time of water level measurements
  - (3) Field sheets providing purging methods and results including the type of pump used, pump placement in the well, pumping rate, equipment and methods used to monitor field pH, temperature, and conductivity, calibration of the field equipment, pH, temperature, conductivity, and turbidity measurements
  - (4) Field sheets providing sampling procedures, field and travel blanks, number and description of duplicate samples, type of sample containers and preservatives used, the name of the person actually taking the samples, and any other relevant observations
  - (5) Documentation of laboratory results, analytical methods, detection limits, and Quality Assurance/Quality Control (QA/QC) procedures for the required sampling.
4. **Violation Reports:** If the Discharger violates requirements in the Site Cleanup Requirements, then the Discharger must notify the Board office by telephone as soon as practicable once the Discharger has knowledge of the violation. Board staff may, depending on violation severity, require the Discharger to submit a separate technical report on the violation within five working days of telephone notification.
5. **Other Reports:** The Discharger must notify the Board in writing prior to any site activities, such as construction or underground tank removal, which have the potential to cause further migration of contaminants or which would provide new opportunities for site investigation.
6. **Record Keeping:** The Discharger or its agents must retain data generated for the above reports, including lab results and QA/QC data, for a minimum of six years after origination and must make them available to the Board upon request.
7. **SMP Revisions:** Revisions to the SMP may be ordered by the Executive Officer, either on his/her own initiative or at the request of the Discharger. Prior to making SMP revisions, the Executive Officer will consider the burden, including costs, of associated SMRs relative to the benefits to be obtained from these reports.
8. **Electronic Reporting:** In addition to print submittals, all SMRs submitted pursuant to this SMP must be submitted as electronic files in PDF format. The Board has implemented a document imaging system, which is ultimately intended to reduce the need for printed report storage space and streamline the public file review process. Documents in the imaging system may be viewed, and print copies made, by the public, during file reviews conducted at

the Board's office. PDF files can be created by converting the original electronic file format (e.g., Microsoft Word) and/or by scanning printed text, figures and tables.

Upon request by Board staff, monitoring results, including water level measurements, sample analytical results, coordinates, elevations, etc., must be provided electronically in Microsoft Excel<sup>®</sup> or similar spreadsheet format. This format facilitates data computations and/or plotting that Board staff may undertake during their review. Data tables submitted in electronic spreadsheet format will not be included in the case file for public review.

All electronic files, whether in PDF or spreadsheet format, must be submitted via the Board's file transfer protocol (FTP) site, email (only if the file size is less than 3 MB) or on CD. CD submittals may be included with the print report. Email notification should be provided to Water Board staff whenever a file is uploaded to the Board's FTP site.

9. **Maintenance of Written Records:** The Discharger must maintain information required pursuant to this SMP for at least five years. The five-year period of retention must be extended during the course of any unresolved litigation regarding this discharge or when requested by the Board.

Table SMP-1  
Gauging and Sampling Frequency  
Pacific Atlantic Terminals Martinez Facility, Self-Monitoring Program

Well ID	Date Installed	Well Depth (ft - bgs)	Screen Interval (ft - bgs)	Water Level	TPHc	TPHg	TPHd	BTEX	MTBE/TBA	Notes
<b>APSA Monitoring</b>										
P-2	3/12/1993	15.0	2.0-15.0	Q	--	Q	Q	Q	Q	
P-13	--	--	--	Q	--	Q	Q	Q	Q	
P-14	--	--	--	Q	--	Q	Q	Q	Q	
P-15	--	--	--	Q	--	Q	Q	Q	Q	
P-16	--	--	--	Q	--	Q	Q	Q	Q	
P-17	--	--	--	Q	--	Q	Q	Q	Q	
P-18	--	--	--	Q	--	Q	Q	Q	Q	
P-20	--	--	--	Q	Q	--	--	--	--	
P-21	--	--	--	Q	Q	--	--	--	--	
P-22	--	--	--	Q	Q	--	--	--	--	
P-23	--	--	--	Q	Q	--	--	--	--	
P-24	--	--	--	Q	Q	--	--	--	--	
P-26	--	--	--	Q	Q	--	--	--	--	
P-27	--	--	--	Q	Q	--	--	--	--	
P-30	--	--	--	Q	--	--	--	--	--	
P-31	--	--	--	Q	--	--	--	--	--	
P-32	--	--	--	Q	--	--	--	--	--	
P-33	--	--	--	Q	--	--	--	--	--	
P-34	--	--	--	Q	--	--	--	--	--	
LF-26	3/16/1993	10.0	2.0-10.0	Q	--	Q	Q	Q	Q	
LF-27	3/17/1993	12.5	2.0-12.5	Q	--	Q	Q	Q	Q	
<b>SCR Monitoring</b>										
ACA-1	5/2/2006	15.0	5.0-15.0	Q	--	--	--	--	--	
ACA-2	5/2/2006	15.0	5.0-15.0	Q	--	A	A	A	A	
ACA-3	5/1/2006	11.0	3.0-11.0	Q	--	SA	SA	SA	SA	
ACA-4	5/1/2006	8.0	3.0-8.0	Q	--	SA	SA	SA	SA	
ACA-5	5/25/2007	15.0	5.0-15.0	Q	--	SA	SA	SA	SA	
EX-2	7/7/2004	20.0	4.0-20.0	Q	--	SA	SA	SA	SA	
EX-6	5/1/2006	14.0	4.0-14.0	Q	--	SA	SA	SA	SA	
HC-2	7/6/2004	13.0	4.0-13.0	Q	--	SA	SA	SA	SA	
LF-25	3/15/1993	12.5	2.0-12.5	Q	--	SA	SA	SA	SA	
LF-29	3/18/1993	12.5	2.0-13.0	Q	--	SA	SA	SA	SA	
LF-30	6/1/1995	30.0	14.5-29.5	Q	--	A	A	A	A	
LF-32R	10/20/2005	18.5	3.5-18.0	Q	--	SA	SA	SA	SA	
MW-6	11/16/1988	20.0	8.0-18.0	Q	--	--	--	--	--	
MW-8R	--	--	--	Q	--	SA	SA	SA	SA	
MW-9	11/21/1988	18.0	8.0-18.0	Q	--	SA	SA	SA	SA	
MW-12	11/29/1988	20.0	10.0-20.0	Q	--	A	A	A	A	See note 4
MW-14	11/29/1988	25.0	8.0-23.0	Q	--	SA	SA	SA	SA	
MW-15	11/29/1988	20.0	9.0-19.0	Q	--	SA	SA	SA	SA	
MW-16	11/30/1988	25.0	10.0-25.0	Q	--	--	--	--	--	
MW-17	12/9/1988	21.0	6.0-21.0	Q	--	SA	SA	SA	SA	
MW-20	2/1/1989	19.0	2.5-17.5	Q	--	SA	SA	SA	SA	
MW-21	2/1/1989	20.0	5.0-20.0	Q	--	SA	SA	SA	SA	
MW-22	2/2/1989	16.0	4.5-14.5	Q	--	SA	SA	SA	SA	
MW-23	3/13/1989	14.0	2.5-12.5	Q	--	A	A	A	A	
MW-24	3/14/1989	14.0	3.0-13.0	Q	--	A	A	A	A	
MW-100	--	--	--	Q	--	--	--	--	--	
MW-101	--	--	--	Q	--	A	A	A	A	
MW-102	4/9/2003	14.5	4.5-13.4	Q	--	A	A	A	A	
P-1	3/12/1993	17.5	3.0-15.0	Q	--	--	--	--	--	
P-3	3/16/1993	10.0	2.0-10.0	Q	--	SA	SA	SA	SA	
P-4	3/11/1993	12.5	3.0-12.5	Q	--	--	--	--	--	
P-5	3/11/1993	16.0	5.4-14.5	Q	--	A	A	A	A	
P-6	3/12/1993	12.5	3.0-12.5	Q	--	--	--	--	--	
P-7	3/17/1993	15.0	2.0-12.0	Q	--	SA	SA	SA	SA	
P-9	3/18/1993	12.5	2.0-12.5	Q	--	SA	SA	SA	SA	
P-10	3/18/1993	12.5	2.0-12.5	Q	--	SA	SA	SA	SA	
P-11	3/12/1993	27.0	17.0-27.0	Q	--	--	--	--	--	
P-12	6/1/1995	13.0	2.0-12.0	Q	--	SA	SA	SA	SA	
W-1	1/13/1987	25.0	10.0-25.0	Q	--	SA	SA	SA	SA	
W-4	1/14/1987	17.0	7.0-17.0	Q	--	SA	SA	SA	SA	
<b>Offsite Wells</b>										
LF-31	--	--	--	Q	--	--	--	--	--	See note 4
LF-33	10/20/2005	18.0	5.0-17.5	Q	--	--	--	--	--	See note 4
LF-34	10/20/2005	18.0	5.0-17.5	Q	--	--	--	--	--	See note 4
MW-1	11/15/1988	20.0	8.0-18.0	Q	--	--	--	--	--	See note 4
MW-2	11/15/1988	23.0	12.0-22.0	Q	--	--	--	--	--	See note 4
MW-3	11/15/1988	18.0	6.0-16.0	Q	--	--	--	--	--	See note 4
MW-4	11/16/1988	20.0	8.0-18.0	Q	--	--	--	--	--	See note 4
MW-5	11/16/1988	20.0	8.0-18.0	Q	--	--	--	--	--	See note 4
MW-11	11/22/1988	20.0	8.0-18.0	Q	--	--	--	--	--	See note 4
MW-13	11/29/1988	20.0	8.0-18.0	Q	--	--	--	--	--	See note 4

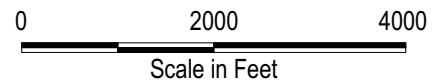
- Notes:
- Q = Quarterly
  - SA = Semi-annually during the first and third quarters.
  - A = Conducted annually in the third quarter
  - Monitoring well sampled semi-annually by LFR, Inc. for Wickland Oil.
  - TPHc = Total petroleum hydrocarbons crude oil range by EPA Method 8015M
  - TPHg = Total petroleum hydrocarbons gasoline range by EPA Method 8260B
  - TPHd = Total petroleum hydrocarbons diesel range by EPA Method 8015M
  - BTEX = Benzene, toluene, ethylbenzene, and xylenes by EPA Method 8260B
  - MTBE/TBA = Methyl tert-butyl ether and tert-butyl alcohol by EPA Method 8260B
  - ft - bgs = Feet below ground surface
  - ft msl = Feet mean sea level



Base map prepared from the USGS 7.5-minute quadrangle of Vine Hill, California, photo revised 1980.



**CALIFORNIA**



## Facility Location Map

Site Cleanup Requirements  
Pacific Atlantic Terminals - Martinez Facility  
Martinez, California



Ash Creek Associates, Inc.  
Environmental and Geotechnical Consultants

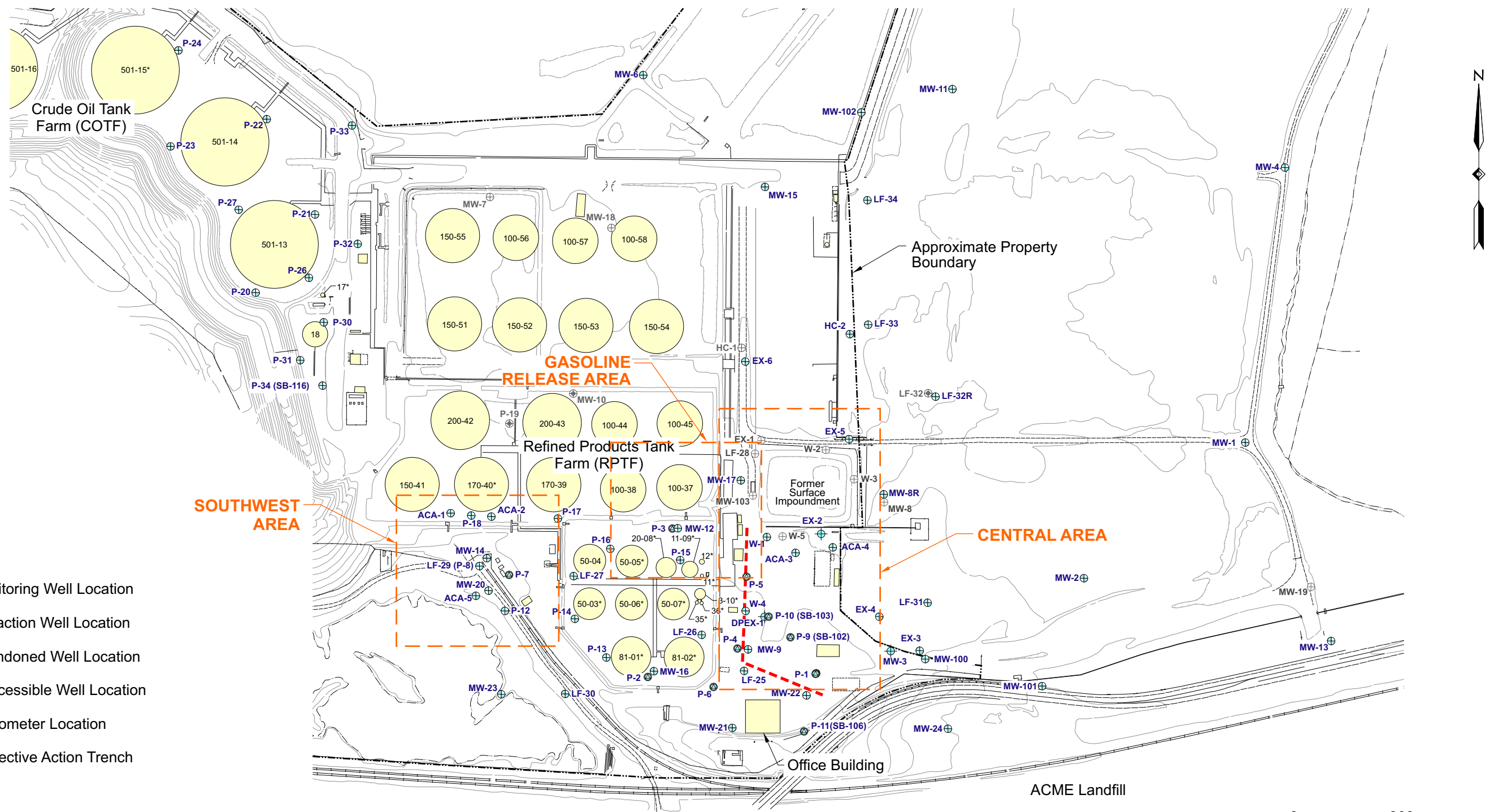
Project Number 1008-02

May 2008

Figure

1



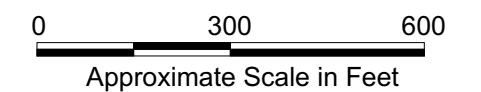


**Legend:**

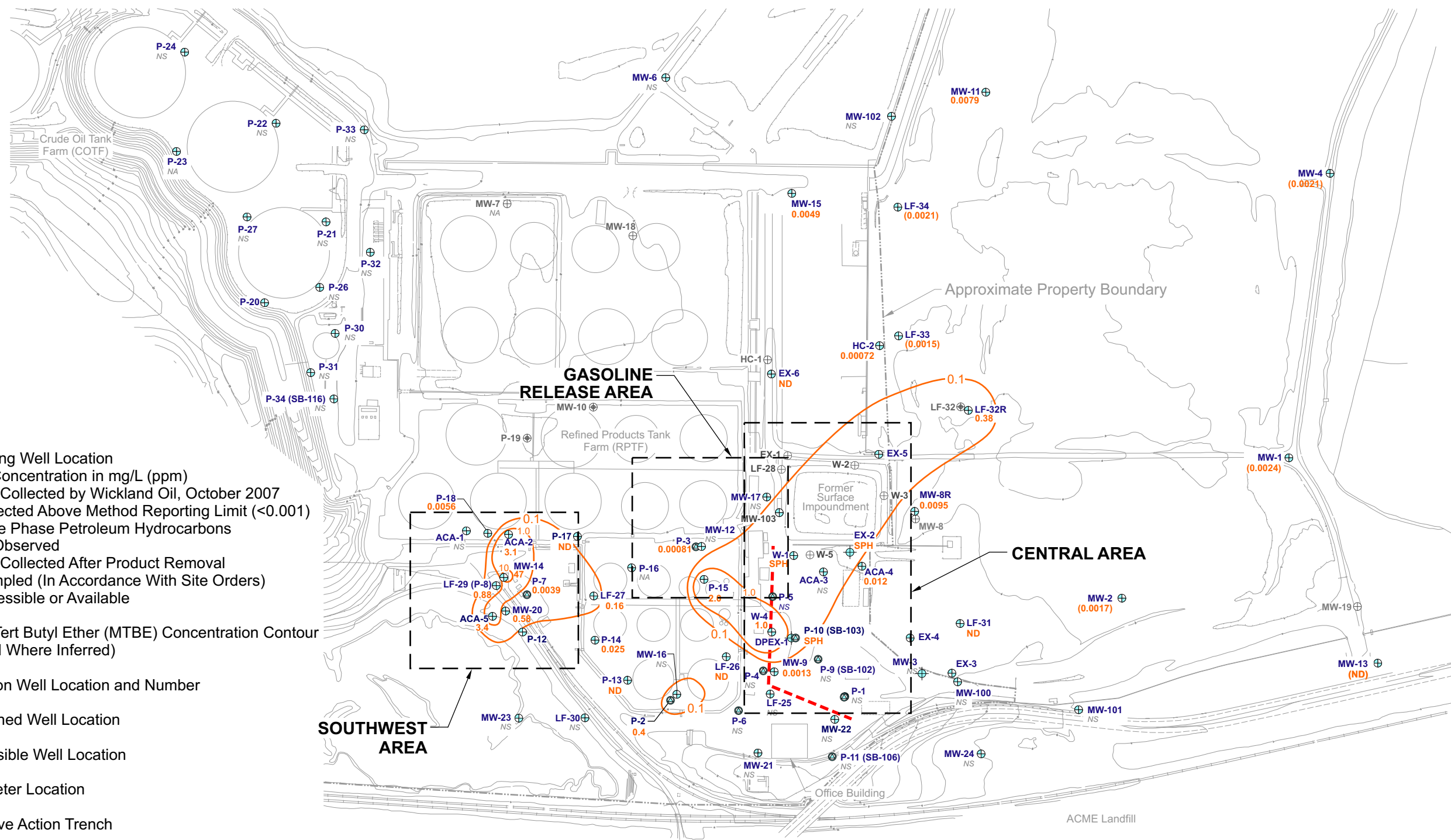
- MW-17 ⊕ Monitoring Well Location
- EX-2 ⊕ Extraction Well Location
- MW-19 ⊕ Abandoned Well Location
- MW-10 ⊕ Inaccessible Well Location
- P-1 ⊕ Piezometer Location
- Corrective Action Trench

**Notes:**

1. Not shown on this figure:
  - Tank #16 located to the west of tank #15; vadose zone piezometer P-25 is located on the northeastern side of tank #16
  - Groundwater monitoring well MW-5 located approximately 1,240 feet north of well MW-4.
2. Location of MW-8R, installed by Levine-Fricke-Recon in February 2001, is approximate.
3. Base map prepared from a Hart Crowser AutoCAD Site Plan, Dated 4/29/04.
4. Single bottom tanks without leak detection are noted with an asterisk (\*) on site plan.



<b>Cleanup Areas</b>		
Site Cleanup Requirements Pacific Atlantic Terminals - Martinez Facility Martinez, California		
Ash Creek Associates, Inc. <small>Environmental and Geotechnical Consultants</small>	Project Number <b>1008-02</b> May 2008	Figure <b>2</b>

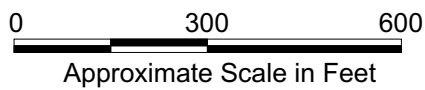


**Legend:**

- P-18 ⊕ Monitoring Well Location
- 0.0056  
(0.0024) Sample Concentration in mg/L (ppm)  
Sample Collected by Wickland Oil, October 2007
- ND Not Detected Above Method Reporting Limit (<0.001)
- SPH Separate Phase Petroleum Hydrocarbons
- SHEEN Sheen Observed
- \* Sample Collected After Product Removal
- NS Not Sampled (In Accordance With Site Orders)
- NA Not Accessible or Available
- 0.1 Methyl Tert Butyl Ether (MTBE) Concentration Contour  
(Dashed Where Inferred)
- EX-2 ⊕ Extraction Well Location and Number
- MW-19 ⊕ Abandoned Well Location
- MW-10 ⊕ Inaccessible Well Location
- P-1 ⊕ Piezometer Location
- Corrective Action Trench

**Notes:**

1. Not shown on this figure:
  - Tank #16 located to the west of tank #15; vadose zone piezometer P-25 is located on the northeastern side of tank #16
  - Groundwater monitoring well MW-5 located approximately 1,240 feet north of well MW-4.
2. Location of MW-8R, installed by Levine-Fricke-Recon in February 2001, is approximate.
3. Base map prepared from a Hart Crowser AutoCAD Site Plan, Dated 4/29/04.



**MTBE Groundwater Concentrations,  
March 2008**  
Site Cleanup Requirements  
Pacific Atlantic Terminals - Martinez Facility  
Martinez, California