

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION**

REVISED TENTATIVE ORDER No. R2-2014-00XX

**UPDATED SITE CLEANUP REQUIREMENTS and
RECISSION OF ORDER Nos. 94-144 AND 97-077 for:**

**VALERO REFINING COMPANY - CALIFORNIA
VALERO BENICIA REFINERY**

3400 EAST SECOND STREET
BENICIA, SOLANO COUNTY

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

SITE LOCATION AND DESCRIPTION

1. Valero Refining Company - California (hereinafter called Valero or the Discharger), a subsidiary of Valero Refining and Marketing Company, owns and operates the Valero Benicia Refinery (hereinafter called the refinery, or site). The refinery occupies approximately 900 acres located north of Carquinez Strait in Solano County (Figure 1). The City of Benicia lies to the southwest of the refinery; to the east are industrial and commercial land uses; and to the north and west is open space and residential development. Until May 15, 2000, the refinery was known as the Exxon Benicia Refinery.

PURPOSE OF ORDER

2. Pursuant to California Water Code (CWC) section (§) 13304, this Order requires the Discharger to perform site investigations and to continue monitoring of corrective action measures implemented at specified areas of the refinery. This Order accomplishes the following:
 - Rescinds and supersedes outdated Site Cleanup Requirements (SCRs);
 - Updates refinery ownership information;
 - Combines requirements for the Main Refinery and the Fuels Terminal (formerly the Marketing Terminal), which previously had separate SCRs; and
 - Requires the Discharger to ensure that its remediation systems and respective monitoring programs are operated, evaluated, and modified as necessary to ensure the requirements of this Order are met.

REGULATORY HISTORY

3. On October 9, 2013, the Water Board adopted Updated Waste Discharge Requirements (WDRs) Order No. R2-2013-0033, which specified requirements for the Discharger's continued maintenance and monitoring of waste management units (WMUs) in the Crude Oil Storage Area (COSA) and Wastewater Treatment Plant (WWTP). This SCR Order shares the same Self-Monitoring and Reporting Program with WDR Order No. R2-2013-0033.

Historically, the Water Board has regulated the refinery under four different orders (two WDRs and two SCRs):

- a) WDR Order No. 91-094 required a comprehensive investigation of soil and groundwater in 12 areas of the site to assess the impact of refinery operations on subsurface conditions. The order also required quarterly groundwater monitoring at the site.
 - b) WDR Order No. 94-070 added to the requirements of Order No. 91-094 and required documentation and actions related to closure or monitoring of the WMUs, including establishment of water quality protections standards, the closure and monitoring of the Burma Road Stockpile and Gate 5 Stockpile, subsurface investigation of the Final Pond at the WWTP, and continued groundwater monitoring at the WWTP.
 - c) SCR Order No. 94-144 also added to the requirements of Order No. 91-094 and specified cleanup requirements for investigation and cleanup of spills, leaks, and contamination of soil and groundwater at the Marketing Terminal.
 - d) SCR Order No. 97-077 rescinded Order No. 91-094 and required additional investigation of areas with known releases or contamination present, as well as evaluation of remedial actions for the site. Order No. 97-077 also required a revised groundwater monitoring program.
4. This Order rescinds and supersedes SCR Order Nos. 94-144 and 97-077. All tasks, provisions, and specifications required by these previous Orders have been satisfactorily completed.
 5. The Water Board has also regulated the refinery under two National Pollutant Discharge Elimination System (NPDES) permits. Order No. R2-2009-0079 (NPDES No. CA0005550) was adopted on November 18, 2009, and regulates industrial activity discharges of effluent from the Discharger's wastewater treatment system, all stormwater runoff from process areas, extracted groundwater from onsite remediation processes, and monitoring well purge water to Suisun Bay and the Carquinez Strait. The Water Board adopted Order No. R2-2012-0096 (NPDES No. CA0038849) on December 12, 2012, for municipal and industrial wastewater discharges. Order No. R2-2012-0096 implements wasteload allocations and requirements of the total maximum daily loads (TMDLs) for mercury and polychlorinated biphenyls.

SITE DESCRIPTION

6. The refinery produces petroleum hydrocarbon products, by-products, and intermediates and is classified as a cracking refinery as defined by the U.S. Environmental Protection Agency (U.S. EPA) in Title 40, Code of Federal Regulations, Section 419.20. The refinery, which began operating in 1969, is permitted to process 165,000 barrels of oil per day.
7. The refinery has been divided into four geographic sectors comprised of ten different areas (see Figure 2). The sectors are as follows:
 - WWTP ponds (Area 1)
 - Fuels Terminal (Area 2)
 - Main Refinery (Areas 3-5, 7-9, and 11), and
 - COSA (Area 6).

The WWTP and COSA are addressed in WDR Order No. R2-2013-0033 and will not be further discussed in this Order.

The Fuels Terminal receives refined petroleum products (mostly gasoline and diesel) from the nearby day tank storage field at the refinery. Products are shipped from the Fuels Terminal to other bulk terminals and service stations via pipelines and tanker trucks.

The Main Refinery includes the following areas:

- Day Tank Area (a portion of Area 2)
- Park Road Parcel (Area 3)
- Upper Level Storage Area (Areas 4, 5, and 7)
- Lower Level Storage Area (Area 8)
- Process Block (Area 9)
- Burma Road Stockpile (Area 10)
- Former UST Area (Area 11), and
- Gate 5 Stockpile (Area 12).

The Day Tank Area received a No Further Action letter from Water Board staff on July 11, 2008, that approved monitored natural attenuation as the ongoing remedial action; this area is further discussed below.

On September 22, 2008, a No Further Action letter was issued by Water Board staff for the Well 325 Area (within the Park Road Parcel) of the Main Refinery (monitoring wells 325, 330, 331, and 332). See Figure 3 for monitoring well and sampling locations.

Areas 10 and 12 were closed by Water Board staff under a No Further Action letter dated January 21, 2010. Corrective actions have not been required for Areas 9 and 11.

Geologic Setting

8. The Main Refinery and Fuels Terminal are constructed on engineered fill that varies in thickness from approximately 2 feet near East Second Street to over 40 feet at the eastern corner of the site. The fill consists primarily of gravelly clay and gravelly sandy clay derived from a large-scale cut and fill operation during the grading and construction of the refinery.
9. Beneath the fill lies a colluvium layer consisting of red brown clayey silt, which is underlain by bedrock consisting of highly fractured and weathered siltstone with interbedded sandstone.

Seismicity

10. The Green Valley Fault is located approximately one mile east of the site and is zoned as an active fault along which displacement has occurred in the last 200 years. The fault has an approximate predicted maximum credible earthquake of 7.0 on the Richter magnitude scale.

Hydrogeologic Setting

11. The primary water-bearing units at the refinery include the fill, colluvium, and bedrock. The groundwater flow direction follows the former native topography that existed prior to cutting and filling. Beneath the Main Refinery, groundwater flows mainly to the east toward Sulphur

Springs Creek. In the southern portion of the refinery, groundwater flow direction is southerly, toward Beaver Creek.

12. Depth to groundwater ranges from less than 1 foot above mean sea level (msl) in parts of Area 5 to nearly 180 feet msl at the Fuels Terminal. Seasonal fluctuations in groundwater elevation at the Main Refinery range from less than 1 foot to almost 15 feet. An intermittent zone of discontinuous perched groundwater appears to exist in the northwestern corner of the Fuels Terminal. The water is generally believed to exist within a pea gravel layer that was used to backfill former underground storage tank (UST) excavations. Groundwater levels in this area, known as the vapor recovery unit (VRU), range from approximately 168 feet msl to 172 feet msl.
13. Two creeks run through the refinery: Sulphur Springs Creek near the eastern boundary of the Main Refinery area and the western boundary of the WWTP and intermittent Beaver Creek near the western and southern boundary of the Main Refinery area.

HISTORICAL SPILLS, RELEASES, AND CLEANUP ACTIONS

14. All sectors of the refinery contain soil and/or groundwater that have been impacted by historic releases, and a variety of corrective action steps have been implemented. Releases associated with WMUs that are in the Title 27 Detection Monitoring Program are regulated under WDR Order No. R2-2013-0033 and are not discussed here. This Order addresses releases and corrective actions that are not directly associated with WMUs. These include releases at the Upper Level Storage Area (ULSA), the Lower Level Storage Area (LLSA), the Fuels Terminal, and the Day Tank Area, as described below.

Main Refinery

15. *The Upper Level Storage Area:* The ULSA encompasses three areas (4, 5 and 7) and contains several discrete and combined groundwater plumes. A description of each area where spills and/or corrective action have occurred is provided below and shown on Figures 3 and 4:
 - i) Area 4: In 1979, approximately 900 barrels of jet fuel were spilled on the ground surface behind a product pump pad (see Figure 4) due to a broken flow-diversion fitting. In 1988, approximately 1,000 barrels of gasoline were released from a failed joint on the Tank 1793 suction line. Although there is no documentation of corrective actions in response to the 1979 or 1988 spills, written communication from Exxon to the Water Board in 1990 indicated that the spills had been cleaned up and contaminated soil was disposed at an authorized disposal facility. Other smaller releases of gasoline, diesel, and volatile organics occurred from sources such as pipelines and sewers. Monitored natural attenuation (MNA) was the approved remedial action for Area 4.
 - ii) Area 5: In 1979, an 800-barrel release of jet fuel occurred in a main pipeline west of Tank 1776 (Figure 4). This release is likely associated with a second area of free-phase liquid hydrocarbons (FPLH) seeps observed below 2nd Street (near monitoring well 517) along Avenue A. The ULSA groundwater interceptor trench was installed in 2001 to prevent the plume from reaching Sulphur Springs Creek. Remediation will be deemed complete when concentrations in the extracted water are at or below water quality protection standards (WQPS; discussed further in Task 9) and no FPLH is present immediately upgradient of, or in, the trench for eight consecutive quarters.

- iii) Area 7: Historical handling practices at the refinery included drawing water from the bottom of storage tanks and pumping the liquid to the refinery's oil-water separator (OWS), which flows to the WWTP. At times, the drain leading to the OWS in Area 7 failed to open properly, became blocked with debris, or overflowed with oily water after heavy rains. As a result of these events, water that contained dissolved petroleum hydrocarbons and/or FPLH spilled back into the bermed drainage area around the tanks, contaminating soil and groundwater in the Area. Monitoring wells in the Area (712, 714, 715) have recently yielded historically high concentrations, indicating this plume is still present and potentially migrating. The previously approved remedial actions for this plume were continued monitoring to confirm that no FPLHs are present and MNA. This Area is further addressed in Task 6.
 - iv) Areas 5 and 7: A separate plume of total petroleum hydrocarbons as diesel (TPH-d) is present partially in Area 5 and partially in Area 7. This plume is presumed to be from a release of approximately 1,000 barrels of TPH-d from Tank 1798 in 1989 (Figure 4). The contaminated soil was treated with a chemical solidification/stabilization process, after which the soil tested as non-hazardous. There is also evidence of a potential historical source of total petroleum hydrocarbons as gasoline (TPH-g); benzene, toluene, ethylbenzene, and xylene (BTEX); and methyl-tert butyl ether (MTBE) from an unidentified release in the vicinity of monitoring well 716. The approved remedial actions for this plume were continued monitoring to confirm that FPLH are not present, and MNA.
16. *The Lower Level Storage Area (Area 8)*: In 1992, a 10-barrel release of Powerformer Reformate resulted in a small, isolated plume near monitoring well 843 (Figure 5). Historical water-draw practices may also have contributed to this plume. FPLH was removed and MNA was implemented as the approved remedy. Also, in the central portion of the LLSA, an unknown amount of Powerformer Feed was released, creating a plume that extends toward Sulphur Springs Creek. The LLSA groundwater interceptor trench was installed in 2002 to prevent the plume from reaching the creek. Remediation will be deemed complete when concentrations in the extracted water are at or below WQPS, and no FPLH is present immediately upgradient of, or in, the trench for eight consecutive quarters.
17. *The Day Tank Area (part of Area 2)*: Elevated levels of petroleum hydrocarbons have been detected in this area in shallow soil and are believed to be from historical water-draw practices, in which tank bottom water was allowed to drain and flow across the ground surface to the nearest oily water sewer. Natural attenuation of hydrocarbons in the Day Tank Area is being monitored using monitoring wells 221 and 232 (Figures 3 and 7).
18. Three phases of enhanced in-situ bioremediation, using a slurry of Oxygen Release Compound (ORC), were performed in between 2003 and 2006 to reduce hydrocarbon concentrations in groundwater near monitoring wells 509B, 805, and 807. After ORC injection, ORC filter socks were placed in wells 509B, 540, 546, and 805 to further reduce residual hydrocarbon concentrations. Monitoring well locations are shown on Figure 6.

Fuels Terminal

19. Several historical releases have occurred at the Fuels Terminal:

- i) In 1987, five USTs used to store fuel additives were removed, and subsequent soil and groundwater sampling revealed visible FPLH sheen in the excavations and detectable concentrations of petroleum hydrocarbons and BTEX.
- ii) In 1990, approximately 2,000 gallons of gasoline overflowed from the VRU onto areas east and south of the VRU concrete pad. Approximately 30 cubic yards of soil were removed. During the soil assessment, a previously excavated area of the former 1,000-gallon VRU condensate tank was discovered. The excavation, which had been backfilled with pea gravel, had accumulated groundwater impacted with petroleum hydrocarbons. An extraction well was installed within the former tank excavation, and over 1,000 gallons of impacted groundwater had been removed by the time extraction was discontinued in 1991.
- iii) In 1992, another hydrocarbon release from the VRU impacted soil to the south and west of the VRU concrete pad. Approximately 250 cubic yards of soil were excavated from this area, and a soil vapor extraction (SVE) system was installed to remediate groundwater.

Corrective Actions for Groundwater

- 20. Corrective actions to remediate groundwater impacts at the refinery include operation of extraction wells and interceptor trenches, FPLH removal from wells using either a bailer or an absorbent collection system in select wells, and in-situ chemical oxidation of FPLH in certain monitoring wells. MNA has been approved by the Water Board as a long-term remedial approach for all areas and monitoring wells not undergoing active remediation.
- 21. Valero has implemented corrective actions to intercept contaminated groundwater at three locations to prevent migration to Sulphur Springs Creek, Beaver Creek, and ultimately Carquinez Strait. The corrective actions include interceptor trenches for hydraulic control downgradient of the ULSA and LLSA for the Main Refinery (see Figure 6) and groundwater and vapor extraction systems as well as a perched zone extraction system at the Fuels Terminal (see Figure 7). Valero is in the process of identifying the appropriate corrective action for mitigating FPLH that has recently been identified in monitoring wells 524 and 526, which are located cross-gradient and downgradient of the ULSA interceptor trench near Sulphur Springs Creek.
- 22. The ULSA trench is approximately 660 feet long and has three extraction sumps situated along the length of the trench. The LLSA trench is approximately 342 feet long and has one extraction sump near the middle of the trench. The sumps also contain skimmers for the capture of FPLH. The skimmers are currently not being used due to lack of free product and may be removed at a later date. When FPLH is present, the extracted groundwater and product are routed into nearby oily water sewer lines, which are tied to the WWTP. Water levels in wells within and adjacent to the trenches are monitored to ensure groundwater is being drawn into the trenches. Each trench is deemed effective as long as the potentiometric surface indicates that groundwater is flowing inward toward the trench.
- 23. Two groundwater extraction systems (GES) have been installed at the Fuels Terminal. One is used to extract groundwater from two wells near the fuel additive tanks, and the other is used to continuously extract groundwater from two recovery wells and two extraction wells downgradient of the loading rack area. Both GES systems discharge to the Fuels Terminal drain, which discharges to the WWTP.

24. The perched zone extraction (PZE) system is designed to remove and treat extracted water from the perched zone underlying the VRU. Groundwater is extracted from a total of 17 vapor and groundwater extraction wells. Two extraction wells connected to the PZE system treat extracted groundwater prior to discharge to the Fuels Terminal drain. Effectiveness evaluations have shown that the PZE performance is currently not optimal; additional evaluation of the PZE system is required in Task 3.
25. A vapor extraction and treatment system (VETS) was formerly operated at the Fuels Terminal to reduce hydrocarbon concentrations in soil vapor; however, the system was shut down in June 2000 after the construction of the PZE. An evaluation of this system is required in Task 4.

MONITORING PROGRAMS

26. Valero monitors and reports groundwater and surface water elevations, flow direction and gradient, FPLH thicknesses and recovery, WQPS compliance, data quality assurance and quality control, and inspection and maintenance activities as part of its Self-Monitoring Program (SMP), which follows the approved 2010 Groundwater Monitoring Plan (GMP). There are 218 groundwater monitoring wells onsite that are gauged quarterly, with sampling and analysis of 129 wells. Monitoring and sampling locations are shown on Figure 3.
27. In accordance with the GMP, Valero performs a statistical evaluation and trend analysis of groundwater analytical results obtained from groundwater monitoring wells to assess the effectiveness of the corrective and remedial actions at the refinery.
28. Surface water is collected from three locations along Sulphur Springs Creek (SW-01 through SW-03), and samples are analyzed for site Constituents of Concern (COCs) (see Figure 3 for locations) as listed in the approved GMP.

BASIN PLAN

29. The Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) is the Water Board's master water quality control planning document. It designates beneficial uses and water quality objectives for waters of the State, including 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 and approved by the State Water Resources Control Board (State Water Board), the Office of Administrative Law, and the U.S. EPA, where required.

BENEFICIAL USES AND SOURCES OF DRINKING WATER

30. Antidegradation Policy: The State Water Board established California's antidegradation policy through State Water Board Resolution No. 68-16, which requires that existing water quality be maintained unless degradation is justified based on specific findings. State Water Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California," applies to the Discharger and requires attainment of background levels of water quality or the highest level of water quality that is reasonable if background levels of water quality cannot be restored. Cleanup levels other than background shall 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.

31. State Water Board Resolution No. 88-63: The Basin Plan provides that all groundwater in the Region is considered suitable, or potentially suitable, for municipal or domestic water supply and that, in making any exceptions, the Water Board will consider the criteria referenced in State Water Board Resolution No. 88-63, “Sources of Drinking Water”, where:
- i) The total dissolved solids exceed 3,000 mg/l (5,000 μ S/cm, electrical conductivity), and it is not reasonably expected by the Water Board that the groundwater could supply a public water system, or
 - ii) There is contamination, either by natural processes or human activity (unrelated to the specific pollution incident), that cannot reasonably be treated for domestic use using best management practices or best economically achievable treatment practices, or
 - iii) The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day (gpd).
32. The refinery is not located in a designated groundwater basin. Monitoring wells screened at or below sea level at the site are typically in Bay Mud sediments that yield saline groundwater (electrical conductivity greater than 5,000 μ S/cm) and exhibit low well yields (typically less than 200 gpd). In contrast, the groundwater in some portions of the Panoche Formation in the upland portions of the site (i.e., those wells screened in the Panoche Formation above 50 feet MSL) may yield brackish water with electrical conductivity values less than 5,000 μ S/cm at rates that marginally exceed 200 gpd for a limited time. The Panoche Formation at the site consists of thinly interbedded mudstone, sandstone, and shale that typically exhibit low yields unsuitable for municipal or agricultural supply. There is no historical, existing, or planned use of groundwater as a source of drinking water at the Main Refinery or Fuels Terminal.
- There is potential for deep groundwater beneath the refinery to discharge into Carquinez Strait. Therefore, the beneficial uses named in the Basin Plan for these bodies of surface water are applicable.
33. The existing and potential beneficial uses of surface water in Suisun Bay, Carquinez Strait, Beaver Creek, and Sulphur Springs Creek are:
- a. Ocean, commercial, and sport fishing
 - b. Shellfish harvesting
 - c. Estuarine habitat
 - d. Fish migration
 - e. Preservation of rare and endangered species
 - f. Fish spawning
 - g. Wildlife habitat
 - h. Water contact recreation
 - i. Non-contact water recreation
 - j. Industrial service supply
 - k. Industrial process supply
 - l. Navigation
 - m. Freshwater replenishment

CLEANUP AUTHORITY

34. State Water Board Resolution No. 92-49: State Water Board Resolution No. 92-49, "Policies and Procedures for Investigation and Cleanup and Abatement of Discharges under California Water Code Section 13304," establishes policies and procedures to be used by the Water Board when:

- Determining when a person is required to investigate, cleanup, or abate a discharge;
- Concurring with a discharger's selection of cost-effective investigation and remedial measures;
- Overseeing implementation of investigation and remedial measures; and
- Determining schedules for investigation and remedial measures.

This Order implements and is consistent with Resolution No. 92-49.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

35. This Order requires continued monitoring, groundwater extraction, and preparation of work plans and reports that do not have the potential for significant impacts on the environment. As such, the general rule that the California Environmental Quality Act (CEQA) only applies to projects that have the potential for causing a significant effect on the environment (the "common sense" exemption) applies, and no environmental document needs to be prepared in connection with the adoption of this Order [Cal. Code Regs., title 14, §15061(b)(3)]. When a specific cleanup proposal is submitted to the Executive Officer for approval, such proposal must and will be evaluated under CEQA prior to approval. Implementation of the Task 1 and Task 6 workplans may require a CEQA evaluation once the Executive Officer approves the workplans.

NOTICE AND MEETING

36. The Water Board has notified the Discharger and interested agencies and persons of its intent to issue this Order and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

37. The Water Board, at a public meeting, heard and considered all comments pertaining to this issuance of Site Cleanup Requirements.

IT IS HEREBY ORDERED, pursuant to CWC section 13304 and 13267, that the Discharger (or its agents, successors, or assignees) shall cleanup and abate the effects described in the above findings as follows:

A. 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. Migration of pollutants through subsurface transport to waters of the State beyond the groundwater extraction trenches is prohibited.
3. There shall be no discharge of wastes or hazardous substances to surface waters except as permitted under the refinery's current NPDES permits.

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 CWC section 13050(m).
6. The Discharger shall not cause the following conditions to exist in waters of the State at any place beyond the influence of the groundwater extraction trenches or other approved treatment systems:
 - a. Surface Waters
 - i. Floating, suspended, or deposited macroscopic particulate matter or foam;
 - ii. Bottom deposits or aquatic growth;
 - iii. Adversely altered temperature, turbidity, or apparent color beyond natural background levels;
 - iv. Visible, floating, suspended or deposited oil or other products of petroleum origin; or
 - v. Toxic or other deleterious substances to be present in concentrations or quantities that may cause deleterious effects on aquatic biota, wildlife, or waterfowl, or which render any of these unfit for human consumption either at levels created in the receiving waters or as a result of biological concentrations.
 - b. Groundwater
 - i. Further degradation of groundwater quality and/or substantial worsening of existing groundwater impacts; and
 - ii. Subsurface migration of pollutants from Valero's operations to waters of the State.

B. TASKS

ALL REQUIRED SUBMITTALS MUST BE ACCEPTABLE TO THE EXECUTIVE OFFICER (SEE PROVISION C.1 - COMPLIANCE)

Groundwater Extraction and Hydraulic Containment

1. Valero shall continue to extract water from the groundwater interceptor trenches and extraction systems at a rate which eliminates or reverses the migration of contaminants toward Sulphur Springs Creek. A Remedial Investigation and Feasibility Study (RI/FS) is currently underway to evaluate the feasibility of tying additional existing monitoring wells into the trenches or extraction systems. The RI/FS will assess the nature and impacts from COCs in the Well 524 Area and evaluate possible cleanup technologies. Once the RI/FS has been approved by the Water Board, a work plan shall be submitted which further evaluates the selected remedial alternative to prevent discharge of contaminated groundwater to Sulphur Springs Creek.

COMPLIANCE DATE: 90 Days after approval of the RI/FS

2. If the Executive Officer determines, on the basis of groundwater monitoring information, that impaired water quality cross-gradient and downgradient of the ULSA extraction trench is not improving, or continues to degrade, Valero will be required to submit additional proposals for corrective actions to address the issue.

COMPLIANCE DATE: To be determined, as needed for future corrective actions

Perched Zone Extraction (PZE) System

3. Valero shall evaluate the effectiveness of the PZE system towards removing and treating perched groundwater underlying the VRU. Specific aspects of the system that should be evaluated are the adequacy of existing extraction wells to capture the plume (groundwater and vapor) in this area; the screen depths of each piezometer used to effectively monitor the perched zone; and the feasibility of a system performance upgrade to maximize perched zone reduction and vapor recovery.

COMPLIANCE DATE: May 30, 2014

Vapor Extraction and Treatment System (VETS)

4. Valero shall propose either: 1) restarting the VETS, which is currently inactive; 2) modifying the system to enhance extraction by working in tandem with the PZE; or 3) dismantling and removing the system from the VRU. Valero shall evaluate historic data on hydrocarbon soil vapor removal rates of the VETS and compare current concentrations against concentrations detected after system shutdown in 2000 to determine which action is appropriate.

COMPLIANCE DATE: June 30, 2014

Free-Phase Liquid Petroleum Hydrocarbon (FPLH) Recovery

5. Valero shall continue to perform recovery activities, as needed, to remove FPLH from groundwater if found in significant and recoverable quantities during routine groundwater monitoring. FPLH recovery may be necessary to reduce the source of dissolved constituents that are introduced via the free-phase.

COMPLIANCE DATE: Ongoing

Additional Evaluation of Area 7

6. Valero shall submit a work plan proposing actions to reduce FPLH in groundwater, particularly in the vicinity of monitoring wells 712, 714, and 715. This work plan must also assess the extent of FPLH in Area 5 and the ULSA trench, which is directly downgradient from Area 7, and propose actions to capture impacted groundwater from the Area 7 plume.

COMPLIANCE DATE: July 30, 2014

Spill Reporting and Documentation of Cleanup

7. Valero shall notify the Water Board of any reportable quantity (42 gallons or more) of petroleum that is either spilled or leaked to any unlined ground surface (any surface not protected by a barrier which is impermeable to petroleum products or other constituents which may cause adverse water quality impacts). Verbal notification shall be provided within one working day of discovery of the spill and shall be followed by a written description to include the nature, location and volume of the spill, and the total area and/or soil volume affected. In

addition, the written report shall include a map that identifies the location of the spill and photographic documentation of the spill area before and after cleanup.

COMPLIANCE DATE: Verbal notification within 24 hours after discovery written notification within five working days after discovery.

Update Groundwater Self-Monitoring Program

8. Following implementation of each task described above, the Discharger shall review the Self-Monitoring Program attached to Order No. R2-2013-0033 (Attachment A), which follows the approved 2010 Groundwater Monitoring Plan, and propose any necessary updates to incorporate new groundwater monitoring wells, extraction systems, and/or sampling parameters/frequency. All sampling protocols and reporting requirements shall be consistent with those described in Attachment A. As part of the update, all historic monitoring well data (from at least the most recent five-year period) shall be evaluated, a determination made about adequacy of the number of point of compliance wells, and compliance timelines added for any future corrective action that may be needed.

COMPLIANCE DATE: October 31, 2014

Update Water Quality Protection Standards

9. The Discharger shall update existing WQPS in accordance with either federal or state regulations or guidelines, or with technically-justified site-specific standards, acceptable to the Executive Officer. The WQPS shall consist of the list of constituents of concern, the concentration limits, and the Points of Compliance and all Monitoring Points.

COMPLIANCE DATE: May 31, 2014

C. PROVISIONS

1. Compliance: The Discharger shall comply immediately, or as prescribed by the time schedule contained herein, with all Prohibitions, Tasks, and Provisions of this Order. All required submittals must be acceptable to the Executive Officer. The Discharger must also comply with all conditions of these Site Cleanup Requirements. Violations may result in enforcement actions, including Water Board orders or court orders requiring corrective action or imposing civil monetary liability, or in modification or revocation of this Order by the Water Board.
2. Authority to Request Technical Reports: All technical and monitoring reports required by this Order are requested pursuant to CWC § 13267. Failure to submit reports in accordance with schedules established by this Order or failure to submit a report of sufficient technical quality to be acceptable to the Executive Officer may subject the Discharger to enforcement action pursuant to CWC § 13268.
3. All technical reports submitted pursuant to this Order shall be prepared under the supervision of and signed by a California registered civil engineer or a California professional geologist.
4. At any time, the Discharger may file a written request (including supporting documentation) with the Executive Officer, proposing modifications to the attached Self-Monitoring Program

(SMP). If the proposed modifications are acceptable, the Executive Officer may issue a letter of approval that incorporates the proposed revisions into the SMP.

5. Modifications to Remedial Action Plan: The Discharger shall notify and get approval from the Executive Officer at least 60 days prior to implementing any proposed major modifications to any approved Remedial Action Plan, Implementation Schedule, or remediation system. The notification shall include the rationale for any proposed modification.
6. Delayed Compliance: If the Discharger is delayed, interrupted, or prevented from meeting one or more of the completion dates specified for the tasks, the Discharger shall promptly notify the Executive Officer of the delay and reason for the delay, and the Water Board may consider revisions to this Order.
7. Operation and Maintenance (O&M): The Discharger shall, at all times, properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the Discharger to achieve compliance with conditions of this Order. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls including appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this order.
8. Availability: A copy of this Order shall be maintained by the Discharger and shall be made available by the Discharger to all employees or contractors performing work necessary to comply with the tasks set forth in this Order.
9. Change in Ownership: In the event of any change in control or ownership of the facility presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be forwarded to the Water Board upon a final change in ownership.

COMPLIANCE DATE: 30 days after a change in site control or ownership

10. Stormwater: The Discharger shall comply with the provisions of the refinery's current NPDES permits for the management, monitoring, and discharge of stormwater and wastewater effluent.
11. Reporting of Hazardous Substance Release: If any hazardous substance is discharged in or on any waters of the State, or discharged or deposited where it probably will be discharged in or on any waters of the State, the Discharger shall:
 - a. Report such discharge to the following:
 - i. The Water Board by calling (510) 622-2369 during regular office hours (Monday through Friday, 8 a.m. – 5 p.m.); and to
 - ii. The California Emergency Management Agency at (800) 852-7550.
 - b. A written report shall be filed with the Water Board within five working days. The report shall describe:
 - i. The nature of the waste or pollutant.

- ii. The estimated quantity involved.
- iii. The duration of the incident.
- iv. The cause of the release.
- v. The estimated size of the affected area, and nature of the effect.
- vi. The corrective actions taken or planned and a schedule of those measures.
- vii. The persons/agencies notified.

This reporting is in addition to any reporting to the California Emergency Management Agency that is required pursuant to the Health and Safety Code.

- 12. Contractor/Consultant Qualifications: All technical documents shall be signed by and stamped with the seal of a California professional geologist, or a California registered civil engineer.
- 13. Lab Qualifications: All samples shall be analyzed by State-certified laboratories or laboratories accepted by the Water 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 Water Board review. This provision does not apply to analyses that can only reasonably be performed onsite (e.g., temperature).
- 14. Document Distribution: Copies of all correspondence, technical reports, and other documents submitted in compliance with this Order shall be provided to the Water Board.
- 15. Submittal Revisions: Where the Discharger becomes aware of a material error in fact or omission in any report previously submitted to the Water Board, it shall promptly submit such facts or information. [CWC sections 13260 and 13267]
- 16. Severability: Provisions of this Order are severable. If any provisions of this Order are found invalid, the remainder of these Requirements shall not be affected. [CWC 9213]
- 17. GeoTracker Requirements: The State Water Board has adopted regulations requiring electronic report and data-submittal to GeoTracker. The text of the regulations can be found at the following URL:

http://www.waterboards.ca.gov/water_issues/programs/ust/electronic_submittal/index.shtml

Parties responsible for cleanup of pollution at sites overseen by the Water Board are required to submit the following information electronically to GeoTracker:

- 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.] must 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, unless otherwise agreed upon. The Water Board may require direct submittal of electronic reports and correspondence in addition to the State Water Board's GeoTracker requirements.

18. Entry and Inspection: The Discharger shall allow the Water Board, or an authorized representative upon the presentation of credentials and other documents as may be required by law, to:
- Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this Order;
 - Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order;
 - Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order; and
 - Sample or monitor at reasonable times, for the purposes of assuring compliance with this Order or as otherwise authorized by the CWC, any substances or parameters at any location.
19. Maintenance of Records: The Discharger shall retain records of all monitoring information including all calibration and maintenance records, all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order. Records shall be maintained for a minimum of five years from the date of the sample, measurement, report, or application. This period may be extended during the course of any unresolved litigation regarding this discharge or when requested by the Executive Officer. Records of monitoring information shall include:
- The date, exact place, and time of sampling or measurements;
 - The individuals who performed the sampling or measurements;
 - The date(s) analyses were performed;
 - The individuals who performed the analyses;
 - The analytical techniques or method used; and
 - The results of such analyses.
20. Report Certification: All application reports or information to be submitted to the Executive Officer shall be signed and certified as follows:
- For a corporation – by a principal executive officer or the level of vice president.
 - For a partnership or sole proprietorship – by a general partner or the proprietor, respectively.
 - For a municipality, State, federal, or other public agency – by either a principal executive officer or ranking elected official.

A duly authorized representative of a person designated in this provision may sign documents if all of the following are met:

- The authorization is made in writing by a person described in paragraph (a) of this provision;
- The authorization specifies either an individual or position having responsibility for the overall operation of the regulated facility or activity; and
- The written authorization is submitted to the Executive Officer.

Any person signing a document under this Provision shall make the following certification:

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the

information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.” [CWC § 13263, 13267, and 13268]

21. Cost Recovery: The Discharger (as applicable) shall be liable, pursuant to CWC section 13304 and Health and Safety Code section 25270.9 to the Water Board for all reasonable costs actually incurred by the Water 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 Water 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 (as applicable) over reimbursement amounts or methods used in that program shall be consistent with the dispute resolution procedures for that program.
22. Periodic Site Cleanup Requirements (SCR) Order Review: The Water Board will review this Order periodically and may revise it when necessary. The Discharger (as applicable) may request revisions and upon review the Executive Officer may recommend that the Water Board revise these requirements.

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

Bruce H. Wolfe
Executive Officer

=====

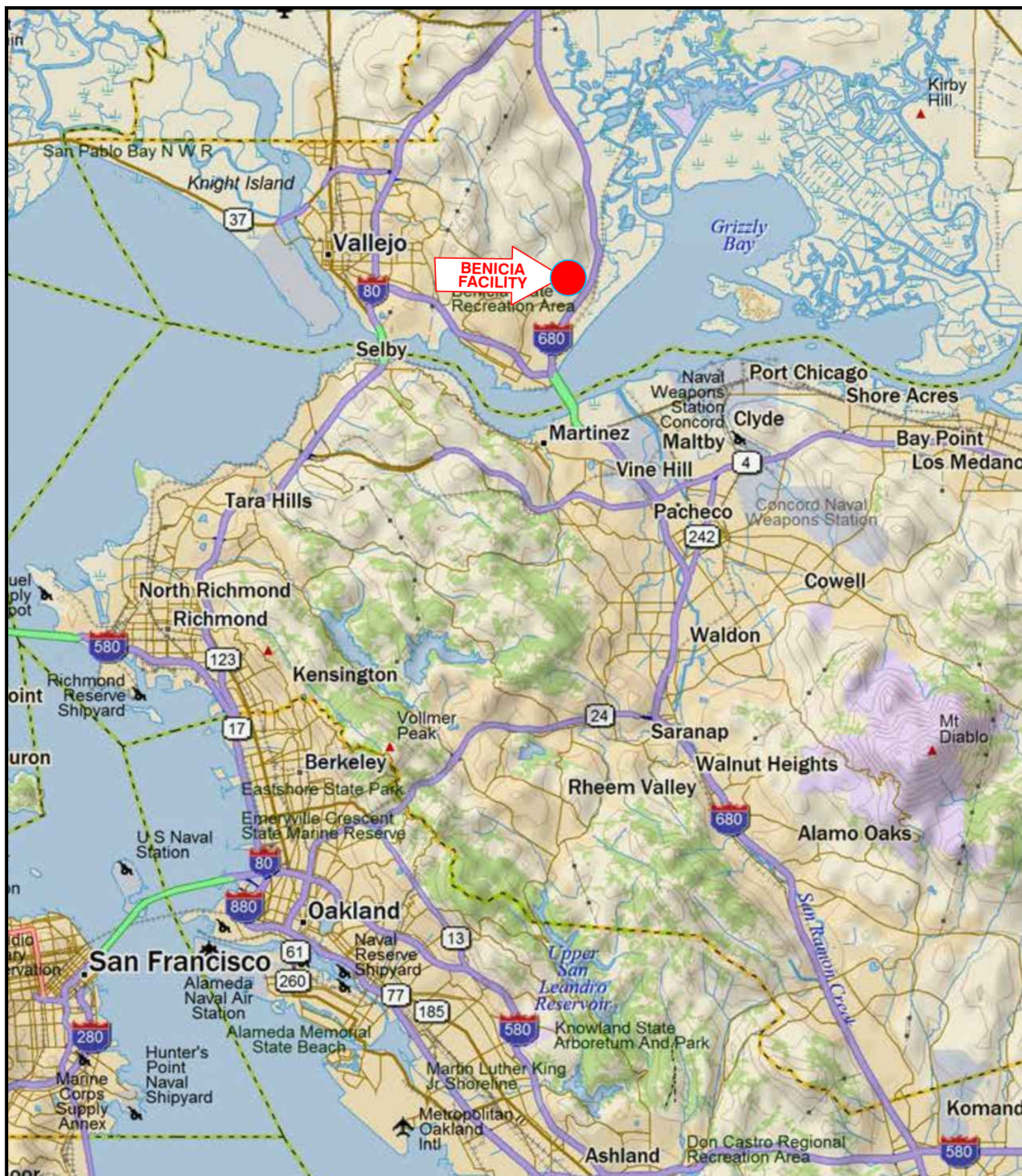
**FAILURE TO COMPLY WITH THE REQUIREMENTS OF THIS ORDER MAY
SUBJECT YOU TO ENFORCEMENT ACTION, INCLUDING BUT NOT LIMITED TO:
IMPOSITION OF ADMINISTRATIVE CIVIL LIABILITY UNDER WATER CODE
SECTIONS 13268 OR 13350, OR REFERRAL TO THE ATTORNEY GENERAL FOR
INJUNCTIVE RELIEF OR CIVIL OR CRIMINAL LIABILITY**

=====

Figures:

- Figure 1 - Location Map
- Figure 2 - Geographic Sector Map with Corrective Action Areas
- Figure 3 - Groundwater Monitoring and Sampling Locations
- Figure 4 - Area 5 and 7 Plume
- Figure 5 - Area 8 Plume
- Figure 6 - Interceptor Trenches
- Figure 7 - Fuels Terminal Treatment Systems

Attachment: Self-Monitoring and Reporting Program, Order No. R2-2013-0033



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FOR:

VALERO BENICIA REFINERY

BENICIA
CALIFORNIA

JOB NUMBER:

185702613.500.0001

DRAWN BY:

STA

CHECKED BY:

GH

APPROVED BY:

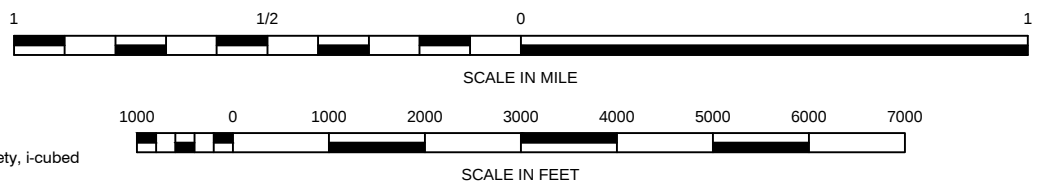
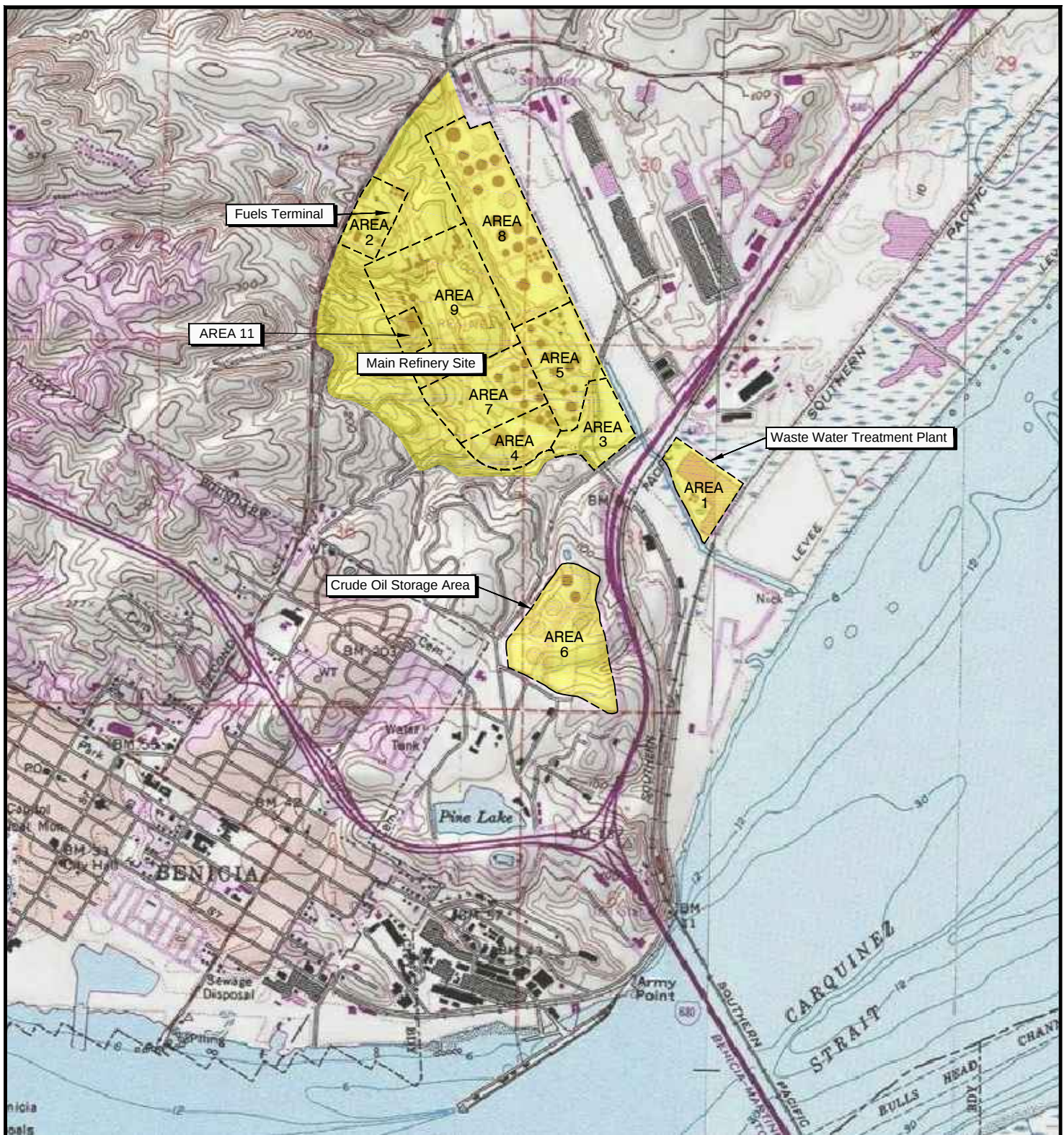
GH

FIGURE:

1

DATE:

10/21/13



REFERENCE

TITLE: USA Topographic Map
 AUTHOR: ESRI
 CREDITS: Copyright: © 2013 National Geographic Society, i-cubed
 ArcGIS for AutoCAD 2011; Obtained August 1, 2013



FOR:
 VALERO BENICIA REFINERY
 BENICIA
 CALIFORNIA

GEOGRAPHIC SECTOR MAP WITH
 CORRECTIVE ACTION AREAS

FIGURE:

2

JOB NUMBER:
 185702613.500.0001

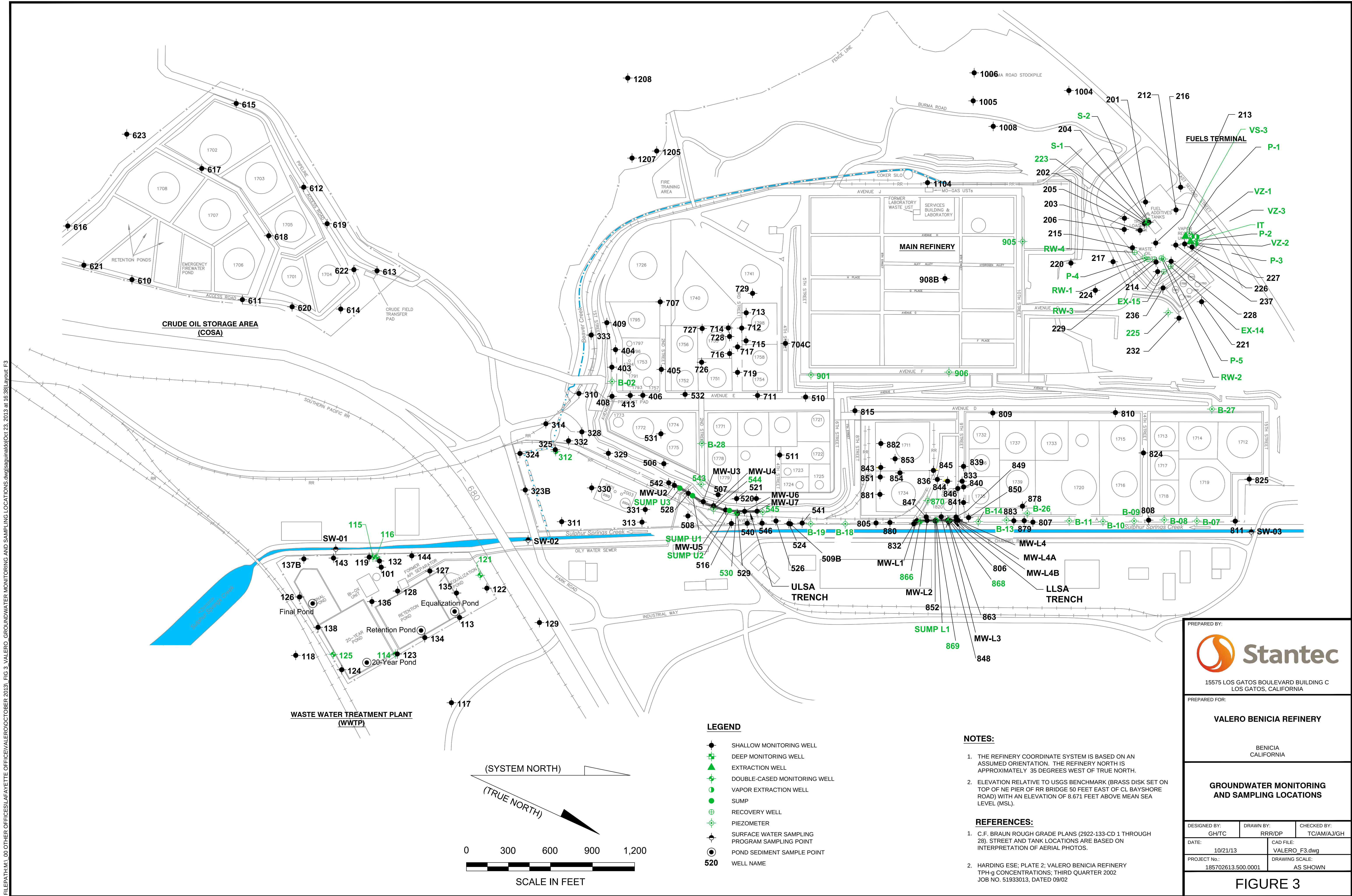
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CHECKED BY:
 TC/AM/GH

APPROVED BY:
 GH/TC

DATE:
 10/21/13

FILEPATH:M:\00 OTHER OFFICES\LA\FAYETTE OFFICE\VALERO\OCTOBER 2013\ FIG 3 VALERO GROUNDWATER MONITORING AND SAMPLING LOCATIONS.dwg\agsunimdd\Oct 23, 2013 at 16:38\Layout F3



PREPARED BY:

Stantec

15575 LOS GATOS BOULEVARD BUILDING C
LOS GATOS, CALIFORNIA

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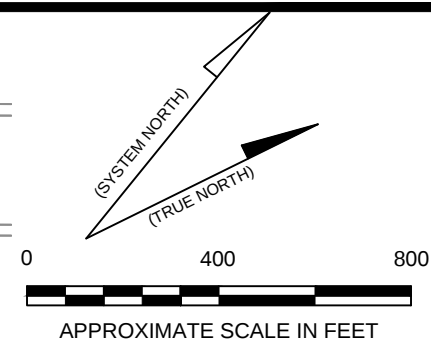
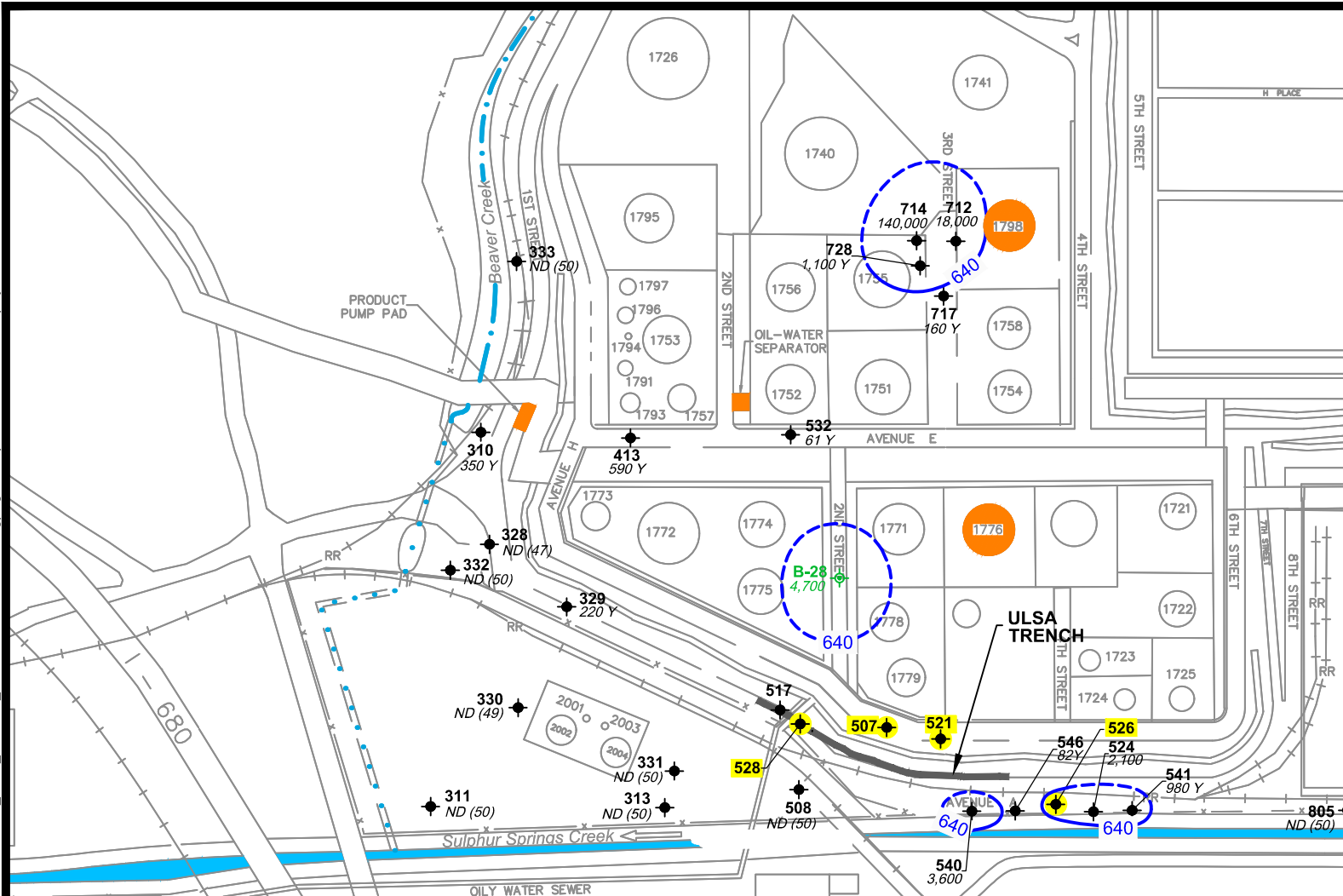
VALERO BENICIA REFINERY

BENICIA
CALIFORNIA

**GROUNDWATER MONITORING
AND SAMPLING LOCATIONS**

DESIGNED BY: GH/TC	DRAWN BY: RRR/DP	CHECKED BY: TC/AM/AJ/GH
DATE: 10/21/13	CAD FILE: VALERO_F3.dwg	
PROJECT No.: 185702613.500.0001	DRAWING SCALE: AS SHOWN	

FIGURE 3



LEGEND

- ◆ SHALLOW MONITORING WELL
- ◆ DEEP MONITORING WELL
- ▲ EXTRACTION WELL
- ◆ DOUBLE-CASED MONITORING WELL
- VAPOR EXTRACTION WELL
- SUMP
- ⊕ RECOVERY WELL
- ◆ PIEZOMETER
- ◆ SURFACE WATER SAMPLING
- ◆ PROGRAM SAMPLING POINT
- ⊙ POND SEDIMENT SAMPLE POINT
- 520 WELL NAME
- HISTORIC SPILL SITE

640

220

Y

ISOCONCENTRATION CONTOURS ESTIMATING TPH-d IN $\mu\text{g/L}$. MINIMUM CONTOUR CONCENTRATION REPRESENTS THE WATER QUALITY PROTECTION STANDARD APPROVED BY THE RWQCB FOR THE REFINERY AREA AND FUELS TERMINAL AREA. DASHED WHERE INFERRED.

SHREEN PRESENT

CONCENTRATION OF TOTAL PETROLEUM HYDROCARBONS AS DIESEL (TPH-d) IN MICROGRAMS PER LITER ($\mu\text{g/L}$)

SAMPLE EXHIBITS CHROMATOGRAPHIC PATTERN WHICH DOES NOT RESEMBLE STANDARD.

NOTES:

- THE REFINERY COORDINATE SYSTEM IS BASED ON AN ASSUMED ORIENTATION. THE REFINERY NORTH IS APPROXIMATELY 35 DEGREES WEST OF TRUE NORTH.
- ELEVATION RELATIVE TO USGS BENCHMARK (BRASS DISK SET ON TOP OF NE PIER OF RR BRIDGE 50 FEET EAST OF CL BAYSHORE ROAD) WITH AN ELEVATION OF 8.671 FEET ABOVE MEAN SEA LEVEL (MSL).

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PREPARED FOR:

VALERO BENICIA REFINERY

BENICIA
CALIFORNIA

TPH-d CONCENTRATIONS IN
GROUNDWATER AREAS 5 AND 7
SECOND QUARTER 2013

DESIGNED BY:
GH/TC

DRAWN BY:
RRR/DP

CHECKED BY:
TC/AM/AJ/GH

DATE:

10/21/13

CAD FILE:

VALERO F4.dwg

PROJECT No.:

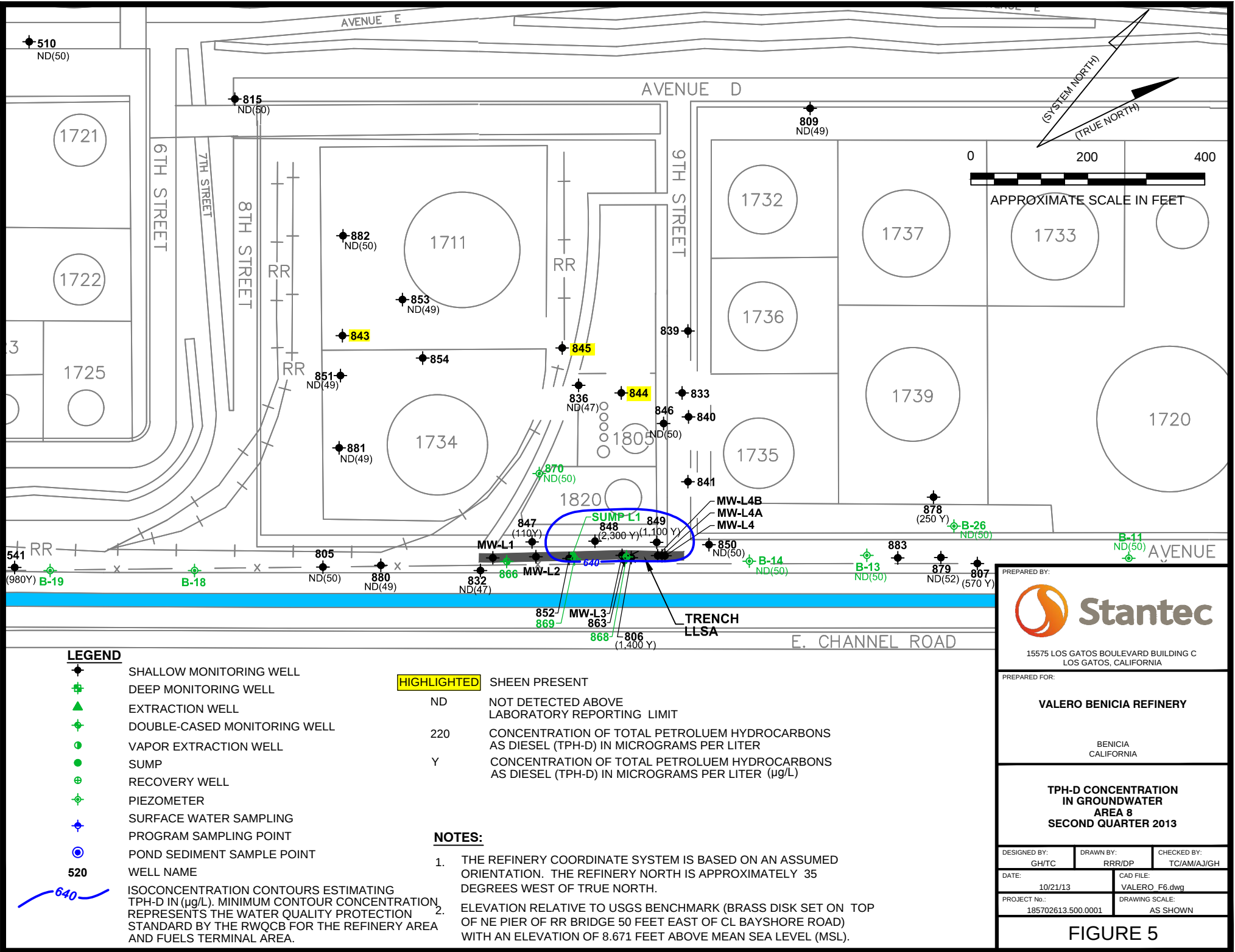
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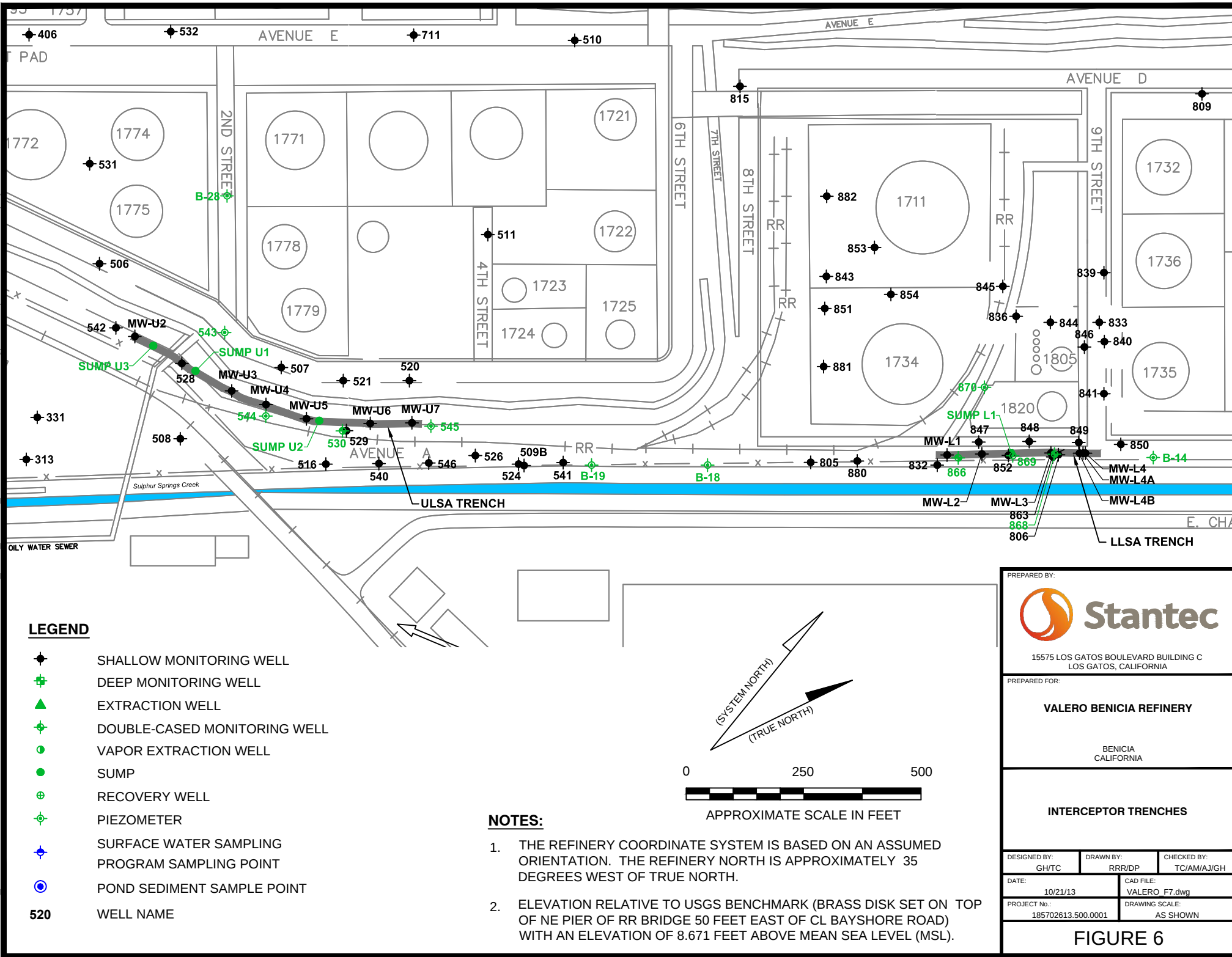
AS SHOWN

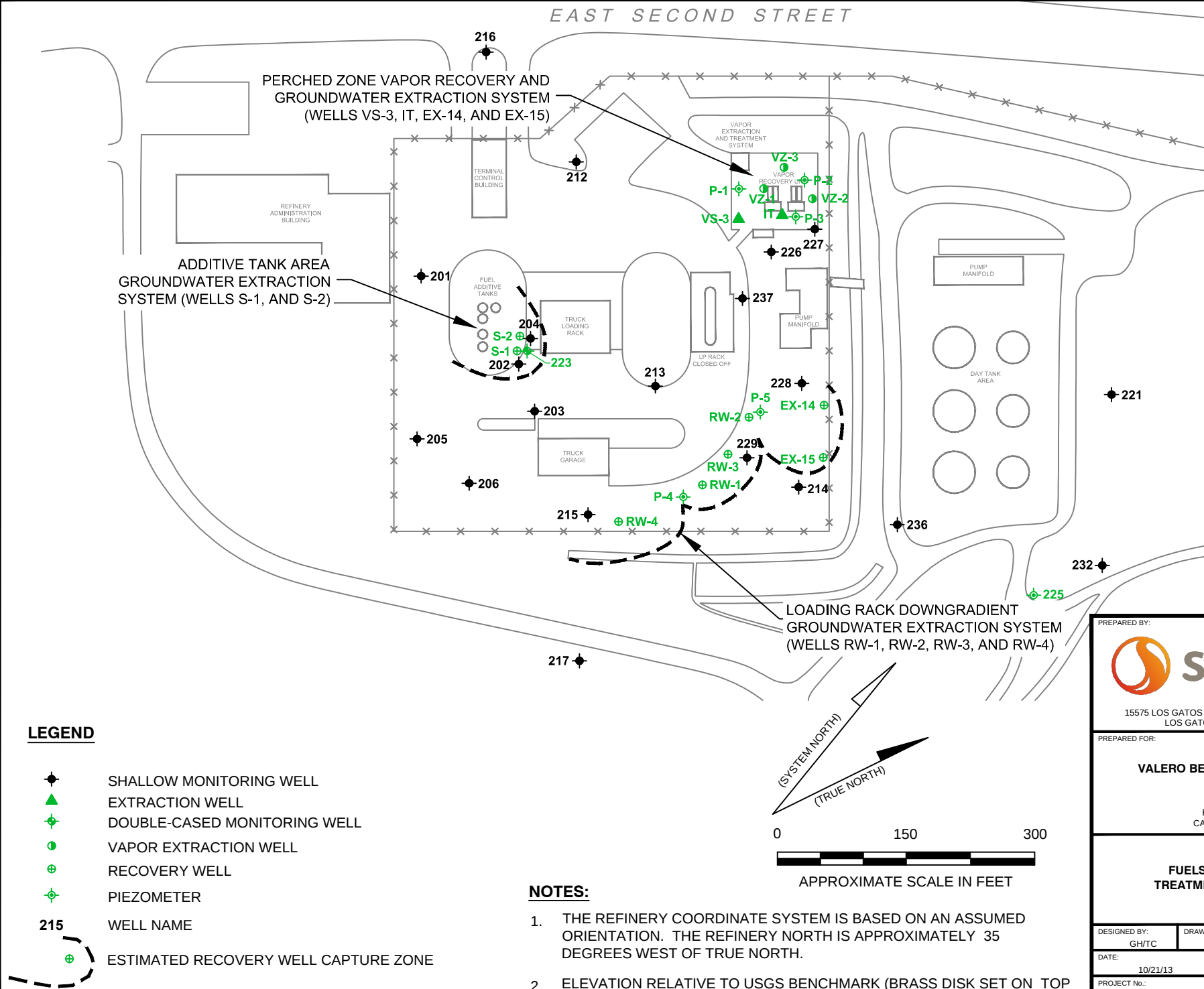
FIGURE 4

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FILEPATH:M:\00 OTHER OFFICES\LAFALETTE OFFICE\VALERO\OCTOBER 2013\ FIG 7 VALERO INTERCEPTOR TRENCHES.dwg\miramirez\Oct 31, 2013 at 15:29\Layout: F7





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Stantec

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LOS GATOS, CALIFORNIA

PREPARED FOR:

VALERO BENICIA REFINERY

BENICIA
CALIFORNIA

**FUELS TERMINAL
TREATMENT SYSTEMS**

DESIGNED BY: GH/TC	DRAWN BY: RRR/DP	CHECKED BY: TC/AM/AJ/GH
DATE: 10/21/13	CAD FILE: VALERO_F8.dwg	
PROJECT No.: 185702613.500.0001	DRAWING SCALE: AS SHOWN	

FIGURE 7

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION**

SELF-MONITORING AND REPORTING PROGRAM for:

**VALERO REFINING COMPANY - CALIFORNIA
VALERO BENICIA REFINERY
3400 EAST SECOND STREET
BENICIA, SOLANO COUNTY**

ORDER NO. R2-2013-0033

PART A: GENERAL MONITORING REQUIREMENTS

This combined self-monitoring and reporting program (SMP) specifies monitoring and reporting programs necessary to fulfill obligations under both the refinery's waste discharge requirements (WDRs) and site cleanup requirements (SCRs), including:

- a) General monitoring requirements for waste management units (WMUs) under the WDRs and SCRs (Part A);
- b) Self-monitoring report content and format (Part A);
- c) Self-monitoring report submittal frequency and schedule (Part B); and
- d) Monitoring locations, parameters, analytes and frequency for programs under the WDRs and SCRs (Part B).

A. AUTHORITY AND PURPOSE

For discharges of waste to land, water quality monitoring is required pursuant to the California Code of Regulations (CCR), Division 2, Title 27, Subdivision 1, chapter 3, subchapter 3, sections (§) 20380 through 20435. The principal purposes of an SMP include: 1) to document compliance with WDRs and prohibitions established by the Water Board, 2) to facilitate self-policing by the discharger in the prevention and abatement of pollution arising from the waste discharge, 3) to develop or assist in the development of effluent standards of performance and toxicity standards, and 4) to assist the discharger in complying with the requirements of title 27. Additionally, under California Water Code (CWC) §13304, Valero is required to implement corrective actions and monitor the effectiveness of the implemented corrective actions under this SMP.

B. MONITORING REQUIREMENTS

Monitoring refers to the observation, inspection, measurement, and/or sampling of environmental media and WMUs. The monitoring program designed to evaluate the potential release of wastes from WMUs is included in the WDRs. Monitoring programs designed to evaluate the effectiveness of corrective actions implemented under CWC §13304 are also described in the SMP. The following defines the types of monitoring that may be required.

Monitoring of Environmental Media

The Water Board may require monitoring of groundwater, surface water, vadose zone, stormwater, and any other environmental media that may pose a threat to water quality or provide an indication of a water quality threat at the refinery.

Sample collection, storage, and analyses shall be performed according to the most recent version of U.S. EPA-approved methods or in accordance with the 2010 Groundwater Monitoring Plan or subsequent revisions approved by Water Board staff. Analytical testing of environmental media required by this SMP shall be performed by a State-approved laboratory for the required analyses. The director of the laboratory whose name appears on the certification shall be responsible for supervising all analytical work in his/her laboratory and shall have signing authority for all laboratory data reports or may designate signing of all such data included in reports submitted to the Water Board.

All monitoring instruments and devices used to conduct monitoring in accordance with this SMP shall be maintained and calibrated as necessary to ensure their continued accuracy. All flow measurement devices shall be calibrated at least once every year.

Receiving waters refer to any surface water which actually or potentially receives surface or groundwater that pass over, through, or under waste materials or impacted soils. In this case, the groundwater beneath and adjacent to the WMU areas and Sulphur Springs Creek are receiving waters.

Standard Observations

Standard observations refer to observations within the limits of each WMU, at their perimeter, and of the receiving waters beyond their limits. Standard observations include:

1. Waste Management Units:

- a. Evidence of pond water overflow;
- b. Evidence of odors, including their presence or absence, characterization, source, and distance of travel from source; and
- c. Evidence of oily sheen on pond water surface.

2. Perimeter of Waste Management Units:

- a. Evidence of liquid leaving or entering the WMU, estimated size of affected area and flow rate (show affected area on map);
- b. Evidence of odors, including their presence or absence, characterization, source, and distance of travel from source; and
- c. Evidence of pond perimeter dike erosion.

3. Receiving Waters:

- a. Floating and suspended materials of waste origin, including their presence or absence, source, and size of affected area;
- b. Discoloration and turbidity: description of color, source, and size of affected area;
- c. Evidence of odors, presence or absence, characterization, source, and distance of travel from source;
- d. Evidence of beneficial use, such as presence of water associated with wildlife;
- e. Estimated flow rate; and
- f. Weather conditions, such as estimated wind direction and velocity, total precipitation.

Facilities Inspections

Facilities inspections refer to the inspection of all containment and control structures and devices associated with the environmental monitoring of the refinery. Containment and control facilities include the WMUs as part of the WWTP and COSA.

Quality Assurance/Quality Control (QA/QC) Sample Monitoring

Valero shall collect duplicate, field blank, equipment blank (if appropriate) and trip blank samples for each monitoring event at the frequency specified in the approved GMP.

C. REPORTING REQUIREMENTS

Reporting responsibilities of waste dischargers under WDRs and SCRs are specified in CWC §13225(a), §13267(b), §13383, and §13387(b) and this Water Board's Resolution No.73-16 and Title 27. At a minimum, each self-monitoring report (SMR) shall include the following information, unless the information is already contained in Geotracker or in a GMP approved by Water Board staff:

1. Transmittal Letter: A cover letter transmitting the essential points of the monitoring report shall be included with each monitoring report. The transmittal letter shall discuss any violations during the reporting period and actions taken or planned to correct the problem. The letter shall also certify the completion of all monitoring requirements. The letter shall be signed by the Discharger's principal executive officer or his/her duly authorized representative, and shall 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.
2. Graphic Presentation: The following maps, figures, and graphs (if applicable) shall be included in each SMR to visually present data collected pursuant to this SMP:
 - a. Plan-view maps showing all monitoring and sampling locations, WMUs, surface water bodies, and site/property boundaries;
 - b. Groundwater level/piezometric surface contour maps for the shallow groundwater-bearing zone of interest showing inferred groundwater gradients and flow directions under/around each WMU, based upon the past and present water level elevations and pertinent visual observations; and
 - c. 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.
3. Tabular Presentation: The following data (if applicable) shall be presented in tabular form and included in each SMR to show a chronological history and allow quick and easy reference:
 - a. Well designation;
 - b. Well location coordinates (latitude and longitude);
 - c. Well construction (including top of well casing elevation, total well depth, screen interval depth below ground surface, and screen interval elevation);
 - d. Groundwater depths;
 - e. Groundwater elevations;
 - f. Current analytical results (including analytical method and detection limits for each constituent); and
 - h. Measurement dates.

4. Compliance Evaluation Summary and Discussion:

- a. A summary and certification of completion of all environmental media monitoring, standard observations, and facilities inspections;
- b. The quantity and types of contaminants captured by the groundwater extraction systems and hydrocarbon recovery program, and how impacted groundwater was disposed of during the reporting period, if applicable;
- c. The signature of the laboratory director or his/her designee in laboratory data deliverables indicating that he/she has supervised all analytical work in his/her laboratory; and
- d. A discussion of the field and laboratory results that includes the following information:
 - (1) Data interpretations of trends compared to water quality protection standards;
 - (2) Newly implemented or planned investigations and remedial measures;
 - (3) Data anomalies;
 - (4) Variations from protocols;
 - (5) Condition of wells; and
 - (6) Effectiveness of control facilities.

D. ANNUAL REPORTING

The Discharger shall submit an annual self-monitoring report to the Water Board covering the previous calendar year. The annual report must summarize all monitoring, investigation, and remedial activities that have occurred in the previous year. The annual report shall include the following information for each monitoring event during the year required pursuant to this SMP, in addition to the transmittal letter and appendices described above in Section C:

Provide a discussion of the field and laboratory results that includes the following information:

- a. Data Interpretations;
- b. Newly implemented or planned investigations and remedial measures;
- c. Data anomalies;
- d. Variations from protocols; and
- e. Conditions of wells.

E. CONTINGENCY REPORTING

1. The Discharger shall report any seepage from the surface of any WMU or discharge prohibited in the WDRs or SCRs immediately after it is discovered to the Water Board by calling the Spill Hotline at 1-800-852-7550 and by sending an email to Rb2SpillReports@waterboards.ca.gov. The Discharger shall submit a written report with the Water Board within five days of discovery of any discharge. The written report shall contain, at a minimum, the following information:
 - a. a map showing the location(s) of discharge;
 - b. approximate flow rate;
 - c. a description of the nature of the discharge; and
 - d. corrective measures underway or proposed.
2. The Discharger shall submit an email notification to the Water Board within seven working days of determining that a statistically significant difference occurred in the sample result compared against the historical dataset and above an approved WQPS in a point of compliance

(POC) monitoring well. The procedures on when to conduct a statistical analysis are documented in the GMP.

- a. The Discharger shall immediately re-sample at the compliance point where the exceedance was observed, evaluate the result against the historical dataset and re-analyze if results are not consistent with historical trends.
- b. If re-sampling and analysis confirm the exceedance through statistical analysis, the Discharger shall document this in the text of the next Annual Report and notify the Water Board in writing within 21 days of receiving results. In this letter, the Discharger shall evaluate whether any re-sampling or additional corrective measures need to be implemented.

F. ELECTRONIC REPORTING

1. Geotracker Requirements

The State Water Board has adopted regulations requiring electronic report and data submittal to Geotracker. The text of the regulations can be found at the following URL:

http://www.waterboards.ca.gov/water_issues/programs/ust/electronic_submittal/index.shtml

Parties responsible for cleanup of pollution at sites overseen by the Water Board are required to submit over the internet, the following information electronically to Geotracker:

- 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.] must 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. The Water Board may require direct submittal of electronic reports and correspondence in addition to the State Water Board's Geotracker requirements.

2. Data Tables

Upon request, monitoring results shall also be provided electronically in Microsoft Excel or similar spreadsheet format to provide an easy to review chronological summary of site data, and to facilitate data computations and/or plotting that Water Board staff may undertake during the review process. Data tables submitted in electronic spreadsheet format will not be included in the case file for public review and should therefore be submitted on CD or diskette and included with the print report.

Electronic tables shall include the following information:

- a. Well designations;
- b. Well location coordinates (latitude and longitude);
- c. Well construction (including top of well casing elevation, total well depth, screen interval depth below ground surface, and screen interval elevation);
- d. Groundwater depths and elevations (water levels);
- e. Separate-phase product thicknesses and elevations;

- f. Current analytical results by constituent of concern (including detection limits for each constituent);
- g. Historical analytical results (including the past four sampling events); and
- h. Measurement dates.

G. MAINTENANCE OF WRITTEN RECORDS

1. Recordkeeping

The following records not included in the groundwater monitoring report shall be also maintained:

- a. Method and time of water level measurements;
 - b. 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 electrical conductivity, calibration of the field equipment, pH temperature, and turbidity measurements, and method of disposing of the water; and
 - c. Sampling procedures, field, equipment, and travel blanks, number and description of duplicate samples, type of sample containers and preservatives used, the date and time of sampling, the name of the person actually taking the samples, and any other relevant observations.
2. The Discharger shall maintain information required pursuant to this SMP for a minimum of five years. The five-year period of retention shall be extended during the course of any unresolved litigation regarding this discharge or when requested by the Water Board.

PART B: MONITORING AND OBSERVATION SCHEDULE

1. DESCRIPTION OF OBSERVATION STATIONS AND SCHEDULE OF OBSERVATIONS

The following activities shall be performed in accordance with the approved 2010 Groundwater Monitoring Plan (GMP) and any updated version that should be approved by the Executive Officer hereafter.

A. GROUNDWATER AND FACILITIES MONITORING

For Facilities Monitoring, make observations quarterly and report semi-annually:

Semi-Annual Report: Due August 31 of each year

Annual Report: Due March 1 of each year

2. INTERCEPTOR TRENCH PERFORMANCE MONITORING

The Discharger shall measure the water level in each trench corrective action monitoring well and in a sufficient number of wells or piezometers both upgradient and downgradient of the trenches to demonstrate continuous maintenance of a hydraulic depression (inward hydraulic gradient). To demonstrate the effectiveness of the trenches, the Discharger shall include the following for each refinery sector in the SMRs:

- a. contour maps of 1st and 3rd quarter trench groundwater elevation data;
- b. hydrographs showing water level data (measured at least once per month) at each operating extraction sump or recovery well;
- c. a narrative summary of the trench performance during the reporting period; and
- d. an estimate of the volume of groundwater extracted during the reporting period.

3. FREE-PHASE LIQUID HYDROCARBON (FPLH) RECOVERY SUMMARY

The Discharger shall include a map in each SMR that shows the locations of all wells within the refinery that contain separate phase hydrocarbons (SPH). The measured thickness of the SPH in each well should be indicated on the map next to the well. Recovery of SPH will be performed in accordance with the procedures described in the GMP. In addition, the SMR shall include a description of SPH recovery method used, recovery volume data for the reporting period and cumulative recovery data for each active recovery well or system.

4. CHEMICAL CONSTITUENT MONITORING

Refinery-Wide Groundwater Monitoring Program: All monitoring activities, including analytical and QA/QC procedures will be conducted in accordance with the GMP.