

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

CLEANUP AND ABATEMENT ORDER NO. R5-2007-0728

FOR
BIG WEST OF CALIFORNIA, LLC
AND
EQUILON ENTERPRISES LLC
BAKERSFIELD REFINERY
KERN COUNTY

This Order is issued to Big West of California, LLC, and Equilon Enterprises LLC, hereafter referred to collectively as Dischargers, based on provisions of California Water Code section 13304, which authorizes the California Regional Water Quality Control Board, Central Valley Region, (hereafter Regional Water Board) to issue a Cleanup and Abatement Order (Order), and on Water Code section 13267, which authorizes the Regional Water Board to require preparation and submittal of technical and monitoring reports.

The Executive Officer finds, with respect to the Discharger's acts or failures to act, the following:

PROPERTY OWNERSHIP AND OPERATIONS

1. Big West of California, LLC (Big West), a Utah limited liability company, currently owns and operates a refinery on 599 acres of properties it owns at 6451 Rosedale Highway in Bakersfield, California (properties hereafter referred to simply as Site, as shown on Figure 1). As Figure 1 shows, the Site consists of Area 1 (including but not limited to the Mohawk Tank Farm, Sales Terminal, and Blending Area) and Area 2. The properties and refinery, or parts and areas of them, have over the years been owned and operated by other parties. The refinery currently processes approximately 70,000 barrels of crude oil daily. Numerous pipelines exist above and below ground surface throughout the Site, including several pipelines unassociated with the refinery which transverse the Site. The Site includes many aboveground storage tanks. As summarized in more detail below, operations over the years have resulted in discharges of crude oil and various refinery products and additives, including but not limited to diesel, gasoline, reformate, and MBTE from the tanks and pipelines. These discharges deposited petroleum hydrocarbons in soils, from which the petroleum hydrocarbons then migrated to and polluted underlying groundwater as set forth in findings below. Monitoring of more than 250 groundwater monitoring and supply wells occurs regularly.
2. Big West purchased the refinery and Site from Equilon Enterprises LLC and began operating the refinery in March 2005. Discharges of petroleum hydrocarbons to soil and/or groundwater occurred in at least 2006 and 2007 and contributed to or created pollution or threat of pollution of groundwater. As current Site owner and because the discharge of petroleum hydrocarbons to soil and groundwater occurred during its operations, Big West is a responsible party for the pollution caused by its discharges and for other pollution due to its current ownership of the Site, and subject to this Order. Big West has been engaged in cleanup and abatement actions concerning the

discharges. Big West was also issued Cleanup and Abatement Order No. R5-2007-0716 to address a specific petroleum hydrocarbons discharge reported in June 2007.

3. Equilon Enterprises LLC (Equilon), a Delaware limited liability company, owned the Site from 1998 to March 2005 and operated the refinery during this period. From 1998 through 2001, Equilon was a joint venture between Texaco Refining and Marketing, Inc. (TRMI), a Delaware corporation, and Shell Oil Company, a Delaware corporation. Shell Oil Company purchased TRMI and TRMI's interest in Equilon by stock purchase agreement dated 12 December 2001 and the refinery was then operated as Equilon Enterprises LLC, doing business as Shell Oil Products US (SOPUS). SOPUS is a wholly owned subsidiary of Shell Oil Company that does refining, transporting, and marketing of petroleum. Discharges of petroleum hydrocarbons to soil and/or groundwater occurred in at least 1999, 2000 and 2001, 2003, and 2004 and contributed to or created petroleum hydrocarbons pollution or threat of pollution of groundwater. As an owner and operator during a period when petroleum hydrocarbons was discharged, Equilon is a responsible party for the pollution and subject to this Order. Shell Oil Company still owns underground pipelines that transverse the Site. At least one of the pipelines still continues to transport petroleum hydrocarbon products. Equilon is conducting groundwater monitoring, assessment and remediation (soil vapor extraction and air sparging) at the Site over portions of the Area 2 Refinery, the Blending Area, and the Mohawk Tank Farm.
4. Texaco Inc. owned and operated the Area 2 refinery from 1986 to 1987 and Area 1 from 1984 to 1987. TRMI owned and operated the Area 2 refinery from 1988 to 1998 and Area 1 from 1987 to 1998. Discharges of petroleum hydrocarbons occurred at the Area 2 refinery in at least 1987 and 1993 and in Area 1 in at least 1993 and 1996 and contributed to or created petroleum hydrocarbons pollution or threat of pollution of groundwater.
5. As Area 1 was also owned and operated by Mohawk Oil Company from 1932 to 1970, Reserve Oil and Gas Company from 1970 to 1980, and Getty Oil Company from 1980 to 1984, and as Area 2 was built and operated by the U.S. Government in 1942 and also subsequently owned by Lion Oil Company and then Tosco Oil Company from 1970 to 1986, these persons are all potentially responsible parties. However, no evidence is currently available that would justify naming them as responsible parties subject to this Order.
6. Big West, Equilon, and Texaco, Inc. received an opportunity to review a draft of this Order. Big West and Equilon have accepted responsibility for the necessary cleanup and abatement actions identified in this Order, which may be revised to name other responsible parties in the future should that prove necessary to obtain cleanup and abatement.

BACKGROUND

7. The Site is within the boundaries of the Kern County Water Agency Improvement District No. 4 (ID4). The District recharges groundwater in the vicinity of the Site through seepage from the Calloway Canal and the Kern River. The quality of the water used for recharge has total dissolved solid concentrations ranging from 100 milligrams per liter (mg/L) to 400 mg/L. Groundwater pumped from ID4 is used as a supplemental supply for portions of metropolitan Bakersfield.
8. Groundwater impacted by diesel constituents underlies most of the Site. Groundwater beneath approximately 200 acres of the Site is also impacted with significant concentrations of gasoline constituents and MTBE.
9. The groundwater surface has historically fluctuated between 50 and 150 feet below ground surface (bgs). Water levels at the Site rose approximately 100 feet between 1993 and 1999. The upper 100 feet of sediments beneath the Site consists of interbedded sands and silts. The large fluctuation of groundwater levels has led to smearing of petroleum hydrocarbons from first encountered groundwater to depths of greater than 140 feet bgs.
10. **Area 2 Refinery** - A discharge of petroleum hydrocarbons in the form of reformat (main reformat discharge) from an underground pipeline was discovered in March 1987 in the vicinity of the Area 2 refinery hydrocracker unit. Estimates of the volume of that discharge range from 1.5 million to over 2.8 million gallons. A discharge of petroleum hydrocarbons in the form of diesel in the vicinity of monitoring well R6B was reported in May 2006. The discharge was estimated at 1,000 barrels. Big West is currently removing liquid petroleum hydrocarbons from monitoring wells in the vicinity of this discharge. Liquid petroleum hydrocarbons were also recently detected in wells B-012 and ROW-2 in the southern portion of the Area 2 refinery. Maximum concentrations of MTBE, total petroleum hydrocarbons as gasoline (TPHG), and total petroleum hydrocarbons as diesel (TPHD) in groundwater beneath this area in February 2007 were 5,100 micrograms per liter (ug/L), 100,000 ug/L, and 30,000 ug/L, respectively. Maximum concentrations of benzene, toluene, ethylbenzene, and xylenes during February 2007 were 3,800 ug/L, 12,000 ug/L, 4,800 ug/L, and 24,100 ug/L, respectively. Big West submitted a work plan for additional assessment in the southern portion of the Area 2 Refinery dated 11 October 2006, which was approved by a Regional Water Board letter dated 16 November 2006. The area covered by the work plan includes the tank farm south of the high-tension power line corridor that traverses Area 2 from east to west. This area includes several former solid waste disposal sites, crude oil supply piping and metering stations, and the southern portion of the Area 2 tank farm. Assessment by Big West is ongoing.
11. **Sales Terminal** - Discharges of petroleum hydrocarbons containing MTBE occurred in the Sales Terminal area in March 1999, December 2000, and April 2001. Two groundwater extraction systems were installed downgradient of the discharge and

vapor extraction wells were installed in the vicinity of the discharge by Equilon. Maximum concentrations of MTBE, TPHG, and TPHD in groundwater beneath this area in February 2007 were 3,100 ug/L, 1,100 ug/L, and 64,000 ug/L, respectively. Maximum concentrations of benzene, toluene, ethylbenzene, and xylenes during February 2007 were 27 ug/L, 21 ug/L, 170 ug/L, and 1,120 ug/L, respectively. Petroleum hydrocarbons were detected during February 2007 to the west and offsite of the Sales Terminal at maximum concentrations of 420 ug/L, 2,100 ug/L, and 1,100 ug/L for MTBE, TPHD and TPHG, respectively.

12. **Blending Area** - A discharge of 2,300 gallons of MTBE from a railroad car occurred in July 1996 in the Blending area. Several smaller discharges were also reported in this area. Liquid petroleum hydrocarbons are routinely detected in monitoring well B-109. Five feet of petroleum hydrocarbons were detected in B-109U in July 2007. The source for the liquid petroleum hydrocarbons is unknown. Recent studies in the Blending Area indicate that some soils in this area are impacted by elevated concentrations of chromium and arsenic, and by elevated-to-hazardous concentrations of lead. Soils in the southeastern and southern portions of this area are impacted by gasoline and diesel. Soils had a maximum lead total threshold limit concentration (TTL) of 8,560 milligrams per kilogram (mg/kg) and a maximum chromium TTL of 164 milligrams per kilogram. Maximum concentrations of MTBE, TPHG and TPHD in groundwater beneath this area in February 2007 were 940 ug/L, 30,000 ug/L, and 13,000 ug/L, respectively. Maximum concentrations of benzene, toluene, ethylbenzene, and xylenes during February 2007 were 2,400 ug/L, 2,100 ug/L, 1,100 ug/L, and 10,400 ug/L, respectively. Big West submitted a work plan for additional assessment of soil and groundwater conditions in this area dated 11 October 2006 that was approved by a Regional Water Board letter dated 16 November 2007. Assessment of this area by Big West is ongoing.

13. **Mohawk Tank Farm** – This area is directly south of the Blending Area. A discharge of less than 500 barrels of residual gas oil from the RGO pipeline, located in the northwest corner of the area, was reported in January 2007. Big West reported greater than 20 feet of liquid petroleum hydrocarbons in monitoring well BWM-5U in June 2007. The liquid petroleum hydrocarbons are being assessed and removed under Cleanup and Abatement Order No. R5-2007-0716. A discharge of an unknown amount of petroleum hydrocarbons was reported from a flange near 72P15 in January 2006. Initial assessment in the vicinity of the flange indicates impacts of petroleum hydrocarbons to deeper soils may be related to operation of other equipment in the area. Liquid petroleum hydrocarbons have been detected in monitoring well BWM-4U in the northeastern portion of the area. The source of the petroleum hydrocarbons has not yet been identified. In the vicinity of BWM-6U, in the northwest corner of the area, groundwater has been impacted by MTBE, diesel and gasoline. Maximum concentrations of MTBE, TPHG, and TPHD in groundwater beneath this area in October 2006 were 94 ug/L, 40,000 ug/L, and 32,000 ug/L, respectively. Maximum concentrations of benzene, toluene, ethylbenzene, and xylenes in May 2006 were 950 ug/L, 1,900 ug/L, 4,100 ug/L, and 7,200 ug/L, respectively. Soil assessments in

the Mohawk Tank Farm have detected lead and chromium at elevated-to-hazardous concentrations. Soils had a maximum lead TTLC concentration of 5,670 milligrams per kilogram and maximum chromium TTLC of 6,920 mg/kg. Big West submitted a work plan dated 11 October 2006 proposing additional assessment in this area that was approved in Regional Water Board letter dated 16 November 2006. Big West submitted a work plan dated 16 April 2007 proposing assessment in the vicinity of a flange leak near 72P15 that was approved by a Regional Water Board letter dated 1 May 2007. Assessments by Big West are ongoing.

14. **Soil Vapor Extraction System** – A soil vapor extraction (SVE) system has been utilized at the Site to remove volatile petroleum hydrocarbons from the vadose zone. The majority of the SVE wells are in the vicinity of the Area 2 refinery and the Sales Terminal. Three SVE wells exist in the northern portion of the Mohawk Tank Farm and one exists in the Blending Area. The SVE system was shut down in March 2005 when Equilon sold the Bakersfield refinery to Big West and the system has not been restarted to date. SOPUS is rebuilding the SVE system to run independently from the refinery. SOPUS reported operation would resume in July 2007. The Regional Water Board requested an evaluation of the SVE and air sparge systems in October 2006. SOPUS submitted a proposed outline dated 12 July 2007 for the evaluation. The outline was approved with revisions by a Regional Water Board letter dated 16 August 2007.
15. **Air Sparge System** – An air sparge (AS) system is operated at the Site by SOPUS to add oxygen to the groundwater and enhance biodegradation. The system consists of 46 multi-level well clusters located principally in the vicinity of and to the west and north of the Area 2 refinery.
16. Diesel constituents have been detected in western and northwestern perimeter monitoring wells and/or offsite monitoring wells. The lateral extent of diesel-impacted groundwater is not delineated along the western and northwestern borders of the Site.

AUTHORITY – LEGAL REQUIREMENTS

17. Section 13304(a) of the California Water Code provides that:

Any person who has discharged or discharges waste into waters of the state in violation of any waste discharge requirements or other order or prohibition issued by a regional board or the state board, or who has caused or permitted, causes or permits, or threatens to cause or permit any waste to be discharged or deposited where it is, or probably will be, discharged into the waters of the state and creates, or threatens to create, a condition of pollution or nuisance, shall upon order of the regional board clean up the waste or abate the effects of the waste, or, in the case of threatened pollution or nuisance, take other necessary remedial action, including but not limited to, overseeing cleanup and abatement efforts. Upon failure of any person to comply with the cleanup or abatement order, the Attorney General, at the request of the regional board, shall petition the superior court for that county for the issuance of an injunction requiring the person to comply with the order. In the suit, the court shall have jurisdiction to grant a prohibitory or mandatory injunction, either preliminary or permanent, as the facts may warrant.

18. Section 13267(b)(1) of the California Water Code provides that:

In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.

19. Section 13304(c)(1) of the California Water Code provides that:

. . . the person or persons who discharged the waste, discharges the waste, or threatened to cause or permit the discharge of the waste within the meaning of subdivision (a), are liable to that government agency to the extent of the reasonable costs actually incurred in cleaning up the waste, abating the effects of the waste, supervising cleanup or abatement activities, or taking other remedial actions. . .

20. The State Water Resources Control Board (hereafter State Water Board) has adopted Resolution No. 92-49, the *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304*. This Policy sets forth the policies and procedures to be used during an investigation or cleanup of a polluted site and requires that cleanup levels be consistent with State Water Board Resolution 68-16, the *Statement of Policy With Respect to Maintaining High Quality of Waters in California*. Resolution 92-49 and the Basin Plan establish the cleanup levels to be achieved. Resolution 92-49 requires the waste to be cleaned up to background, or if that is not reasonable, to an alternative level that is the most stringent level that is economically and technologically feasible in accordance with Title 23, California Code of Regulations (CCR) Section 2550.4. Any alternative cleanup level to background must: (1) be consistent with the maximum benefit to the people of the state; (2) not unreasonably affect present and anticipated beneficial use of such water; and (3) not result in water quality less than that prescribed in the Basin Plan and applicable Water Quality Control Plans and Policies of the State Water Board. Resolution 92-49 directs that investigation proceed in a progressive sequence. To the extent practical, it directs the Regional Water Board to require and review for adequacy written work plans for each element and phase, and the written reports that describe the results of each phase of the investigation and cleanup.
21. Chapter IV of the Basin Plan contains the policy for *Investigation and Cleanup of Contaminated Sites*, based on Water Code Sections 13000 and 13304; Title 27, CCR, section 20005, et seq. (Title 27); and State Water Board Resolution Nos. 68-16 and 92-49. The strategy includes site investigation, source removal or containment, information required for consideration in establishing cleanup levels, and the basis for establishment of soil and groundwater cleanup levels.

22. The State Water Board's *Water Quality Enforcement Policy* states, in part, that spills that result in adverse impact to beneficial uses of groundwater or violate water quality objectives are priority violations. The policy states that, if any violation continues, the enforcement response should be quickly escalated to increasingly more formal and serious actions until compliance is achieved.
23. The Water Quality Control Plan for the Tulare Lake Basin, Second Edition, (hereafter Basin Plan) designates beneficial uses of the waters of the State and establishes water quality objectives to protect those areas. The Site overlies groundwater within the Kern County Basin Hydrologic Unit, Detailed Analyses Unit No. 254. Present and potential future beneficial uses of the groundwater as designated by the Basin Plan for Unit No. 254, include municipal and domestic supply (MUN).
24. The Basin Plan contains numerical water quality objectives (WQOs) that apply to surface water and groundwater, including, for example, drinking water maximum contaminant levels (MCLs) promulgated in Title 22, CCR, Division 4, Chapter 15 (hereafter Title 22) that the Basin Plan applies directly to waters designated as MUN. Waste constituents discharged by the Dischargers for which there is a numerical WQO are as follows:

Constituent	Limits*	WQO	Reference
Benzene	1	Chemical	Primary MCL, Title 22
Toluene	150	Chemical	Primary MCL, Title 22
Ethylbenzene	300	Chemical	Primary MCL, Title 22
Xylene	1750	Chemical	Primary MCL, Title 22
Methyl Tert-butyl Ether	13	Chemical	Primary MCL, Title 22
Methyl Tert-butyl Ether	5	Chemical	Secondary MCL, Title 22

* In micrograms per liter (ug/L)

25. The concentrations in groundwater (Findings 10, 11, 12 and 13) of the waste constituents listed in Finding 24 significantly exceed the numerical WQOs for the constituents. As the Dischargers have discharged or deposited waste where it has caused exceedence of numerical WQOs, they have created a condition of pollution, as defined in California Water Code Section 13050(l)(1).
26. Petroleum hydrocarbons discharged to and deposited within soil will continue to migrate to groundwater, float as liquid on groundwater, and/or dissolve into groundwater. Petroleum hydrocarbons dissolved in groundwater will continue to disperse and migrate to unaffected and less affected waters. These petroleum hydrocarbons will continue to alter the quality of groundwater to a degree that unreasonably affects the waters for designated beneficial uses, continuing and expanding a condition of pollution unless cleaned up.

27. The Basin Plan contains narrative WQOs that apply to both surface and groundwater for tastes and odors, toxicity, and chemical constituents. The taste and odor WQO requires, in part, that, groundwater and surface water not contain substances in concentrations that cause nuisance, adversely affect beneficial uses, or impart undesirable tastes and odors to municipal and domestic water supplies. The toxicity WQO requires, in part, that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans. The chemical constituent WQO requires, in part, that groundwater not contain chemical constituents in concentrations that adversely affect any beneficial use.
28. Chapter IV of the Basin Plan contains the *Policy for Application of Water Quality Objectives*, (WQO Policy) which provides that “[w]here compliance with narrative objectives is required (i.e., where the objectives are applicable to protect specified beneficial uses), the Regional Water Board will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives.” Compliance with narrative WQO requires consideration of site-specific information and of relevant numerical criteria and guidelines developed or published by other agencies and organizations. Such numerical criteria and guidelines relevant to the waste constituents described in Findings 10, 11, 12 and 13 include the following:

Constituent	Limits*	WQO	Reference
TPHG	5	Taste and Odor	McKee & Wolf, <i>Water Quality Criteria</i> , SWRCB, p. 230 (2) USEPA Drinking Water Health Advisory
TPHD	100	Toxicity, Taste and Odor	1980 USEPA suggested no adverse response level
Toluene	42	Taste and Odor	Federal Register, Vol. 54, No. 97
Ethylbenzene	29	Taste and Odor	Federal Register, Vol. 54, No. 97
Xylene	17	Taste and Odor	Federal Register, Vol. 54, No. 97
Benzene	0.15	Toxicity	California Public Health Goal (OEHHA)

*in micrograms per liter (µg/L)

29. Consistent with the WQO Policy, the limits for the waste constituents listed in Finding 28, above, are relevant and appropriate to use to evaluate compliance with the narrative WQOs for taste and odor, and for toxicity. The concentrations of waste constituents in groundwater, or likely to occur in groundwater after migration from soils, significantly exceed the groundwater limits set forth in Finding 28. Therefore, the Dischargers have created a situation that exceeds the narrative taste and odor and toxicity WQOs and creates a condition of pollution.
30. Title 22, CCR, section 66261.24, defines hazardous waste based on concentrations of constituents of concern. The hazardous TTLC as included in section 66261.24 for lead is 1,000 mg/kg and the soluble threshold limit concentration (STLC) is 5 milligrams per liter (mg/L). The hazardous TTLC for chromium is 2,500 mg/kg and the STLC is

5 mg/L. Section 66261.24 states that any waste having concentrations equal or greater than the above stated concentrations is a hazardous waste. As established by Finding 12, hazardous waste has been discharged within the Blending Area, and as indicated in Finding 13, hazardous waste has also been discharged in the Mohawk Tank Farm.

31. Title 23, California Code of Regulations (CCR), Division 3, Chapter 30, Articles 1 and 2, sections 3890 through 3895, require that the Dischargers submit analytical data electronically via the internet using electronically deliverable formats (EDF) designated by the State Water Board that are both non-proprietary and available as public domain. All EDF data must be submitted over the Internet to the State Water Board Geographic Environmental Information Management System database (Geotracker). In addition, section 3895(b) allows the Regional Water Board to specify submittal in alternative forms provided the benefit or need for it bears a reasonable relationship to the burden of producing it.
32. Sections 25270 to 25270.13 of the California Health and Safety Code regulate aboveground storage tanks to protect natural resources from discharges of petroleum hydrocarbons. The regulations became effective 1 January 1990. The regulations in general require owners or operators of aboveground storage tanks to register the tanks with the State, provide secondary containment, install and maintain a system for detection of leaks, and implement measures to prevent discharges.
33. Section 13350 of the California Water Code states, in part, that any person who violates a cleanup and abatement order may be liable civilly in accordance with subdivision (d) or (e) thereof. Section 13268 of the California Water Code states, in part, that any person failing or refusing to furnish a technical or monitoring report, or falsifying any information provided therein, may be liable civilly in accordance with subdivision (b) thereof. The Regional Water Board may impose civil liability administratively in accordance with California Water Code Section 13323, et seq.

DISCHARGER LIABILITY

34. As described in the above Findings, the Dischargers are subject to an order pursuant to Water Code section 13304 because the Dischargers have discharged or deposited waste and caused or permitted waste to be discharged or deposited where it has discharged to waters of the state and has created, and continues to threaten to create, a condition of pollution. The condition of pollution is a priority violation and issuance or adoption of a cleanup or abatement order pursuant to Water Code section 13304 is appropriate and consistent with policies of the Regional Water Board. If additional parties are determined to be responsible for this discharge of waste, this Order may be amended and issued to those parties and the Dischargers.
35. This Order requires investigation and cleanup of the Site in compliance with the Water Code, the applicable Basin Plan, Resolution 92-49, Title 27, and other applicable plans, policies, and regulations.

36. As described in the above Findings, the Dischargers are subject to an order pursuant to Water Code section 13267 to submit technical reports because existing data and information about the Site indicate that waste has been discharged, is discharging, or is suspected of discharging, at the property, which is or was owned and/or operated by the Dischargers named in this Order. The technical reports required by this Order are necessary to assure compliance with section 13304 of the Water Code, including prompt identification and abatement of the source and investigation and cleanup of the affected area to protect the beneficial uses of waters of the state, to protect against nuisance, and to protect human health and the environment.
37. The issuance of this Order is an enforcement action taken by a regulatory agency and is exempt from the provisions of the California Environmental Quality Act (Public Resources Code, section 21000, et seq.), pursuant to Title 14 CCR section 15321(a)(2). The implementation of this Order is also an action to assure the restoration of the environment and is exempt from the provisions of the California Environmental Quality Act (Public Resources Code, section 21000, et seq.), in accordance with Title 14 CCR, sections 15308 and 15330.

REQUIRED ACTIONS

IT IS HEREBY ORDERED that, pursuant to California Water Code section 13000, section 13304 and section 13267, the Dischargers shall:

1. Forthwith investigate the discharges of waste, cleanup the waste, and abate the effects of the discharge of waste, including petroleum hydrocarbons and hazardous waste, to soil and groundwater, in conformance with State Water Board Resolution No. 92-49 *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304* and with the Water Board's *Water Quality Control Plan for the Tulare Lake Basin* (in particular the Policies and Plans listed within the Control Action Considerations portion of Chapter IV). "Forthwith" means as soon as is reasonably possible without risk to health and safety. Staff when referenced below means Regional Water Board technical staff. Compliance with this requirement shall include, but not be limited to, completing the tasks listed below.

REMEDATION SYSTEMS

2. Start full operation of the soil vapor extraction system and the air sparge system as soon as practicable but no later than **1 November 2007**. The systems shall be operated so as to maximize the efficiency of remediation of impacted groundwater and soil at the Site.
3. **By 3 December 2007**, submit a technical report containing a performance evaluation report on the Site remedial systems acceptable to the Executive Officer. The evaluation should be prepared in accordance with the outline as approved by a Regional Water Board letter dated 16 August 2007. Using existing data available to

Big West and/or Equilon, the report shall evaluate the systems efficiency in remediating impacted groundwater and sources of impact or potential impact to groundwater. The report shall propose expansion of the existing systems or other remedial options if it is found that the SVE and/or AS systems are not efficiently treating impacted groundwater and/or source areas in all areas of the Site.

4. **By 31 January of each calendar year**, submit an annual technical report providing a detailed evaluation of the operation and effectiveness of all remediation systems being operated at the Site.

SALES TERMINAL

5. **By 30 November 2007**, submit a technical report containing a work plan for assessment of the lateral and vertical extent of petroleum hydrocarbon impacted groundwater downgradient from and offsite of the Sales Terminal. The work plan needs to propose sufficient sampling points to delineate the extent of impacted groundwater. The assessment needs to provide sufficient data to allow design of a remediation system to cleanup impacted groundwater offsite of refinery property and provide hydraulic control to prevent offsite migration of impacted groundwater. The work plan needs to include a time schedule for completion of the assessment.
6. Within **30 days** of staff concurrence with the Assessment Work Plan, but no later than **60 days** from submittal of the plan, implement the work plan in accordance with the approved time schedule as approved or directed by the Executive Officer, which shall become part of this Order.
7. Within **120 days** of staff concurrence with the assessment report, submit a technical report evaluating effective cleanup and abatement options and proposing a preferred cleanup and abatement alternative for the offsite impacted groundwater and the preferred option for preventing offsite migration of impacted groundwater. The report needs to include a timetable for implementation of the proposed remedial option(s).
8. Within **30 days** of staff concurrence, implement the approved alternative in accordance with a time schedule as approved or directed by the Executive Officer, which shall become part of this Order.

BLENDING AREA

9. **By 1 November 2007**, submit a technical assessment report on soil and groundwater with elevated and/or hazardous concentrations of petroleum hydrocarbons and metals in accordance with the approved workplan dated 15 September 2006.
10. Within **150 days** of staff concurrence with the assessment report, submit a technical report evaluating effective cleanup and abatement options and proposing a preferred

cleanup and abatement alternative. The report needs to include a timetable for implementation of the proposed remedial options.

11. Within **30 days** of staff concurrence, implement the approved alternative in accordance with the time schedule as approved or directed by the Executive Officer, which shall become part of this Order.
12. **By 15 November 2007**, submit an Assessment Work Plan for assessment of the source and the lateral extent of liquid petroleum hydrocarbons in the vicinity of monitoring well B-109U. The work plan shall propose a sufficient number of borings and samples to accomplish the goal of the assessment. The work plan shall include a time schedule for implementing the work.
13. Within **30 days** of staff concurrence with the Assessment Work Plan, but no later than **60 days** from submittal of the plan, implement the work plan in accordance with the time schedule as approved or directed by the Executive Officer, which shall become part of this Order.
14. Submit a technical Assessment Report defining the source and lateral extent of liquid petroleum hydrocarbons in accordance with the approved time schedule. The report shall propose remedial options for removal of liquid petroleum hydrocarbons and include a time schedule for installation of equipment required for the preferred remedial option.
15. Within **30 days** of staff concurrence, implement the approved alternative in accordance with the time schedule as approved or directed by the Executive Officer, which shall become part of this Order.

MOHAWK TANK FARM

16. By **1 October 2007**, submit a technical report on the assessment of elevated and/or hazardous concentrations of metals as proposed in Big West's work plan dated 11 October 2006 and approved by a Regional Water Board letter dated 16 November 2006. The report needs to include an evaluation of the potential impacts to groundwater, health and safety, and the environment posed by the metal impacted soils being assessed.
17. If data from the assessment report indicate that metal impacted soils pose a threat or potential threat to health and safety, or the environment, submit a technical report evaluating remedial options for cleanup of soils impacted by metals within **120 days** of staff concurrence with the assessment report. The report needs to include a timetable for implementation of the proposed remedial options.

18. Within **30 days** of staff concurrence with the report evaluating remedial options, implement the approved alternative(s) in accordance with the time schedule as approved or directed by the Executive Officer, which shall become part of this Order.
19. By **23 November 2007**, submit a technical report on the additional assessment of soil impacted by petroleum hydrocarbons in the vicinity of the flange leak near 72P15 as proposed in a Big West work plan dated 16 April 2007 and approved in a Regional Water Board letter dated 1 May 2007. The report needs to include an evaluation of the potential impacts to groundwater, health and safety, and the environment posed by the impacted soil.
20. If data from the assessment report indicate that petroleum hydrocarbon impacted soils pose a threat or potential threat to groundwater, health and safety, or the environment, submit a technical report evaluating remedial options for cleanup of soils within **180 days** of staff concurrence with the assessment report. The report needs to include a timetable for implementation of the proposed remedial options.
21. Within **30 days** of staff concurrence with the technical report, implement the approved alternative(s) in accordance with the time schedule as approved or directed by the Executive Officer, which shall become part of this order.
22. **By 3 December 2007** submit a technical report containing a work plan for assessment of the source and the lateral extent of liquid petroleum hydrocarbons in the vicinity of monitoring well BWM-4U. The work plan shall propose a sufficient number of borings and samples to accomplish the goal of the assessment. The work plan shall include a time schedule for implementing the work.
23. Within **30 days** of staff concurrence with the work plan, but no later than **60 days** from submittal of the plan, implement the work plan in accordance with the time schedule as approved or directed by the Executive Officer, which shall become part of this Order.
24. Submit an technical report defining the source and lateral extent of liquid petroleum hydrocarbons in the vicinity of BWM-4U in accordance with the approved time schedule. The report shall propose remedial options for removal of liquid petroleum hydrocarbons and include a time schedule for installation of equipment required for the preferred remedial option.
25. Within **30 days** of staff concurrence, implement the approved alternative in accordance with the time schedule as approved or directed by the Executive Officer, which shall become part of this Order.
26. **By 3 December 2007** submit a technical report containing a work plan for assessment of the lateral and vertical extent of petroleum hydrocarbon impacted groundwater in the vicinity of and downgradient of BWM-6U. The work plan shall propose a sufficient

number of borings and samples to accomplish the goal of the assessment. The work plan shall include a time schedule for implementing the work.

27. Within **30 days** of staff concurrence with the work plan, but no later than **60 days** from submittal of the plan, implement the work plan in accordance with the time schedule as approved or directed by the Executive Officer, which shall become part of this Order.

AREA 2 REFINERY

28. The Dischargers shall continue routine removal of liquid petroleum hydrocarbons in the vicinity of monitoring well RB6 in a manner that allows removal of the liquid petroleum hydrocarbons in the shortest practicable period of time. When liquid petroleum hydrocarbons is removed to a point where feasible methods of removal are no longer effective, the Dischargers shall submit a request to the Executive Officer for cessation of liquid petroleum hydrocarbons removal in the affected wells. Liquid petroleum hydrocarbons removal shall be continued until cessation is approved by the Executive Officer. The Dischargers shall summarize the status of liquid petroleum hydrocarbon levels and removal in quarterly reports.
29. By **2 January 2008**, submit a technical report containing a work plan for assessment of the source of liquid petroleum hydrocarbons and impacts to groundwater in the vicinity of monitoring wells ROW-2, B-12 and in any other wells in the vicinity of these wells where liquid petroleum hydrocarbons and/or high concentrations of petroleum hydrocarbons are detected in groundwater. The work plan shall propose a sufficient number of borings and samples to accomplish the goal of the assessment. The work plan shall include a time schedule for implementing the work.
30. Within **30 days** of staff concurrence with the work plan, but no later than **60 days** from submittal of the plan, implement the work plan in accordance with the time schedule as approved or directed by the Executive Officer, which shall become part of this Order.
31. If data from the assessment report indicate that petroleum hydrocarbon impacted soils pose a threat or potential threat to groundwater, health and safety, or the environment, submit a technical report evaluating remedial options for cleanup of soils within **120 days** of staff concurrence with the assessment report. The report needs to include a timetable for implementation of the proposed remedial option(s).
32. Within **30 days** of staff concurrence with the report, implement the approved alternative(s) in accordance with the time schedule as approved or directed by the Executive Officer, which shall become part of this order.
33. By **14 November 2007**, submit a technical report on the additional assessment of soil impacted by metals and petroleum hydrocarbons in the southern portion of the Area 2 Refinery as proposed in a Big West work plan dated 11 October 2006 and approved by

a Regional Water Board letter dated 16 November 2006. The report needs to include an evaluation of the potential impacts to groundwater, health and safety, and the environment posed by the impacted soil.

34. If data from the assessment report indicate that impacted soils pose a threat or potential threat to groundwater, health and safety, or the environment, submit a technical report evaluating remedial options for cleanup of soils within **180 days** of staff concurrence with the assessment report. The report needs to include a timetable for implementation of the proposed remedial options.
35. Within **30 days** of staff concurrence with the report, implement the approved alternative(s) in accordance with the time schedule as approved or directed by the Executive Officer, which shall become part of this order.

WESTERN PLUME PERIMETER

36. **By 15 December 2007**, submit a technical report containing a work plan for defining the lateral extent of diesel impacted groundwater along the western edge of the Site west of the Area 2 Refinery and along the Calloway Canal. The work plan needs to propose a sufficient number of monitoring points to allow the assessment of the western edge of impacted groundwater originating from the Site and include a time schedule for implementation.
37. Within **30 days** of staff concurrence with the work plan and by **60 days** from submittal of the plan, implement the work plan in accordance with the time schedule as approved or directed by the Executive Officer, which shall become part of this Order.

UNDERGROUND PIPELINES

38. **By 17 December 2007**, submit a technical report documenting the facility plan for routine maintenance and testing of underground pipelines used to convey petroleum hydrocarbons and/or other hazardous liquid materials. The plan should include a time schedule for implementation of the plan.
39. Within **30 days** of staff concurrence with the pipeline maintenance and testing plan, but no later than **60 days** from submittal of the plan, implement the plan in accordance with the time schedule as approved or directed by the Executive Officer, which shall become part of this Order.

DISCHARGE RESPONSE

40. **By 17 December 2007** submit a technical report proposing procedures for reporting, response to, and assessment of future discharges of petroleum hydrocarbons and other hazardous liquids and solids.

ABOVEGROUND STORAGE TANKS

41. **By 2 January 2008**, submit a technical report that accounts for each AST and documents that each AST is either equipped or fitted, or proposes that it be equipped or retrofitted, with a reliable method of detecting a leak or discharge as soon after the event as feasible to prevent and minimize future impacts to groundwater. The plan shall include a proposed time schedule for beginning and completing implementation at all ASTs where additional measures are required.
42. Within **90 days** of staff concurrence with the detection plan, implement the plan in accordance with the time schedule as approved or directed by the Executive Officer, which shall become part of this Order.

PUBLIC PARTICIPATION

43. **By 7 January 2008** submit and implement a Public Participation Plan. The Public Participation Plan shall describe how the Dischargers will solicit the public's concerns and disseminate information to the public regarding the investigation and proposed cleanup activities at the site. The Public Participation Plan shall be updated as necessary to reflect any significant changes in the degree of public interest as the site investigation and cleanup process moves toward completion.

ASSESSMENT OF THREAT TO HUMAN HEALTH AND SAFETY

44. **By 7 January 2008**, submit a work plan to assess whether soil and/or groundwater impacted by petroleum hydrocarbons, metals and/or other constituents pose a threat to human health and safety. The proposed assessment must evaluate all potential exposure pathways and use the Office of Environmental Health Hazard Assessment (OEHHA) toxicity data (California cancer slopes). The initial assessment may be based primarily on existing site data. Additional site assessment shall be proposed as necessary to collect data needed to fully assess the threat to human health and safety. The initial assessment shall be submitted within 90 days of approval of the work plan.

GENERAL REQUIREMENTS

45. **By 31 October 2007**, the Dischargers shall notify the Regional Water Board in writing of which individual Discharger named herein will be lead for each required action in this Order.
46. As required by the California Business and Professions Code sections 6735, 7835, and 7835.1, have reports prepared by, or under the supervision of, a registered professional engineer or geologist and signed by the registered professional. All technical reports submitted by the Discharger(s) shall include a cover letter signed by the Discharger(s), or an authorized representative, certifying under penalty of law that the signer has examined and is familiar with the report and that to their knowledge, the report is true,

complete, and accurate. The Discharger(s) shall also state if they agree with any recommendations/proposals and whether they approved implementation of said proposals.

47. Conduct work only after Regional Water Board staff concurs with the proposed work.
48. The Dischargers shall operate the remedial systems continually except for brief shutdowns for maintenance and/or repair. The Dischargers shall at all times, properly operate and maintain all facilities and systems of treatment and control (and related equipment) that are installed or used by the Dischargers to achieve compliance with the conditions of this Order. The Dischargers shall notify the Regional Water Board prior to any planned shutdown of any treatment or remediation system of more than three days. The Dischargers shall notify the Regional Water Board of any unplanned shutdown of any treatment or remediation that lasts more than three days and state the estimated time to restart the system(s) and the steps being taken to restart the system(s).
49. Notify Regional Water Board staff at least three working days prior to any onsite work, testing, or sampling that pertains to environmental remediation and investigation and is not routine monitoring, maintenance, or inspection.
50. Obtain all local and state permits and access agreements necessary to fulfill the requirements of this Order prior to beginning the work.
51. Continue any remediation or monitoring activities until such time as the Executive Officer determines that sufficient remediation has been accomplished to fully comply with this Order and this Order has been either amended or rescinded in writing.
52. Optimize remedial systems as needed to improve system efficiency, operating time, and/or waste removal rates, and report on the effectiveness of the optimization in quarterly reports.
53. Maintain a sufficient number of monitoring wells to completely define and encompass the above waste plume(s). If groundwater monitoring indicates the waste in groundwater has migrated beyond laterally or vertically defined limits during the quarter, then the quarterly monitoring reports must include a work plan and schedule, with work to begin within thirty days of Regional Water Board staff approval, to define the new plume limits.
54. The Dischargers shall comply with Monitoring and Reporting Program No. R5-2007-0728, which is attached to and made part of this Order. A violation of Monitoring and Reporting Program No. R5-2007-0728 is a violation of this Order.
55. Each individual Discharger shall supply each of the other Dischargers herein named with timely updates on activities conducted under this Order and shall provide the other

Dischargers with copies of reports, correspondence, and other documents produced to meet the requirements of this Order.

56. If, for any reason, the Dischargers are unable to perform any activity or submit any document in compliance with the schedule set forth herein, or in compliance with any work schedule submitted pursuant to this Order and approved by the Executive Officer, the Dischargers may request, in writing, an extension of the time specified. The extension request shall include justification for the delay. An extension may be granted by revision of this Order or by a letter from the Executive Officer.
57. Reimburse the Regional Water Board for reasonable costs associated with oversight of the investigation and remediation of the Site.

If, in the opinion of the Executive Officer, the Dischargers fail to comply with the provisions of this Order, the Executive Officer may refer this matter to the Attorney General for judicial enforcement or may issue a complaint for administrative civil liability.

Any person affected by this action of the Regional Water Board may petition the State Water Board to review the action in accordance with section 13320 of the Water Code and Title 23, California Code of Regulations, Section 2050. The petition must be received by the State Water Resources Control Board, Office of Chief Counsel, P. O. Box 100, Sacramento 95812, within 30 days of the date of this Order. Copies of the law and regulations applicable to filing petitions will be provided upon request and are available at www.waterboards.ca.gov.

Any person affected by this action of the Regional Water Board may also request an evidentiary review by the Executive Officer or the Regional Water Board. The review request should specify whether an evidentiary hearing is being requested. The request for review should be sent to Mr. Bert Van Voris, California Regional Water Quality Control Board, Central Valley Region, 1685 E Street, Fresno, CA 93706. Mr. Van Voris must receive the review request within 30 days of the date of this Order. Failure to request a review may prevent you from submitting new evidence in support of a State Water Board petition. A review request under this paragraph does not extend the 30-day period to file a petition with the State Water Board.

This Order is effective upon the date of signature.

Original signed by
PAMELA C. CREEDON, Executive Officer

10 October 2007

(Date)

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2007-0728

BIG WEST OF CALIFORNIA, LLC
AND EQUILON ENTERPRISES LLC
BAKERSFIELD REFINERY
KERN COUNTY

Compliance with this Monitoring and Reporting Program is required pursuant to the California Water Code section 13267 as ordered by Cleanup and Abatement Order No. R5-2007-0728 (CAO). Failure to comply with this program constitutes noncompliance with the CAO and California Water Code, which can result in the imposition of civil monetary liability. All sampling and analyses shall be by USEPA approved methods. The test methods chosen for detection of the constituents of concern shall be subject to review and concurrence by the Regional Water Quality Control Board, Central Valley Region (Regional Water Board).

A complete list of substances which are tested for and reported on by the testing laboratory shall be provided to the Regional Water Board. All peaks must be reported. In addition, both the method detection limit and the practical quantification limit shall be reported. Detection limits shall equal or be more precise than USEPA methodologies. Water samples must be analyzed within allowable holding time limits as specified in 40 CFR Part 136. All QA/QC samples must be run on the same dates when samples were actually analyzed. Proper chain of custody procedures must be followed and a copy of the completed chain of custody form shall be submitted with the report. All analyses must be performed by a California Department of Health Services certified laboratory.

The Discharger shall maintain all sampling and analytical results: date, exact place, and time of sampling; dates analyses were performed; analyst's name; analytical techniques used; and results of all analyses. Such records shall be retained for a minimum of three years. This period of retention shall be extended during the course of any unresolved litigation regarding this discharge, or when requested by the Regional Water Board.

GROUNDWATER MONITORING

The Dischargers shall collect groundwater samples from groundwater monitoring wells (provided sufficient water exists in a well to be sampled) and nearby supply wells in accordance with the Groundwater Monitoring Schedule included as Attachment A. Any monitoring wells installed in the future shall be added to the groundwater monitoring program and sampled quarterly. The groundwater surface elevation (in feet and hundredths, M.S.L.) in all monitoring wells shall be measured and used to determine the gradient and direction of groundwater flow. All wells with historical concentrations of total petroleum hydrocarbons as diesel (TPHD), total petroleum hydrocarbons as gasoline (TPHG), and/or other petroleum hydrocarbons greater than 3,000 micrograms per liter shall be measured for liquid petroleum hydrocarbons during each regular monitoring event.

The following shall constitute the monitoring program for groundwater.

<u>Constituent</u>	<u>Detection Limit ug/L</u>	<u>EPA Method</u>
Total petroleum hydrocarbons as gasoline	50	EPA 8015 modified
Total petroleum hydrocarbons as diesel	50	EPA 8015 modified
Benzene	0.5	EPA 8260
Toluene	0.5	EPA 8260
Ethylbenzene	0.5	EPA 8260
Xylenes	0.5	EPA 8260
Methyl tert-butyl ether	1	EPA 8260
Dissolved oxygen		Field*
pH		Field*
<u>Electrical Conductivity</u>		Field*

*Instrument calibration logs shall be included in the monitoring reports
 ug/L – micrograms per liter

REMEDIATION SYSTEMS

Reports on remediation systems at the site shall be included with the groundwater monitoring reports and submitted quarterly. The reports shall contain the following information regarding the site remediation systems:

1. Maps showing location of all remediation wells;
2. Status of each remediation system including amount of time operating and down time for maintenance and/or repair;
3. Air sparge well operating records including status of each well and volume and pressure of air being injected;
4. Soil vapor extraction well records including status of each well and PID readings or other acceptable methods of determining relative volatile concentrations taken at a minimum quarterly. Readings of volatile concentrations drawn from SVE wells need to be taken at a frequency that allows the efficient operation and evaluation of the SVE system.
5. The report needs to include an evaluation of the SVE system including the amount of petroleum hydrocarbons removed.
6. Daily field sheets shall document field activities conducted during each site visit and shall be included in the quarterly reports.

MONITORING FREQUENCIES

Specifications in this monitoring program are subject to periodic revisions. Monitoring requirements may be modified or revised by the Executive Officer based on review of monitoring data submitted pursuant to this Order. Monitoring frequencies may be adjusted or parameters and locations removed or added by the Executive Officer if site conditions indicate that the changes are necessary.

REPORTING REQUIREMENTS

1. The Dischargers shall report all monitoring data and information as specified herein. Reports that do not comply with the required format will be REJECTED and the Dischargers shall be deemed to be in noncompliance with the Monitoring and Reporting Program.
2. Quarterly groundwater monitoring and remediation system reports shall be submitted to the Regional Water Board according to the schedule below.

<u>Monitoring Period</u>	<u>Report Due</u>
January – March	April 30
April – June	July 31
July – September	October 31
October – December	January 31

Groundwater monitoring reports shall include a contour map showing groundwater elevations at the site and the groundwater flow direction. The quarterly groundwater monitoring reports shall include tables summarizing the historical depth-to-water, groundwater elevations and historical analytical results for each monitoring well. The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall be reported to the Regional Water Board. Field monitoring well sampling sheets shall be completed for each monitoring well sampled and included in the report.

3. The Dischargers shall submit an annual report by January 31 of each year for the preceding year. The report can be combined with the Dischargers' fourth quarter report. The report shall contain:
 - a. An in depth evaluation of groundwater conditions at the site including trends of the constituents of concern in each area of the site;
 - b. An evaluation of the effectiveness of each of the remediation systems. The evaluation shall include the effectiveness of the systems in remediating impacted groundwater and each of the significant source areas or suspected source areas.
 - c. A summary of the performance of each remediation systems including the amount and percentage of operating and downtime, and the amount of petroleum hydrocarbons removed.
4. In reporting the monitoring data, the Discharger's shall arrange the data in tabular form so that the date, the constituents, and the concentrations are readily discernible. The data shall be summarized to demonstrate compliance with the requirements. All data shall be submitted in electronic form in a form acceptable to the Regional Water Board.

5. The Dischargers shall maintain a data base containing historical and current monitoring data in a electronic form acceptable to the Executive Officer. The data base shall be updated quarterly and provided to the Regional Water Board in electronic format.
6. The Dischargers shall submit electronic copies of all workplans, reports, analytical results, and groundwater elevation data over the Internet to the State Water Board Geographic Environmental Information Management System database (GeoTracker) at <http://geotracker.swrcb.ca.gov>. Electronic submittals shall comply with GeoTracker standards and procedures as specified on the State Water Board's web site. In addition, a hardcopy of each document shall be submitted to the Regional Water Board at 1685 E Street, Fresno, CA 93706, attention Cleanup Unit.

Order by: _____ Original signed by _____
PAMELA C. CREEDON, Executive Officer

10 October 2007

(Date)

GROUNDWATER MONITORING AND REPORTING PROGRAM NO. R5-2007-0728

ATTACHMENT A

GROUNDWATER MONITORING SCHEDULE

Well Number	Quarterly Fluid Levels	Quarterly Sample	Semi-Annual Sample**
B-001L	X		X
B-001M	X		X
B-001U	X		X
B-003	X		X
B-007	X		
B-008	X	X	
B-009	X		X
B-010	X		
B-011	X	X	
B-012	X	X	
B-013	X	X	
B-014	X	X	
B-017	X	X	
B-023	X	X	
B-024L	X		X
B-24M	X		X
B-024U	X		X
B-030L	X	X	
B-030M	X	X	
B-030U	X	X	
B-037M	X	X	
B-037U	X	X	
B-041L	X	X	
B-041M	X	X	
B-041U	X	X	
B-042	X	X	
B-043	X	X	
B-044L	X	X	
B-044M	X	X	
B-044U	X		X
B-050L	X	X	
B-050M	X		X
B-050U	X		X
B-052L	X	X	
B-052M	X	X	
B-052U	X	X	

ATTACHMENT A

GROUNDWATER MONITORING SCHEDULE

Well Number	Quarterly Fluid Levels	Quarterly Sample	Semi-Annual Sample**
B-075L	X	X	
B-075M	X	X	
B-075U	X	X	
B-076U	X	X	
B-081U	X	X	
B-081M	X		X
B-098L	X	X	
B-098M	X	X	
B-098U	X		X
B-099L	X	X	
B-099M	X	X	
B-099U	X	X	
B-100L	X		X
B-100M	X	X	
B-100U	X		X
B-102M	X	X	
B-102U	X	X	
B-103L	X	X	
B-103M	X	X	
B-103U	X	X	
B-104L	X	X	
B-104M	X	X	
B-104U	X	X	
B-105L	X		X
B-105M	X	X	
B-105U	X	X	
B-106L	X		X
B-106M	X		X
B-106U	X		X
B-107L	X		X
B-107M	X	X	
B-107U	X		X
B-108L	X		X
B-108M	X	X	
B-108U	X	X	
B-109L	X	X	
B-109M	X	X	
B-109U	X	X	

ATTACHMENT A

GROUNDWATER MONITORING SCHEDULE

Well Number	Quarterly Fluid Levels	Quarterly Sample	Semi-Annual Sample**
B-110L	X		X
B-110M	X		X
B-110U	X		X
B-111L	X		X
B-111M	X	X	
B-111U	X		X
B-114L	X	X	
B-114M	X	X	
B-114U	X	X	
B-115L	X	X	
B-115M	X	X	
B-115U	X	X	
B-116L	X	X	
B-116M	X		X
B-116U	X	X	
B-117L	X	X	
B-117M	X	X	
B-117U	X	X	
B-118L	X	X	
B-118M	X	X	
B-118U	X	X	
B-119L	X		X
B-119M	X		X
B-119U	X		X
B-120L	X	X	
B-120M	X		X
B-120U	X		X
B-121L	X		X
B-121M	X		X
B-121U	X		X
B-124L	X	X	
B-124M	X		X
B-124U	X		X
B-125L	X		X
B-125M	X	X	
B-125U	X		X
B-126L	X	X	
B-126M	X	X	

ATTACHMENT A

GROUNDWATER MONITORING SCHEDULE

Well Number	Quarterly Fluid Levels	Quarterly Sample	Semi-Annual Sample**
B-126U	X	X	
B-127L	X		X
B-127M	X		X
B-127U	X		X
B-128L	X		X
B-128M	X	X	
B-128U	X	X	
B-129L1	X		X
B-129L2	X		X
B-129M	X	X	
B-129U	X		X
B-130L1	X	X	
B-130L2	X	X	
B-130M	X	X	
B-130U	X	X	
B-131L1	X	X	
B-131L2	X	X	
B-131M	X	X	
B-131U	X	X	
B-133	X	X	
B-134	X		X
B-143	X	X	
B-144	X	X	
B-145	X	X	
B-146	X	X	
B-150M	X		X
B-153	X		X
B-154	X	X	
B-155	X	X	
B-156	X	X	
B-157	X		
B-158	X		X
B-159	X	X	
B-160M	X	X	
B-160U	X	X	
B-161M	X	X	
B-161U	X	X	
B-162L	X	X	

ATTACHMENT A

GROUNDWATER MONITORING SCHEDULE

Well Number	Quarterly Fluid Levels	Quarterly Sample	Semi-Annual Sample**
B-162M	X	X	
B-162U	X	X	
B-163L	X	X	
B-163M	X	X	
B-163U	X	X	
B-164L	X	X	
B-164M	X	X	
B-164U	X	X	
B-166L	X	X	
B-166M	X		X
B-166U	X		X
B-167L	X	X	
B-167M	X	X	
B-167U	X	X	
B-168L	X	X	
B-168M	X	X	
B-168U	X	X	
B-169L	X		X
B-169M	X	X	
B-169U	X	X	
B-170L	X		X
B-170M	X	X	
B-170U	X	X	
B-171L	X		X
B-171M	X		X
B-171U	X		X
B-172L	X		
B-172M	X	X	
B-172U	X	X	
B-173L	X		
B-173M	X		
B-173U	X	X	
B-175L	X	X	
B-175M	X	X	
B-175U	X	X	
B-176L	X		X
B-176M	X		
B-176U	X	X	

ATTACHMENT A

GROUNDWATER MONITORING SCHEDULE

Well Number	Quarterly Fluid Levels	Quarterly Sample	Semi-Annual Sample**
B-177U	X	X	
B-177M	X	X	
B-177L	X		X
B-178M	X	X	
B-178U	X	X	
B-179U	X	X	
B-179M	X	X	
B-180U	X	X	
B-180M	X	X	
B-180L	X	X	
B-181U	X	X	
B-181M	X	X	
B-181L	X	X	
B-182U	X	X	
B-182M	X	X	
B-183	X	X	
B-185U	X	X	
B-185M	X	X	
B-185L	X	X	
B-186U	X		X
B-186M	X		X
B-186L	X		X
B-187U	X		X
B-187M	X	X	
B-187L	X	X	
B-188U	X	X	
B-188M	X	X	
B-188L	X	X	
B-195U	X	X	
B-195M	X	X	
B-195L	X	X	
B-196U	X	X	
B-196M	X	X	
B-196L	X	X	
B-201	X		X
B-202U	X	X	
B-202M	X		X
B-202L	X		X

ATTACHMENT A

GROUNDWATER MONITORING SCHEDULE

Well Number	Quarterly Fluid Levels	Quarterly Sample	Semi-Annual Sample**
BWM-1U	X	X	
BWM-2U	X	X	
BWM-3U	X	X	
BWM-4U	X	X	
BWM-5U	X	X	
BWM-6U	X	X	
BWM-7U	X	X	
D-1		X	
D2	X	X	
D-2			
D3	X	X	
D-3		X	
D-6		X	
DP2	X	X	
I-1		X	
I-12		X	
I-2		X	
I-3		X	
I-6		X	
I-8		X	
I-9		X	
M14S	X	X	
MN1Z	X	X	
MN2AU	X	X	
MS2.5A	X	X	
PW-L23	X		X
PW-L26	X		X
PW-L28	X		X
PW-U4	X		X
R1	X	X	
R2	X	X	
R3	X	X	
R4	X	X	
R7	X	X	
R6B	X	X	
ROW-1	X	X	
ROW-2	X	X	
ROW-3	X		X

ATTACHMENT A

GROUNDWATER MONITORING SCHEDULE

Well Number	Quarterly Fluid Levels	Quarterly Sample	Semi-Annual Sample**
ROW-9	X	X	
RS-6A	X	X	
RS-BW4	X		X
RS-DP4	X	X	
RS-DP5	X		X
RS-DP6	X	X	
RS-DP7	X		X
RS-HC7	X	X	
RS-HC8	X	X	
RS-MN1Z	X	X	
RS-MN2B	X		X
RS-MS2.5C	X		X
RS-MS3A	X		X
T10A	X		X
T16A	X	X	
T3B	X	X	
T8B	X		X
T9A	X	X	
TR2	X	X	
U4	X		X
WIP-W1	X	X	
WIP-W2	X	X	
WIP-W2A	X	X	
WIP-W3			
WIP-W3A	X	X	
WIP-W4			
WIP-W4A	X	X	

* Sample during second quarter

** Sample during second and fourth quarters

BAKERSFIELD REFINERY

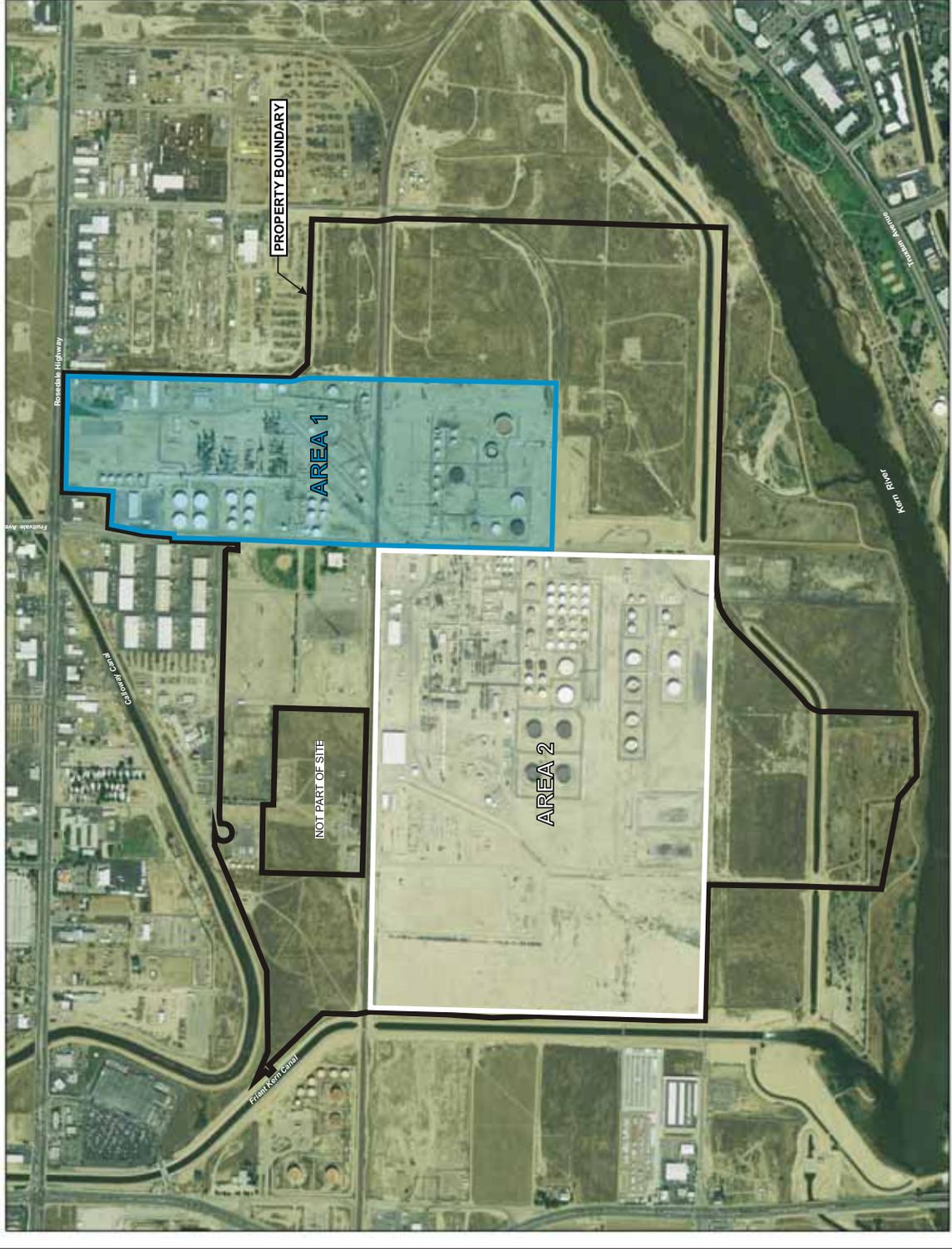


FIGURE 1

NAIP Aerial Photograph (2015)

BAKERSFIELD REFINERY



FIGURE 2

NAP Aerial Photograph (2005)