

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

CLEANUP AND ABATEMENT ORDER R5-2012-0701
FOR
ALON BAKERSFIELD PROPERTY, INC.
AND
EQUILON ENTERPRISES, LLC
BAKERSFIELD REFINERY
KERN COUNTY

This Order is issued to Alon Bakersfield Property, Inc., and Equilon Enterprises, LLC, hereafter collectively referred to as “Dischargers”, pursuant to Water Code section 13304, which authorizes the California Regional Water Quality Control Board, Central Valley Region, (“Central Valley Water Board” or “Board”) to issue a Cleanup and Abatement Order (“CAO”), and pursuant to Water Code section 13267, which authorizes the Central Valley Water Board to require the preparation and submittal of technical and monitoring reports.

The Executive Officer finds, with respect to the Dischargers’ acts, or failures to act, the following:

PROPERTY OWNERSHIP AND OPERATIONS

1. Alon Bakersfield Property, Inc. (“ALON”), a Delaware corporation, purchased the refinery site out of bankruptcy on 2 February 2010. The refinery consists of approximately 600 acres and contains various processing units within the refinery at 6451 Rosedale Highway in Bakersfield, California (properties hereafter referred to as the “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 Sales Terminal is owned by Equilon Enterprises, LLC, a Delaware limited liability company (“Equilon”), and leased by ALON. The refinery historically processed approximately 70,000 barrels of crude oil daily. Refining was temporarily suspended in February 2009. ALON resumed refining in June 2011. Releases of petroleum substances were reported in 2010 and 2011 during ALON’s ownership of the Site. Numerous pipelines exist above and below ground surface throughout the Site, including several pipelines owned by Equilon and others which traverse the Site, but are unassociated with refinery operations. Many aboveground storage tanks are also present at the Site. 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 and gasoline constituents, reformate, methyl tertiary butyl ether (MTBE), and other constituents from the processing facilities, blending operations, tanks and pipelines. These discharges have deposited petroleum hydrocarbons and other chemicals in soils. Once deposited in the soils, the petroleum hydrocarbons and other constituents have 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 of California, LLC (“Big West”), a Utah limited liability company, and a subsidiary of Flying J, Inc., purchased the refinery and Site from Equilon and owned the Site from March 2005 through May 2010. Big West operated the refinery until February 2009, when it temporarily suspended refining after Big West filed for Chapter 11 bankruptcy. Discharges of petroleum hydrocarbons to soil and/or groundwater occurred in at least 2006, 2007, and 2009, and contributed to or created pollution or threat of pollution of groundwater. The Board issued CAO R5-2007-0716 to Big West, ordering Big West to address a specific petroleum hydrocarbon discharge reported in June 2007. The Board also issued CAO R5-2007-0728 to Big West and Equilon, ordering them to address impacts to soil and groundwater throughout the Site.

However, pursuant to the terms of the bankruptcy proceedings that resulted in the sale of the Site to ALON, ALON assumed liability for the environmental remediation of the Site, except for certain liabilities that had been previously assumed by Equilon. Big West is not named as a responsible party in this Order, as the existing cleanup liability is currently shared by ALON and Equilon.

3. Equilon owned the Site from 1998 to March 2005, and operated the refinery during that 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 is in the business of refining, transporting, and marketing petroleum. Discharges of petroleum hydrocarbons to soil and/or groundwater occurred in at least 1999, 2000, 2001, 2003, and 2004 and contributed to or created pollution or threat of pollution of groundwater. As stated above, the Board issued CAO R5-2007-0728 to Big West and Equilon, ordering them to address impacts to soil and groundwater throughout the Site.
4. Equilon still owns underground pipelines that transverse the Site. Equilon is conducting groundwater monitoring, assessment, and remediation (soil vapor extraction and air sparging) at the Site in portions of the Area 2 Refinery, the Sales Terminal, the Blending Area, and the Mohawk Tank Farm.
5. 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 pollution or threat of pollution of groundwater.
6. Area 1 was 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. Area 2 was built and operated by the U.S. Government in 1942, and was owned by Lion Oil Company and then Tosco Oil Company from 1970 to 1986.
7. Drafts of this Order were presented to ALON and Equilon on 7 July 2011 and 26 January 2012, and ALON and Equilon were invited to submit comments on the drafts, as well as additional evidence. The Board has considered all of the materials submitted in response to those drafts. The Order may also be revised to name other responsible parties in the future.

BACKGROUND

8. The Site is within the boundaries of the Kern County Water Agency Improvement District 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. Groundwater pumped from ID4 is drawn from water supply wells that are located approximately 1.5 miles west of the refinery and hydrogeologic and groundwater monitoring data indicate that pollution in groundwater at the Refinery does not pose a current threat to these water supply wells.

9. Active Private domestic and irrigation supply wells are present to the northwest of the refinery. Depth and well construction information for most of these wells is not available.
10. Groundwater impacted by diesel constituents underlies most of the Site. Groundwater beneath at least 200 acres of the Site is impacted with concentrations of gasoline constituents and/or MTBE exceeding water quality objectives.
11. The groundwater surface has historically fluctuated between 15 and 150 feet below ground surface ("bgs"). Water levels at the Site rose approximately 100 feet between 1993 and 1999. Water levels began declining during 2007 and in June 2010 were approximately 130 feet bgs. The upper 150 feet of soil beneath the Site consist 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 150 feet bgs.
12. **Area 2 Refinery** – Historical discharges of petroleum hydrocarbons in the form of reformat (main reformat discharge) from an underground pipeline were discovered in March 1987 in the vicinity of the Area 2 refinery hydrocracker unit during ownership by TRMI. 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 by Big West in May 2006. A separate discharge in the vicinity of well R3 and the mid-aromatic pipeline was reported by Big West in 2008. Liquid petroleum hydrocarbons have been detected in at least 12 monitoring wells in the Area 2 Refinery. Maximum detected concentrations of total petroleum hydrocarbons as gasoline (TPHG), total petroleum hydrocarbons as diesel (TPHD) and benzene in groundwater beneath this area in November 2011 were 96,000 micrograms per liter (ug/L), 180,000 ug/L, and 1,500 respectively. Assessment in portions of the Area 2 Refinery is ongoing. Ongoing remediation in the Area 2 Refinery consists of soil vapor extraction and air sparging programs being conducted by Equilon to address soil and groundwater contamination from historic sources and operations prior to Big West and ALON ownership and operation of the Refinery.
13. **Sales Terminal** – Discharges of petroleum hydrocarbons containing MTBE occurred in the Sales Terminal area in March 1999, December 2000, and April 2001 while operated by Equilon. 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 detected concentrations of TPHG, TPHD, and benzene in groundwater beneath this area in November 2011 were 4,700 ug/L, 1,200 ug/L, and 12 ug/L, respectively.
14. **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 were detected in seven monitoring wells in November 2011. The source for the liquid petroleum hydrocarbons is unknown. Studies in the Blending Area indicate that some soils in this area contain elevated concentrations of chromium and arsenic, and 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 detected total lead concentration of 8,560 milligrams per kilogram (mg/kg) and a maximum detected total chromium concentration of 164 mg/kg. Maximum detected concentrations of TPHG, TPHD, and benzene in groundwater beneath this area in November 2011 were 140,000 ug/L, 23,000 ug/L, and 17,000 ug/L, respectively. Soil vapor samples were collected at selected soil vapor wells and monitoring wells in the Blending Area during early 2011. Total petroleum hydrocarbons as gasoline and benzene were detected in soil vapor at maximum concentrations of 57,000,000 and 2,018,000

micrograms per cubic meter, respectively. Total petroleum hydrocarbons as diesel was also detected in soil vapor in excess of 100,000 micrograms per cubic meter. Soil vapor extraction pilot tests conducted on several soil vapor wells in the Blending Area indicate that soil vapor extraction is a viable option for remediating soils impacted by volatile organic compounds.

15. **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. Assessment and remediation of the liquid petroleum hydrocarbons is ongoing. 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. A release of crude oil occurred in the southeast corner of the Mohawk Tank Farm in November 2010. Liquid petroleum hydrocarbons were detected in approximately 20 monitoring wells in the Mohawk Tank Farm area in November 2011. Groundwater in the northern and west central portions of this area has been impacted by high concentrations of gasoline and diesel constituents. Soils had a maximum detected total lead concentration of 5,670 mg/kg and maximum detected total chromium concentration of 6,920 mg/kg. A work plan submitted by Big West for further assessment of lead and/or chromium concentrations in the southern portion of the Mohawk Tank Farm was approved in a letter dated 12 December 2008. Big West declared bankruptcy in December 2008 and the work has not been completed. A work plan for remediation of lead- and chromium-impacted soil in the Mohawk Tank Farm was approved in a letter dated 18 March 2009, with completion of the remediation required by 18 March 2010. The remediation has not been started to date.
16. **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 portion of the refinery and the Sales Terminal. Three SVE wells exist in the northern portion of the Mohawk Tank Farm and one in the Blending Area. The SVE system was shut down in March 2005 when Equilon sold the Bakersfield refinery to Big West, and was restarted in October 2007.
17. **Air Sparge System** – An air sparge (AS) system is operated at the Site by Equilon to add oxygen to the groundwater and enhance biodegradation. The system currently consists of 46 multi-level well clusters located principally in the vicinity of and to the west and north of the Area 2 refinery. In late 2010 to early 2011, Equilon installed 59 additional multi-level air sparge wells at 30 locations. Equilon is in the process of connecting the new sparge wells to the air sparge system.

LEGAL AUTHORITY

18. Petroleum hydrocarbons discharged to and deposited within soil at the Site 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.
19. Water Code section 13304(a) states that:

Any person ... 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.

20. Water Code section 13267(b)(1) states 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 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.

21. Water Code section 13304(c)(1) states 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. . .

22. The Water Quality Control Plan for the Tulare Lake Basin, Second Edition, revised January 2004 (the "Basin Plan"), designates beneficial uses of the waters of the State and establishes water quality objectives ("WQOs") to protect those areas. The Site overlies groundwater within the Kern County Basin Hydrologic Unit, Detailed Analyses Unit 254. Present and potential future beneficial uses of this groundwater include municipal and domestic supply ("MUN"), agricultural supply ("AGR"), industrial service supply ("IND"), industrial process supply ("PRO"), water contact recreation ("REC 1"), non-contact water recreation ("REC 2"), and warm freshwater habitat ("WILD").

23. The Basin Plan contains a narrative WQO for chemical constituents which requires, in part, that groundwater not contain chemical constituents in concentrations that adversely affect any beneficial use. For groundwaters that are designated MUN, the Basin Plan incorporates by reference drinking water maximum contaminant levels ("MCLs") promulgated in the California Code of Regulations, title 22, chapter 15 ("Title 22"). The following constituents have numeric MCLs associated with them, and these numeric MCLs implement the narrative WQO for chemical constituents:

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)

The concentrations of the waste constituents listed above that are currently found in groundwater (Findings Nos. 12, 13, 14, and 15), or are likely to be found in groundwater after migration from soils, significantly exceed the applicable WQOs.

24. The Basin Plan also contains narrative WQOs that apply to groundwater for tastes and odors and for toxicity. The taste and odor WQO requires, in part, that groundwater 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.
25. 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 Central Valley Water Board will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives.” Compliance with a narrative WQO requires consideration of site-specific information and 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 12, 13, 14, and 15, 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	0.1 5	Toxicity	California Public Health Goal (OEHHA)

*in micrograms per liter (µg/L)

Consistent with the WQO Policy, the limits for the waste constituents listed above are relevant and appropriate to use to evaluate compliance with the narrative WQOs for taste and odor and for toxicity. The concentrations of the waste constituents listed above that are currently found in groundwater (Findings Nos. 12, 13, 14, and 15), or are likely to be found in groundwater after migration from soils, significantly exceed the applicable WQOs.

26. Pollution, as it is defined in Water Code section 13050(l)(1), means the alteration of the quality of the waters of the state by waste to a degree which unreasonably affects either the waters for beneficial uses, or the facilities which serve these beneficial uses. The WQOs delineated in Findings Nos. 23 and 25 are designed to protect the beneficial uses of the groundwater underlying the Site. As the wastes discharged from the Site have caused groundwater to exceed

the applicable WQOs, which have been developed to protect the beneficial uses of the groundwater, a condition of pollution is present in the groundwater.

27. The State Water Resources Control Board ("State Water Board") has adopted Resolution 92-49, *Policies and Procedures for Investigation and Cleanup and Abatement of Discharges under Water Code Section 13304* ("Resolution 92-49"). Resolution 92-49 sets forth the policies and procedures to be used during an investigation and 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 68-16"). Resolution 92-49 and the Basin Plan establish the cleanup levels to be achieved. Resolution 92-49 requires the waste to be cleaned up in a manner that promotes attainment of either background water quality, or the best water quality which is reasonable if background levels of water quality cannot be restored. 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 Central Valley 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.
28. Chapter IV of the Basin Plan also contains a *Policy for the Investigation and Cleanup of Contaminated Sites*. The strategy generally outlines a process that includes site investigation, source removal or containment, information requirements for the consideration of establishing cleanup levels, and a basis for establishing soil and groundwater cleanup levels.
29. California Code of Regulations, title 22, section 66261.24, defines hazardous waste based on concentrations of constituents of concern. The hazardous total threshold limit concentration (TTLC) as included in section 66261.24 for lead is 1,000 mg/kg and the soluble threshold limit concentration (STLC) is 5 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 Findings 14 and 15, metals at hazardous concentrations are present within the Blending Area and the Mohawk Tank Farm.
30. California Code of Regulations, title 23, sections 3890 through 3895, requires 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 Central Valley 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.
31. Unauthorized discharges from operating aboveground tanks not equipped with either double bottoms or leak detection systems have resulted in releases to soils and groundwater at the Site.

DISCHARGER LIABILITY

32. 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 meaning of the term "discharge", as interpreted by the State Water Board in precedential orders, including State Water Board Order WQ 86-2 (*In the Matter of the Petition of Zoecon Corporation*), includes the passive migration of waste from soils to groundwater. Discharges occurred during the time that each of the named Dischargers or their predecessors owned the Site, and, as stated in Finding 26, these discharges have resulted in 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 Central Valley Water Board.

33. 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 the Basin Plan, Resolution 92-49, and this Order, which require the prompt identification and abatement of waste sources and the investigation and cleanup of affected areas to protect the beneficial uses of waters of the state, to protect against nuisance, and to protect human health and the environment.
34. Should the Dischargers fail to take any of the cleanup actions specified in this Order, the Central Valley Water Board may impose administrative civil liability pursuant to Water Code section 13350, which states, in relevant part:
 - (a) Any person who (1) violates any cease and desist order or cleanup and abatement order hereafter issued, reissued, or amended by a regional board ... shall be liable civilly, and remedies may be proposed, in accordance with subdivision (d) or (e).
 - (e) The state board or a regional board may impose civil liability administratively pursuant to Article 2.5 (commencing with Section 13323) of Chapter 5 either on a daily basis or on a per gallon basis, but not both.
 - (1) The civil liability on a daily basis may not exceed five thousand dollars (\$5,000) for each day the violation occurs.
 - (A) When there is a discharge, and a cleanup and abatement order is issued, except as provided in subdivision (f), the civil liability shall not be less than five hundred dollars (\$500) for each day in which the discharge occurs and for each day the cleanup and abatement order is violated.
 - (B) When there is no discharge, but an order issued by the regional board is violated, except as provided in subdivision (f), the civil liability shall not be less than one hundred dollars (\$100) for each day in which the violation occurs.
 - (2) The civil liability on a per gallon basis may not exceed ten dollars (\$10) for each gallon of waste discharged.
35. Should the Dischargers fail to submit any of the technical or monitoring reports required by this Order, the Central Valley Water Board may impose administrative civil liability pursuant to Water Code section 13268, which states, in relevant part:
 - (a)(1) Any person failing or refusing to furnish technical or monitoring program reports as required by subdivision (b) of Section 13267 . . . or falsifying any information provided therein, is guilty of a misdemeanor and may be liable civilly in accordance with subdivision (b).

(b)(1) Civil liability may be administratively imposed by a regional board in accordance with Article 2.5 (commencing with Section 13323) of Chapter 5 for a violation of subdivision (a) in an amount which shall not exceed one thousand dollars (\$1,000) for each day in which the violation occurs.

(c) Any person discharging hazardous waste, as defined in Section 25117 of the Health and Safety Code, who knowingly fails or refuses to furnish technical or monitoring program reports as required by subdivision (b) of Section 13267, or who knowingly falsifies any information provided in those technical or monitoring program reports, is guilty of a misdemeanor, may be civilly liable in accordance with subdivision (d), and is subject to criminal penalties pursuant to subdivision (e).

(d)(1) Civil liability may be administratively imposed by a regional board in accordance with Article 2.5 (commencing with Section 13323) of Chapter 5 for a violation of subdivision (c) in an amount which shall not exceed five thousand dollars (\$5,000) for each day in which the violation occurs.

CEQA

36. Issuance of this Order mandates further investigation and will compel the Dischargers to implement cleanup work that has been underway for many years. The Site is currently an operating refinery site, situated above contaminated soil and groundwater, and an extensive system of extraction and monitoring wells and other remediation equipment has already been installed. After reviewing and considering evidence in the Board's files regarding the existing environmental conditions at the Site, the Board can conclude that there is no possibility that issuance of this Order will have a significant effect on the environment, and therefore, issuance of the Order is not subject to the California Environmental Quality Act (Pub. Resources Code, § 21000 et seq.), pursuant to California Code of Regulations, title 14, section 15061(b)(3).

EFFECT OF PRIOR ORDERS

37. Several orders have already been issued by the Central Valley Water Board to parties legally responsible for environmental remediation at the Site. These orders require those responsible parties to perform cleanup actions and to submit technical and monitoring reports. These orders include CAO R5-2007-0716 and CAO R5-2007-0728. The obligations contained in this Order supersede and replace those contained in prior orders. However, the prior orders remain in effect for enforcement purposes; the Central Valley Water Board and/or the State Water Board may take enforcement actions (including, but not limited to, issuing administrative civil liability complaints) against responsible parties that have not complied with directives contained in previously-issued orders.

REQUIRED ACTIONS

IT IS HEREBY ORDERED that, pursuant to Water Code sections 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 Resolution 92-49 and with the Basin Plan (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 Central Valley Water Board technical staff. Compliance with this requirement shall include, but not be limited to, completing the tasks listed below.

REMEDIATION SYSTEMS

2. Maintain continual operation of all remediation systems at the site including the soil vapor extraction, air sparge, and liquid petroleum hydrocarbon removal systems. The systems shall be operated so as to maximize the efficiency of remediation of impacted groundwater and soil at the Site. All remediation systems shall be expanded as necessary to treat all significantly impacted areas of the site. If significantly impacted areas of soil and/or groundwater are discovered that are not within the area of influence of existing remediation systems, a work plan shall be submitted proposing tasks to install remediation systems in those impacted areas.
3. **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. The report shall include recommendations for improvements to the systems to correct any deficiencies.

BLENDING AREA

4. **By 13 July 2012**, submit a work plan proposing tasks for additional assessment of impacts to soil and/or soil vapor in the Blending Area. The work plan needs to propose tasks that will assess soil/soil vapor sufficiently for the complete design of a soil vapor extraction system and installation of all soil vapor extraction wells necessary for the Blending Area. Soil vapor extraction wells and/or soil vapor probes need to be installed where feasible during the assessment.
5. Implement the work plan in Required Action 4 **within 30 days of submittal of the work plan. Beginning 1 October 2012**, submit monthly progress reports on progress of the assessment.
6. **By 1 December 2012**, submit a summary of the results of the assessment in Required Action 4.
7. **By 1 April 2013**, submit a remedial design for a soil vapor extraction system in the Blending Area. The submittal shall contain all equipment, extraction wells, and tasks necessary for installation, startup, and operation of the system. The report needs to include a schedule for installation and startup of the system. Beginning 1 November 2012, submit monthly reports summarizing progress on the design of the system required above. The progress reports need to include sufficient detail for evaluation of progress in design of system.
8. **Within 30 days of staff concurrence** of the remedial design required by Required Action 7, implement the work in accordance with the time schedule as approved or directed by the Executive Officer, which shall become part of this Order.

MOHAWK TANK FARM

9. **By 1 August 2012**, submit a work plan proposing tasks for additional assessment of impacts to soil, soil vapor, and groundwater in the former Mohawk Refinery and Mohawk Tank Farm. The work plan shall propose tasks that will assess soil and/or soil vapor sufficiently for the complete design of a soil vapor extraction system in the former Mohawk Refinery and Mohawk Tank Farm. Soil vapor extraction wells and/or soil vapor probes need to be installed where feasible during the

assessment. The work plan shall also propose sufficient monitoring wells to assess the lateral and vertical extent of impacted groundwater in each of the groundwater zones.

10. Implement the work plan in Required Action 9 **within 30 days of submittal of the work plan**. Beginning 1 October 2012, submit monthly progress reports on progress of the assessment.
11. **By 2 January 2013**, submit a summary of the results of the assessment required in Required Action 9.
12. **By 1 April 2013**, submit a remedial design for a soil vapor extraction system in the Former Mohawk Refinery and Mohawk Tank Farm. The submittal shall contain all equipment, extraction wells, and tasks necessary for installation, startup, and operation of the system. The report needs to include a schedule for installation and startup of the system. This report can be combined with the report required in Required Action 7. Beginning 1 November 2012, submit monthly reports summarizing progress on the design of the system required above, which can be combined with the progress reports required in Required Action 7.
13. **Within 30 days** of staff concurrence of the remedial design required by Required Action 12, implement the work in accordance with the time schedule as approved or directed by the Executive Officer, which shall become part of this Order.
14. **By 19 January 2013**, submit a report summarizing the results of an additional assessment of the extent of lead and chromium in the vicinity of the former Cooling Towers and Blowdown Ponds, and the former Soil Pile 7 areas as proposed in a work plan submitted by Big West dated 28 October 2008.
15. Implement the Remedial Action Work Plan for Lead in Soil in Study Section 4 dated 28 October 2008 and the addendum to the plan dated 18 February 2009 as approved by the Executive Officer in a letter dated 18 March 2009. The following due dates for this task shall apply:
 - **By 18 January 2013**, submit a report summarizing the results of the proposed geophysical survey and additional assessment of lead and/or chromium in the tank farm berm areas and proposed excavation areas.
 - **By 29 May 2013**, submit the proposed risk assessment regarding lead and chromium impacted soil in the tank berm and proposed excavation areas.
 - **By 16 October 2013**, submit a revised engineering work plan for excavation and/or capping of lead and/or chromium impacted soil.
 - Implement the plan in accordance with the time schedule as approved or directed by the Executive Officer, which shall become part of this Order.
 - **By 29 October 2014**, submit a report summarizing the completion of tasks for remediation of lead and/or chromium impacted soil.
 - **Beginning 1 September 2012**, submit monthly progress reports on the progress of tasks required in Required Action 15.

AREA 2 REFINERY

16. A report evaluating remedial options for impacted soil and groundwater in Study Section 5 (southern portion of Area 2 Refinery) is due by **4 February 2013**. The report needs to select preferred alternatives for remediation of impacted soil and groundwater in this area.
17. **Within 30 days of staff concurrence** of the work plan required by Required Action 16, 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.
18. **By 17 October 2012**, submit a work plan proposing tasks to delineate the source and lateral and vertical extent of liquid and dissolved petroleum hydrocarbons detected in the vicinity of and upgradient in Area 2 of well R3U, R3M and other wells in the vicinity.
19. **Within 30 days of staff concurrence** of the work plan required by Required Action 18, 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

20. Big West submitted and implemented the plan Routine Maintenance and Testing of Underground Petroleum and other Hazardous Liquid Material Lines dated 17 December 2007. The Big West plan shall continue to be implemented by the Dischargers until the Central Valley Water Board approves of any proposed amendments. Procedures for maintenance and testing of underground lines shall be done in accordance with all Federal and State of California regulations as well as following procedures detailed in the above document.

DISCHARGE RESPONSE

21. Big West submitted and implemented the Discharge Response Plan dated 17 December 2007. The Big West plan shall continue to be implemented by the Dischargers until the Central Valley Water Board approves of any proposed amendments. Responses to discharges at the facility shall be conducted following all Federal and State of California regulations as well as following procedures detailed in the above cited plan.

PUBLIC PARTICIPATION

22. Big West submitted and implemented a Public Participation Plan dated January 2008. The Big West plan shall continue to be implemented by the Dischargers until the Central Valley Water Board approves of any proposed amendments.

ABOVEGROUND STORAGE TANKS

23. Big West submitted a report dated 13 March 2008 proposing a schedule for installation of leak detection systems on aboveground storage tanks at the site, as required by CAO R5-2007-0728. The schedule called for installation of the systems or approved alternatives on all active tanks by the end of 2015. The report and proposed schedule were approved in a letter dated 14 April 2008. The approved leak detection systems or alternatives approved by the Central Valley Water Board have not been installed in accordance with the approved schedule. ALON submitted a table on 4 October 2011 indicating that only 38 of the existing tanks at the site will be

used in its operations. Twenty one of those tanks are equipped with double bottoms or leak detection systems and three tanks do not require leak detection systems based on their contents. The remaining tanks need to be retrofitted with double bottoms or leak detection systems in accordance with the following schedule:

- 2012 – two tanks to be retrofitted
- 2013 – two tanks to be retrofitted
- 2014 - two tanks to be retrofitted
- 2015 – two tanks to be retrofitted
- 2016 - three tanks to be retrofitted

All aboveground tanks in use for storage of petroleum hydrocarbon containing compounds or other chemicals or compounds that could pose a potential threat to groundwater quality shall be retrofitted by the end of 2016. All tanks not in use shall be inspected and cleaned prior to the end of 2015. An annual update on retrofitting of aboveground storage tanks and cleaning and inspection of unused tanks needs to be submitted by 15 January of each year.

ASSESSMENT OF THREAT TO HUMAN HEALTH AND SAFETY

24. A Human Health Risk Assessment Report submitted by Big West identified that petroleum hydrocarbon vapors, specifically benzene, originating from soil or groundwater may pose an exposure risk through inhalation in the Nurse Station Building. **By 2 July 2012**, the Dischargers shall submit a plan to mitigate the threat posed to human health and safety in the Nurse Station Building. The plan shall include a time schedule for its implementation and completion prior to occupancy of the building.
25. After staff concurrence of the plan required by Required Action 24, implement the plan in accordance with the time schedule as approved or directed by the Executive Officer, which shall become part of this Order.

GENERAL REQUIREMENTS

The Dischargers shall:

26. The Central Valley Water Board shall be notified within 48 hours of any discharges of petroleum hydrocarbons, hazardous materials, or other materials that could pose a threat to soil or groundwater at the facility.
27. As required by the 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.
28. Conduct work only after Central Valley Water Board staff concurs with the proposed work.
29. 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 Central Valley Water Board prior to any planned shutdown of any treatment or remediation system of more than three days. The Dischargers shall notify the Central Valley 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).

30. Notify Central Valley 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.
31. Obtain all local and state permits and access agreements necessary to fulfill the requirements of this Order prior to beginning the work.
32. 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.
33. 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.
34. 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 Central Valley Water Board staff approval, to define the new plume limits.
35. Comply with Monitoring and Reporting Program R5-2012-0701, which is attached to and made part of this Order. A violation of Monitoring and Reporting Program R5-2012-0701 is a violation of this Order.
36. Supply each of the other Dischargers herein named with timely updates on activities conducted under this Order and provide the other Dischargers with copies of reports, correspondence, and other documents produced to meet the requirements of this Order.
37. Reimburse the Central Valley Water Board for reasonable costs associated with oversight of the investigation and remediation of the Site.

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.

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. The Central Valley Water Board reserves its right to take any enforcement actions authorized by law.

Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board to review the action in accordance with Water Code section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of this Order, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at:

http://www.waterboards.ca.gov/public_notices/petitions/water_quality

or will be provided upon request.

This Order is effective upon the date of signature.

Originally Signed by: _____

PAMELA C. CREEDON, Executive Officer

5/3/2012

(Date)

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2012-0701

FOR

ALON BAKERSFIELD PROPERTIES, INC.

AND

EQUILON ENTERPRISES, LLC

BAKERSFIELD REFINERY

KERN COUNTY

Compliance with this Monitoring and Reporting Program is required pursuant to Water Code section 13267 as ordered by Cleanup and Abatement Order R5-2012-0701 (the "CAO"). Failure to comply with this program constitutes noncompliance with the CAO and the Water Code, which can result in the imposition of civil liability. All sampling and analyses shall be by United States Environmental Protection Agency (USEPA) approved methods. The test methods chosen for detection of the constituents of concern shall be subject to review and concurrence by the California Regional Water Quality Control Board, Central Valley Region ("Central Valley Water Board").

A complete list of substances which are tested for and reported on by the testing laboratory shall be provided to the Central Valley 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 quality assurance/quality control (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 Public Health certified laboratory.

The Dischargers 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 Central Valley 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, mean seal level) 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 analytical suite 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

<u>Constituent</u>	<u>Detection Limit ug/L</u>	<u>EPA Method</u>
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*
Electrical Conductivity		Field*
Temperature		Field*
Oxidation Reduction Potential		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. A written summary and a table showing the amount and frequency of removal of liquid petroleum hydrocarbons from all wells with liquid petroleum hydrocarbons present.
7. Daily field sheets shall document field activities conducted during each site visit and shall be included in the quarterly reports.

MONITORING FREQUENCIES

Monitoring frequencies are listed in Attachment A. 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 Central Valley 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

Each quarterly report shall include the following minimum information:

- (a) a description and discussion of the groundwater sampling event and results, including trends in the concentrations of pollutants and groundwater elevations in the wells, how and when samples were collected, and whether the pollutant plume is fully treated by the existing remediation systems; If there are any deficiencies during the sampling event or if impacts to groundwater extend beyond recent historical boundaries, the report shall include an explanation and/or evaluation and propose options for addressing or correcting the deficiencies;
- (b) field logs that contain, at a minimum, water quality parameters measured before, during, and after purging, method of purging, depth of water, volume of water purged, etc.; Water quality parameters shall include electrical conductivity, temperature, pH, dissolved oxygen, and oxygen reduction potential;
- (c) groundwater contour maps for all groundwater zones, if applicable;
- (d) pollutant isoconcentration maps for all groundwater zones, if applicable. The maps shall include at a minimum plots of total petroleum hydrocarbons as diesel and gasoline, benzene, and MTBE for each of the groundwater zones monitored;
- (e) a table showing well construction details that shall include at a minimum well number, groundwater zone being monitored, measuring point elevation, depth to top and bottom of screen, water level elevation, depth to water, and depth to product and product thickness, if present;
- (f) a table showing historical lateral and vertical (if applicable) flow directions and gradients;
- (g) cumulative data tables containing all historical water quality analytical results and depth to groundwater;

- (h) a copy of all laboratory analytical data reports;
 - (i) results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program or at other locations at the site shall be reported to the Central Valley Water Board;
 - (j) a summary of any spills/releases that occurred during the quarter and tasks undertaken in response to the spills/releases;
 - (k) an update and status on each of the outstanding tasks required by the CAO or Executive Officer;
 - (l) a map showing all wells on the facility;
 - (m) a table summarizing water quality parameters measured during the current quarter;
3. In reporting the monitoring data, the Dischargers 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 an electronic form acceptable to the Executive Officer.
4. The Dischargers shall submit an annual report by 31 January of each year for the preceding year. The report can be combined with the Dischargers' fourth quarter report. The report shall contain:
- a. Both tabular and graphical summaries of all data obtained during the year;
 - b. An in-depth evaluation of groundwater conditions at the site including short and long-term trends of the constituents of concern in each area of the site;
 - c. An evaluation of the effectiveness of the groundwater monitoring network in delineating the lateral and vertical extent of impacts to groundwater in all affected areas of the site. This should include an identification of any data gaps and potential deficiencies in the monitoring system or reporting program. The report shall include recommendations to address any deficiencies in the monitoring and report program.
 - d. 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 source areas or suspected source areas. The report shall include recommendations for improving or expanding the systems, if necessary.
 - e. A summary of the performance of each remediation system including the amount and percentage of operating and downtime, and the amount of petroleum hydrocarbons removed.
 - f. A summary of all spills/releases, if any, that occurred during the year, tasks undertaken in response to the spills, the results of the tasks undertaken.

5. For each required quarterly and annual report, one report shall be submitted containing all monitoring data collected at the site by all Dischargers and include all information cited in the above sections. A hard copy of all required reports on/or responses shall be submitted by the due date unless otherwise arranged with Central Valley Water Board staff.
6. The Dischargers shall maintain a data base containing historical and current monitoring data in an electronic form acceptable to the Executive Officer. The data base shall be updated quarterly and provided to the Central Valley Water Board in electronic format.
7. 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. Uploads to Geotracker shall be completed on or prior to the due date. In addition, a hardcopy of each document shall be submitted to the Central Valley Water Board at 1685 E Street, Fresno, CA 93706, attention Cleanup Unit.

Original Signed by
PAMELA C. CREEDON, Executive Officer

5/3/2012
(Date)

GROUNDWATER MONITORING AND REPORTING PROGRAM NO. R5-2012-0701

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	X	
B-008	X		X
B-009	X		X
B-010	X		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-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	
B-075L	X	X	
B-075M	X	X	
B-075U	X	X	

ATTACHMENT A

GROUNDWATER MONITORING SCHEDULE

Well Number	Quarterly Fluid Levels	Quarterly Sample	Semi-Annual Sample*
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	
B-110L	X		X
B-110M	X		X
B-110U	X		X
B-111L	X		X
B-111M	X	X	

ATTACHMENT A

GROUNDWATER MONITORING SCHEDULE

Well Number	Quarterly Fluid Levels	Quarterly Sample	Semi-Annual Sample*
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-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	
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

ATTACHMENT A

GROUNDWATER MONITORING SCHEDULE

Well Number	Quarterly Fluid Levels	Quarterly Sample	Semi-Annual Sample*
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-153M	X	X	
B-135U	X	X	
B-154	X	X	
B-156	X	X	
B-157	X	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-162M	X	X	
B-162U	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

ATTACHMENT A

GROUNDWATER MONITORING SCHEDULE

Well Number	Quarterly Fluid Levels	Quarterly Sample	Semi-Annual Sample*
B-167L	X	X	
B-167M	X	X	
B-167U	X	X	
B-168L	X	X	
B-168M	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		X
B-172M	X	X	
B-172U	X	X	
B-173L	X	X	
B-173M	X	X	
B-173U	X	X	
B-175L	X	X	
B-175M	X	X	
B-175U	X	X	
B-176L	X	X	
B-176M	X	X	
B-176U	X	X	
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	

ATTACHMENT A

GROUNDWATER MONITORING SCHEDULE

Well Number	Quarterly Fluid Levels	Quarterly Sample	Semi-Annual Sample*
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-202L	X		X
B-203 (Area 1)	X	X	
B-203 (Area 2)	X	X	
B-204 (Area 1)	X	X	
B-204 (Area 2)	X	X	
B-207M	X	X	
B-207U	X	X	
B-209M	X	X	
B-209U	X	X	
B-210M	X	X	
B-210U	X	X	
B-211M	X	X	
B-211U	X	X	
B-212M	X	X	
B-212U	X	X	
B-213L	X	X	
B-213M	X	X	
B-213U	X	X	

ATTACHMENT A

GROUNDWATER MONITORING SCHEDULE

Well Number	Quarterly Fluid Levels	Quarterly Sample	Semi-Annual Sample*
RWIP-W4BU	X	X	
RWIP-W4BM	X	X	
B-231	X	X	
B-232	X	X	
B-233	X	X	
B-234	X	X	
B-235	X	X	
B-236	X	X	
B-237	X	X	
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	
BWM-8U	X	X	
BWM-9	X	X	
BWM-10	X	X	
BWM-11	X	X	
BWM-12	X	X	
BWM-13	X	X	
BWM-14	X	X	
BWM-15	X	X	
BWM-16	X	X	
BWM-17	X	X	
BWM-18	X	X	
BWM-19M	X		X
BWM-19U	X		X
BWM-20M	X		X
BWM-20U	X		X
BWM-21L	X	X	
BWM-21M	X	X	
BWM-21U	X	X	
BWM-22M	X	X	
BWM-22U	X	X	
BWM-23M	X	X	
BWM-23U	X	X	
BWM-24M	X	X	
BWM-24U	X	X	

ATTACHMENT A

GROUNDWATER MONITORING SCHEDULE

Well Number	Quarterly Fluid Levels	Quarterly Sample	Semi-Annual Sample*
BWM-25M	X	X	
BWM-25U	X	X	
BWM-26M	X	X	
BWM-26U	X	X	
BWM-27M	X	X	
BWM-27U	X	X	
BWM-28M	X	X	
BWM-28U	X	X	
BWM-29M	X	X	
BWM-29U	X	X	
BWM-30M	X	X	
BWM-30U	X	X	
BWM-31M	X	X	
BWM-31U	X	X	
BWM-32M	X	X	
BWM-32U	X	X	
BWM-33L	X	X	
BWM-34L	X	X	
BWM-35L	X	X	
D-1			X
D-2			X
D3	X	X	
D-3			X
D-4			X
D-6			X
DP2	X	X	
I-1			X
I-2			X
I-3			X
I-6			X
I-8			X
I-9			X
I-12			X
M14S	X	X	
MN1Z	X	X	
MN2AU	X	X	
MS2.5A	X	X	
PW-A	X	X	
PW-L23	X		X
PW-L26	X		X

ATTACHMENT A

GROUNDWATER MONITORING SCHEDULE

Well Number	Quarterly Fluid Levels	Quarterly Sample	Semi-Annual Sample*
PW-L28	X		X
PW-U4	X		X
R1	X	X	
R2	X	X	
R4	X	X	
R7	X	X	
R6B	X	X	
ROW-1	X	X	
ROW-2	X	X	
ROW-3	X		X
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
RWIP-W4BM	X	X	
T10A	X		X
T16A	X	X	
T3B	X	X	
T8B	X		X
T9A	X	X	
T19M	X	X	
T19U	X	X	
T21M	X	X	
T21U	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	

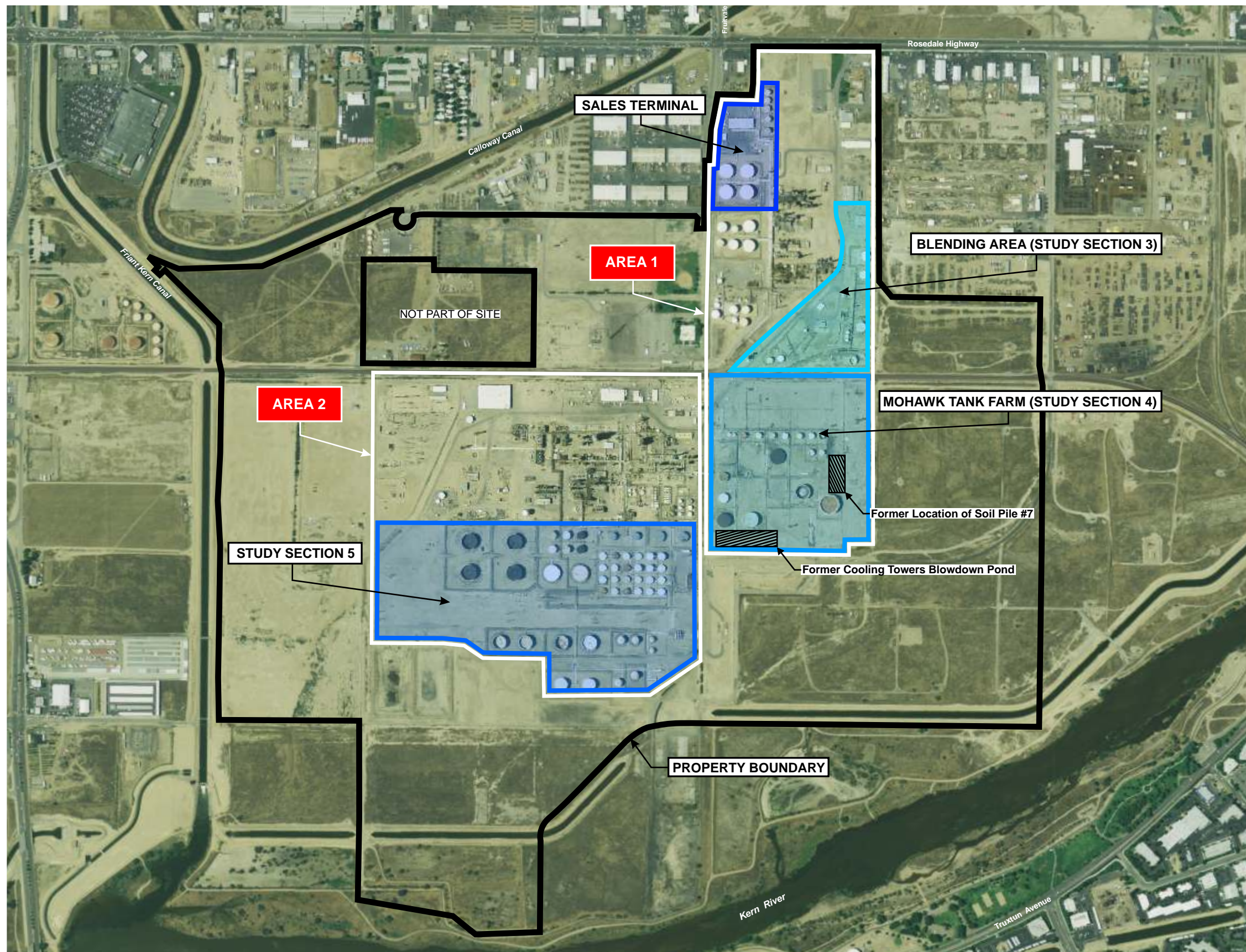
ATTACHMENT A

GROUNDWATER MONITORING SCHEDULE

Well Number	Quarterly Fluid Levels	Quarterly Sample	Semi-Annual Sample*
WIP-W4			
WIP-W4A	X	X	
5U-1	X	X	
5U-2	X	X	
5U-3	X	X	
5U-4	X	X	
5U-5	X	X	
5U-6	X	X	
5U-7	X	X	
5U-8	X	X	
5U-9	X	X	
5U-10	X	X	
5U-11	X	X	
5U-12	X	X	
5U-13	X	X	
5U-14	X	X	
5U-15	X	X	
6U-1	X	X	
6U-2	X	X	
6U-3	X	X	
RGO-1	X		
RGO-2	X		
RGO-3	X		
RGO-4	X		
RGO-5	X		
RGO-6	X		
RGO-7	X		
RGO-8	X		
RGO-9	X		

* Sample during first and third quarters

BAKERSFIELD REFINERY



NAIP Aerial Photograph (2005)

FIGURE 1