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Attorneys for Respondent
EXXONMOBIL OIL CORPORATION

BEFORE THE STATE OF CALIFORNIA

STATE WATER RESOURCES CONTROL BOARD

IN THE MATTER OF THE PETITION OF

FORMER EXXONMOBIL JALK FEE

PROPERTY

California Regional Water Quality Control
Board, Los Angeles Region

Case No. ________________

PETITION FOR REVIEW AND REQUEST FOR STAY AND HEARING

(Cal. Water Code §§ 13320, 13321; Cal. Code Regs. tit. 23 § 2050 *et seq.*)

INTRODUCTION

Petitioner ExxonMobil Oil Corporation ("ExxonMobil" or "Petitioner") respectfully petitions the California State Water Resources Control Board ("State Board") to review the following requirements issued by the Los Angeles Regional Water Quality Control Board's ("Regional Board")

- Requirement for Additional Off-Site Groundwater Investigations, Pursuant to California Water Code Section 13267 Order, and
- Requirement for Additional Soil Vapor and Soil Investigations, Pursuant to California Water Code Section 13267 Order.

ExxonMobil brings this petition pursuant to California Water Code section 13320 and California Code of Regulations ("CCR") Title 23, Section 2050 et seq.

PETITION FOR REVIEW

I. NAME AND ADDRESS OF PETITIONER

ExxonMobil Oil Corporation
c/o Len Racioppi, Global Development Area Manager – Manufacturing / Superfund
22777 Springwoods Village Parkway
Spring, TX 77389
Telephone: (832) 624-2039
Email: len.m.racioppi@exxonmobil.com

Elizabeth Weaver
Norton Rose Fulbright US LLP
555 South Flower Street
41st Floor
Los Angeles, CA 90071
Telephone: (213) 892-9290
Email: Elizabeth.Weaver@nortonrosefulbright.com

II. REGIONAL BOARD ACTION FOR WHICH PETITIONER SEEKS REVIEW

Petitioner seeks review of the Regional Board's January 12, 2018 Requirement for Additional Off-Site Groundwater Investigations, Pursuant to California Water Code Section 13267 Order, and January 19, 2018 Requirement for Additional Soil Vapor and Soil Investigations, Pursuant to California Water Code Section 13267 Order (collectively "Requirements"). A copy of the Requirements are attached hereto as Exhibit 1 and Exhibit 2.

III. DATE OF REGIONAL BOARD ACTION

The Regional Board issued the Requirement for Additional Off-Site Groundwater Investigations, Pursuant to California Water Code Section 13267 Order on January 12, 2018.

The Regional Board issued the Requirement for Additional Soil Vapor and Soil Investigations, Pursuant to California Water Code Section 13267 Order on January 19, 2018.

IV. STATEMENT OF REASONS WHY THE ACTION WAS INAPPROPRIATE OR IMPROPER

The Regional Board's Requirements are improper because ExxonMobil should not be identified as a Responsible Party. ExxonMobil has been in communication with the Regional

Board regarding the fact that Continental Heat Treating ("CHT") is the appropriate Responsible Party at the Jalk Fee property, not ExxonMobil. Most recently, ExxonMobil representatives met with the Regional Board on November 15, 2017 and submitted a follow-up summary of the meeting in its Request for Response to Reports Providing Conclusive Evidence that CHT is Sole Discharger of PCE on December 5, 2017, in furtherance of the issue.

ExxonMobil has presented the Regional Board with substantial evidence that chlorinated solvents migrated from the adjacent CHT property to the Jalk Fee property including information showing: (1) ExxonMobil did not use, store, or discharge chlorinated solvents at the former Jalk Fee property ("Jalk Fee"), (2) CHT owned and operated, and continues to own and operate, a heat treating business adjacent to Jalk Fee that used and stored PCE and generated thousands of gallons of waste PCE, and other chlorinated solvents, in its operations from approximately 1969 to 1995, (3) CHT operated multiple degreasers with documented spills, releases, and even fires in the degreaser on its property as documented by a number of governmental agencies, and CHT was cited for improper waste disposal practices, including the disposal of hazardous waste to unauthorized points, (4) hydrocarbons detected in the soil at the Jalk Fee/CHT property boundary that are co-located with the chlorinated solvent contamination are not crude oil or petroleum fuels such as diesel fuel and most closely resemble a mix of quench oils and mineral oils known to be used in heat treating operations and consistent with the quench oils used in CHT's operations, (5) quench oils are not used in oil and gas production, which formerly occurred at the Jalk Fee property, and (6) CHT's documents establish that CHT's waste contained both PCE and used quench oil. To date, based only on the fact that chlorinated solvents have been found in soil at the Jalk Fee property (and without any evidence or records indicating that ExxonMobil used, stored, or discharged chlorinated solvents at the former Jalk Fee property), the Regional Board has refused to rescind its Section 13267 order and continues to issue new requirements to ExxonMobil. ExxonMobil has not seen or identified any records indicating that it used or stored chlorinated solvents at the Jalk Fee property and has not discharged chlorinated solvents at Jalk Fee. In light of the evidence before the Regional Board, there is no reasonable basis for the Regional Board to suspect that ExxonMobil discharged chlorinated solvents at the Jalk Fee property. Therefore, the Requirements are improper.

V. MANNER IN WHICH PETITIONER IS AGGRIEVED

Despite the lack of evidence that ExxonMobil stored, used, or discharged chlorinated solvents at the Jalk Fee property, the Regional Board is requiring ExxonMobil to (1) prepare a work plan for additional off-site groundwater investigations to adequately delineate the VOCs plume upgradient, downgradient, crossgradient/west, and crossgradient/east by April 9, 2018 and (2) prepare a work plan for additional soil and soil vapor investigations by March 30, 2018. Because ExxonMobil is not a Responsible Party, these requirements are unwarranted, unfair, burdensome and expensive and should be the responsibility of Continental Heat Treating.

VI. ACTION REQUESTED BY PETITIONER

ExxonMobil respectfully requests that the State Board (1) accept this Petition; (2) stay the Requirements pursuant to CCR, Title 23, Section 2053, and (3) rescind the Regional Board's Requirements.

VII. STATEMENT OF POINTS AND AUTHORITIES IN SUPPORT OF PETITION

In order to issue a Water Code section 13267 order, or requirements pursuant to such an order, the Regional Board must have evidence that ExxonMobil discharged, or is suspected of having discharged, chlorinated solvents at the Jalk Fee Property. But, the Regional Board has not provided any evidence that ExxonMobil caused a discharge of chlorinated solvents at the Jalk Fee Property other than the fact that chlorinated solvents have been detected at the Jalk Fee Property. Because there is no evidence that ExxonMobil stored, used, or discharged chlorinated solvents, and no evidence to support even a suspicion that ExxonMobil discharged chlorinated solvents, the Regional Board has improperly issued the Requirement for Submittal of Technical Reports.

As demonstrated in ExxonMobil's March 25, 2015 Request to Name CHT as Discharger (attached hereto as Exhibit 3), February 9, 2017 Report of Additional Evidence in Support of Request to Name CHT as Discharger (attached hereto as Exhibit 4), August 25, 2017 Response to CHT Allegations (attached hereto as Exhibit 5), December 5, 2017 Request for Response to Reports Providing Conclusive Evidence that CHT is Sole Discharger of PCE (attached hereto as Exhibit 6) and during meetings held with the Regional Board on March 3, 2015, July 7, 2016, December 14, 2016, November 15, 2017, ExxonMobil has not used chlorinated solvents during its operations at the Jalk Fee property or stored chlorinated solvents at the Jalk Fee property. Further, there is substantial evidence that chlorinated solvents were used, stored, ***and discharged***, at the adjacent CHT property. Investigations conducted by ExxonMobil in the late fall of 2016 have produced information demonstrating that heat treating quench oils are also present at locations where the highest concentrations of chlorinated solvents have been found, which strongly supports the conclusion that the chlorinated solvents on the Jalk Fee property were directly associated with CHT's heat treating operations and waste management practices. Further CHT's documents demonstrate that its waste stream contained chlorinated solvents and used quench oils. There is simply no reasonable basis to suspect that ExxonMobil discharged chlorinated solvents (or quench oils, for that matter) at the Jalk Fee property.

A. Legal Standard

Pursuant to California Water Code section 13267, the Regional Board may require any person who ***has discharged, discharges, or is suspected of having discharged or discharging***...waste within its region to furnish technical or monitoring program reports.[1] Water Code § 13627(b)(1) (emphasis added). The Regional Board must identify the evidence that supports requiring that person to provide the reports. *Id.*

B. ExxonMobil Has Presented Evidence Establishing That it Has Not Discharged Chlorinated Solvents at the Jalk Fee Property

The Jalk Fee property was used as an oil production field from approximately the 1920s until 1996. It was originally operated by ExxonMobil predecessors, and later leased to, and operated by, Hathaway Oil Company. In the 1990s, ExxonMobil and Hathaway ceased oil production and removed the infrastructure from the property. The Jalk Fee property was redeveloped into an industrial park in 2003, and the current operators are not known to have used

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[1] In addition, Water Code section 13304 authorizes the water board to issue "cleanup and abatement" orders requiring a discharger to cleanup and abate waste, take other necessary remedial action, where the discharger "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." Water Code § 13304(a). The Regional Board has not issued a cleanup and abatement order to ExxonMobil, and is proceeding under a Water Code section 13267 investigation order at this time. However, neither 13304 nor 13267 provides any legal basis for requiring ExxonMobil to assess or remediate contamination caused by another party under the facts at the Jalk Fee site, which clearly identify a responsible polluter or discharger (CHT) that can be required to address the contamination resulting from its operations.

chlorinated solvents in their operations. Chlorinated solvents are not standard chemicals used in oil field operations, and ExxonMobil is not aware of any records indicating that ExxonMobil or Hathaway used chlorinated solvents or that such chemicals were stored or released on the Jalk Fee property.[2]

On the other hand, CHT, who operates the adjacent property to the south of the Jalk Fee property, has been, and is, in the business of cleaning metal parts and processing them with heat—a process that often involves placing the metals parts in a vapor degreaser that employs chlorinated solvents, and then using quench oils to cool metal parts after they are heat-treated. CHT used significant quantities of chlorinated solvents (specifically including PCE) and quench oils in its operations for more than 25 years. The record also clearly shows that CHT had poor operational and waste management practices, as documented by various agencies. CHT has had known discharges of chlorinated solvents and quench oil wastes to the ground, and the Regional Board acknowledges that on-site releases of chlorinated solvents and oils occurred at CHT's property as a result of CHT's operations.

Because the Jalk Fee property had a dirt surface and was unpaved until its redevelopment in 2003, and the CHT property was paved with asphalt and concrete surfaces since its construction in 1969, rainwater and/or spills from the CHT property would have migrated to the Jalk Fee property. ExxonMobil presented the Regional Board with a conceptual site model demonstrating that the chlorinated solvents on Jalk Fee migrated from CHT's property, as well as aerial photos showing the paved surfaces at CHT throughout its operations. ExxonMobil's site conceptual model utilized facts from historical records showing CHT releases of PCE and quench oils at the property boundary between CHT and Jalk Fee. The conceptual site model demonstrates that because (1) the Jalk Fee property was unpaved and unfenced during the majority of the period when CHT was using PCE, (2) CHT's property was paved, and (3) there is a migration pathway across the Jalk Fee property due to shallow subsurface low permeability layer(s) dipping to the north from the CHT

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[2] While petroleum-based solvents have sometimes been used in oil production activities, chlorinated solvents (including PCE) have not. Industry standard solvents used in oil production activities would be non-chlorinated hydrocarbon-based, such as mid-distillates, xylenes and other aromatic compounds. This is consistent with ExxonMobil's statements that there is no evidence of PCE use during the oil and gas activities at the site.

property onto the Jalk Fee property, the conceptual site model demonstrates how PCE in soil at the Jalk Fee property is attributable to the activities of CHT. ExxonMobil's conceptual site model also demonstrates that chlorinated solvents detected in soil away from the property boundary with CHT are also attributable to releases by CHT, as a result of subsurface soil vapor and liquid transport.

Further, as presented to the Regional Board, chlorinated solvents in soils sampled at the Jalk Fee property, near the boundary between the CHT property and Jalk Fee, are co-located with various hydrocarbons. The hydrocarbons are inconsistent with crude oil such as that produced on Jalk Fee and also inconsistent with other conventional petroleum fuels such as diesel fuel. The soils contain a range of largely de-aromatized hydrocarbons that are consistent with quench oils used in heat treating operations, including the type of quench oil used by CHT according to historical records. CHT documents identify quench oils and mineral oils among the chemicals stored and used at the CHT property. Forensic analysis shows that a mixture of quench oils and mineral oils typically used in heat treating operations accounts for the hydrocarbon fingerprint found in the soil at the property boundary between the Jalk Fee and CHT properties. This evidence further substantiates ExxonMobil's conceptual site model—that waste from the CHT property (chlorinated solvents and a mix of quench/mineral oils) migrated from the CHT property to the Jalk Fee property.

This evidence establishes that ExxonMobil has not discharged, or permitted a discharge of, chlorinated solvents at the Jalk fee property.

C. The Regional Board Has No Evidence that Chlorinated Solvents Were Used, Stored, or Discharged at the Jalk Fee Property

The sole evidence relied upon by the Regional Board to support its contention that ExxonMobil either discharged or is suspected of having discharged chlorinated solvents on the Jalk Fee property is (1) PCE was detected in soil at certain locations on the Jalk Fee property, (2) an EPA report lists "waste solvents" as being generated at some oil production properties, (3) the geologic cross-section generated by the Regional Board indicates a silty surface dips from the Jalk Fee property to the CHT property which could serve as a pathway for contaminants to migrate from the Jalk Fee property onto CHT's property, and (4) that there was a "trucking operation" on the

Jalk Fee property. Regional Board Response to ExxonMobil's Request to Name Continental Heat Treating as Discharger Pursuant to California Water Code Section 13267 Order Dated August 24, 2010, issued on July 22, 2016 (attached hereto as Exhibit 7).

First, regarding the "waste solvents" identified in a 2002 EPA publication, this publication does not state the "waste solvents" are chlorinated-based. Petroleum-based solvents are routinely used in oil production activities, but chlorinated solvents (including PCE) are not. Industry standard solvents used in oil production activities would be non-chlorinated hydrocarbon-based, such as mid-distillates, xylenes and other petroleum compounds. This is consistent with ExxonMobil's statements that there is no evidence of PCE use during the oil and gas activities at the site.

Second, regarding the Regional Board's cross-section, the Regional Board used only two data points to develop its cross-section—which is not consistent with industry geologic practice. On the other hand, a Professional Geologist from Cardno developed cross-sections based upon evaluation of the logs of the numerous borings and wells drilled at the two sites, which confirms that the silt layer slopes from the CHT property to the Jalk Fee property—the exact opposite of what is shown in the Regional Board's cross-section.

Third, regarding the alleged "trucking operation" on the property, there are no records of the property being leased by a trucking company, that truck repair activities were present at the Jalk Fee property, or of any trucking operation that utilized PCE or other chlorinated solvents. ExxonMobil and Hathaway's operations on the property were limited to oil and gas operations. In fact a recent review by a retained interpretative aerial photographer indicates a lack of structures of sufficient size to be used for truck repairs. Further, ExxonMobil conducted a soil gas investigation in the former trucking operations area in 1996, and the results indicated that a release of PCE had not occurred in this area. Therefore this area is not a secondary source. And again, there is no evidence of an onsite release of PCE in this vicinity.

Finally, in light of the evidence ExxonMobil presented to the Regional Board regarding the operations at the Jalk Fee and the CHT properties, and based on ExxonMobil's conceptual site model, the mere presence of PCE in soil at certain locations at the Jalk Fee property does not support ExxonMobil being identified as the Responsible Party. The distribution of PCE in soil borings at

Jalk Fee is consistent with ExxonMobil's conceptual site model, which demonstrated pathways and mechanisms that resulted in PCE migrating laterally away from the CHT source area near the property boundary. The mere presence of PCE in certain soil borings identified by the Regional Board at Jalk Fee alone does not require the assumption of a second release area on the Jalk Fee property.

All of the theories relied on by the Regional Board are mere speculation. No evidence has been presented showing a discharge or release of chlorinated solvents by ExxonMobil, or even of a discharge of chlorinated solvents of which ExxonMobil was aware or which it allowed to occur. While the Regional Board may have presented some evidence—none of which indicated that ExxonMobil discharged or released *or even used* chlorinated solvents on Jalk Fee—in issuing its original Section 13267 Order on August 27, 2010, ExxonMobil has since provided a much more convincing and plausible explanation for the source of the chlorinated solvents found in the soil at the Jalk Fee property. In light of the direct and indirect evidence presented to the Regional Board, there is no reasonable basis for the Regional Board to suspect that ExxonMobil has discharged chlorinated solvents at the Jalk Fee property. Therefore the Requirement for Submittal of Technical Reports must be rescinded.

VIII. STATEMENT THAT COPIES OF PETITION HAVE BEEN SENT TO THE REGIONAL BOARD

A copy of this Petition was transmitted to the Executive Officer of the Regional Board on February 12, 2018.

IX. STATEMENT THAT THE ISSUES RAISED IN THE PETITION WERE PRESENTED TO THE REGIONAL BOARD

The issues raised in this petition were raised before the Regional Board on numerous occasions, including in ExxonMobil's March 25, 2015 Request to Name CHT as Discharger (attached hereto as Exhibit 3), February 9, 2017 Report of Additional Evidence in Support of Request to Name CHT as Discharger (attached hereto as Exhibit 4), August 25, 2017 Response to CHT Allegations (attached hereto as Exhibit 5), December 5, 2017 Request for Response to Reports Providing Conclusive Evidence that CHT is Sole Discharger of PCE (attached hereto as Exhibit 6) and before the Regional Board during meetings between the Regional Board and ExxonMobil on March 3, 2015, July 7, 2016, December 14, 2016, and November 15, 2017. Regarding any newly discovered information raised in this petition, ExxonMobil was not able to raise them below because ExxonMobil was unaware of them and could not have reasonably been aware of them in time to raise them before the Regional Board.

X. REQUEST FOR PREPARATION OF THE ADMINISTRATIVE RECORD

By copy of this Petition to the Executive Office of the Regional Board, ExxonMobil hereby requests the preparation of the administrative record herein.

XI. REQUEST FOR HEARING

ExxonMobil requests that the State Board hold a hearing in this matter.

XII. REQUEST FOR STAY

ExxonMobil requests that the State Board issue a stay of the Requirements as to ExxonMobil as of the date of issuance pursuant to CCR, Title 23, Section 2053, while the State Board is considering this petition. As set forth in the declaration of Len Racioppi, submitted concurrently with this petition, since the State Board has up to 90 days to review an action upon a petition, there will be substantial harm to ExxonMobil from the costs of implementing actions for which it is not liable. Declaration of Len Racioppi ("Racioppi Decl."), ¶ 2. Specifically, ExxonMobil will be required to (1) prepare a work plan for additional off-site groundwater investigations to adequately delineate the VOCs plume upgradient, downgradient, crossgradient/west and crossgradient/east by April 9, 2018, and (2) prepare an additional soil and soil vapor investigation work plan by March 30, 2018. Each of these would need to be completed before the State Board is required to act on ExxonMobil's petition. *Id.* A preliminary estimate by ExxonMobil's environmental consultant, Cardno, indicates that completing the work plans in the Requirements and implementing such work could cost up to $284,000. *Id.*

Granting a stay of the Requirements will not cause substantial harm to other interested persons or to the public, because the years that have passed between each of the Regional Board's efforts with regard to the Jalk Fee property demonstrate that the Board does not view this site as presenting near-term risks. Racioppi Decl. ¶ 3. ExxonMobil acknowledges that the delays by the

Regional Board in issuing formal directives between November 2014 and November 2016 and January 2018 have been largely due to the discussions taking place between ExxonMobil and the Regional Board in trying to resolve the issue of which party is the appropriate Responsible Party to conduct this work, and not due to the Regional Board's failure to take timely action. ExxonMobil respectfully suggests that resolving the issue of the appropriate discharger has been, and should continue to be, very important to resolve before new directives are undertaken.

ExxonMobil notes the following relevant delays have already occurred: it submitted an amended work plan for indoor air assessment on November 14, 2014. Racioppi Decl. ¶ 4. The Regional Board did not formally approve this work plan until the November 18, 2016 Requirement for Submittal of Technical Reports. *Id.* ExxonMobil submitted a site assessment report on October 20, 2014. *Id.* The Regional Board did not formally respond to this site assessment report until the November 18, 2016 Requirement for Submittal of Technical Reports. *Id.* Finally, ExxonMobil submitted a revised public participation plan on November 14, 2014. *Id.* The Regional Board did not formally respond to this plan until the November 18, 2016 Requirement for Submittal of Technical Reports. *Id.* Then, in January 2018, the Regional Board issued the Requirements which are the subject of this Petition.

In summary, the Regional Board waited two years to require ExxonMobil to implement work for which ExxonMobil submitted work plans. The Regional Board similarly waited a further two years to issue the Requirements which are the subject of this Petition despite the fact that ExxonMobil has shown clearly that it is not the discharger or the Responsible Party. Only a stay of these Requirements can prevent ExxonMobil from being unfairly prejudiced by being required to undertake work for which it is not responsible.

As is detailed in this petition, there are substantial questions of law and fact regarding the Regional Board's issuance of the Requirement for Submittal of Technical Reports to ExxonMobil that justify the issuance of a stay. Racioppi Decl. ¶ 5.

XIII. STATEMENT OF ADDITIONAL EVIDENCE

To the extent additional evidence becomes available that was not previously presented to the Regional Board, pursuant to CCR Title 23, Section 2050.6, ExxonMobil will request that it be permitted to supplement the record before the State Board, and ExxonMobil will advise the State Board more specifically regarding the nature of the evidence and facts to be presented and why such evidence was not previously submitted.

Dated: February 12, 2018

Respectfully submitted,
NORTON ROSE FULBRIGHT US LLP
ELIZABETH M. WEAVER
LAUREN A. SHOOR

By________________________
LAUREN A. SHOOR
Attorneys for Respondent
EXXONMOBIL OIL CORPORATION

PROOF OF SERVICE

I, Monica Tapia, declare:

I am a citizen of the United States and employed in Los Angeles County, California. I am over the age of eighteen years and not a party to the within-entitled action. My business address is 555 South Flower Street, Forty-First Floor, Los Angeles, California 90071. On February 12, 2018, I served a copy of the within document(s):

PETITION FOR REVIEW AND REQUEST FOR HEARING AND STAY

☐ by transmitting via facsimile the document(s) listed above to the fax number(s) set forth below on this date before 5:00 p.m.

☒ by placing the document(s) listed above in a sealed envelope with postage thereon fully prepaid, in the United States mail at Los Angeles, California addressed as set forth below.

☐ by placing the document(s) listed above in a sealed Federal Express envelope and affixing a pre-paid air bill, and causing the envelope to be delivered to a Federal Express agent for delivery.

☐ by personally delivering the document(s) listed above to the person(s) at the address(es) set forth below.

☒ by transmitting via e-mail or other electronic transmission the document(s) listed above to the person(s) at the e-mail address(es) set forth below.

By Email
State Water Resources Control Board
waterqualitypetitions@waterboards.ca.gov

By Email and U.S. Mail
Samuel Unger, Executive Officer
Los Angeles Regional Water Quality Control Board
320 W. 4th Street, Suite 200
Los Angeles, CA 90013
Samuel.Unger@waterboards.ca.gov

I am readily familiar with the firm's practice of collection and processing correspondence for mailing. Under that practice it would be deposited with the U.S. Postal Service on that same day with postage thereon fully prepaid in the ordinary course of business. I am aware that on motion of the party served, service is presumed invalid if postal cancellation date or postage meter date is more than one day after date of deposit for mailing in affidavit.

I declare under penalty of perjury under the laws of the State of California that the above is true and correct.

Executed on February 12, 2018, at Los Angeles, California.

Monica Tapia

EXHIBIT 1

CALIFORNIA
Water Boards

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

Los Angeles Regional Water Quality Control Board

January 12, 2018

Ms. Marla Madden
ExxonMobil Environmental Services Co.
8941 Atlanta Avenue, # 384
Huntington Beach, CA 92646

RETURN MAIL
RETURN RECEIPT REQUESTED
CLAIM NO. 7017 0190 0000 4172 8599

SUBJECT: REQUIREMENT FOR ADDITIONAL OFF-SITE GROUNDWATER INVESTIGATIONS, PURSUANT TO CALIFORNIA WATER CODE SECTION 13267 ORDER

SITE: FORMER EXXONMOBIL JALK FEE PROPERTY, 10607 NORWALK BOULEVARD, SANTA FE SPRINGS, CA (SCP NO. 0203, SITE ID NO. 1848000)

Dear Ms. Madden:

Los Angeles Regional Water Quality Control Board (Regional Board) staff reviewed the August 15, 2017, *First Half 2017 Groundwater Monitoring and Status Report* (Report), prepared and submitted by Cardno ERI on your behalf for the referenced site. The California Water Code (CWC) section 13267 Order dated August 24, 2010 requires conducting semi-annual groundwater monitoring activities, and submittal of semi-annual reports.

SUMMARY OF THE REPORT

The Report summarizes the first semiannual groundwater monitoring activities of 2017. All on-site and off-site monitoring wells were sampled and analyzed for volatile organic compounds (VOCs), and total petroleum hydrocarbons.

REGIONAL BOARD RESPONSE

Based upon review of the information in the Report and case files, the Regional Board provides the following requirements:

1. The VOCs plume originating from the site requires further delineation in the following locations/directions, with the reason stated below:

   As shown in Table 1 below, VOCs concentrations in samples collected from wells MW-7B, MW-11C, MW-4, and MW-8C, indicate that the extent of the VOCs plume originating from the site has not been adequately delineated in the upgradient, downgradient, crossgradient/west, and crossgradient/east, respectively.

Table 1 (Sampling: May 26-28, 2017)

	PCE	TCE	Cis-1,2-DCE	1,1-DCA	1,1-DCE	VC
MW-7B (Upgradient)	100	86	27	11	84	0.39
MW-11C (Downgradient)	3.2	55	65	9.4	82	6.7
MW-04[1] (Crossgradient/West)	110	66.6	33.1	15.1	67.1	ND<0.5[2]
MW-8C (Crossgradient/East)	0.42	75	80	1.4	28	9.4

Notes: 1 = Well has been reported dry since November 2014. Data correspond to May 2014
2 = Non-detected above the laboratory reporting limit of 0.5 micrograms per liter
All concentration units are in micrograms per liter
PCE = Tetrachloroethene
TCE = trichloroethene
Cis-1,2-DCE = cis-1,2-dichloroethene
1,1-DCA = 1-1,dichloroethane
1,1-DCE = 1,1-dichloroethe
VC = vinyl chloride

2. A work plan (technical report) for additional off-site groundwater investigations to adequately delineate the VOCs plume shall be prepared and submitted to the Regional Board via GeoTracker by **April 9, 2018,** for our review and approval.

Due to the comingling of groundwater plumes associated with the Continental Heat Treating (CHT) and ExxonMobil sites, the Regional Board recommends that CHT and ExxonMobil work cooperatively in assessing, monitoring, and cleaning up subsurface media contaminated by releases that have occurred on each of the referenced sites.

The due date for submittal of the technical report constitutes an amendment to the requirements of the CWC section 13267 Order originally dated August 24, 2010 (Order). All other aspects of the Order originally dated August 24, 2010, and the amendments thereto, remain in full force and effect. The required technical report is necessary to investigate the characteristics of and extent of the discharges of waste at the site and to evaluate cleanup alternatives. Therefore, the burden, including costs, of the report bears a reasonable relationship to the need for the report and benefits to be obtained. Pursuant to section 13268 of the CWC, failure to submit the required technical report by the specified due date may result in civil liability administratively imposed by the Regional Board in an amount up to one thousand dollars ($1,000) for each day the technical report is not received.

If you have any questions, please contact Mr. Luis Changkuon, Project Manager, at (213) 576-6667 or luis.changkuon@waterboards.ca.gov.

Sincerely,

Samuel Unger

Samuel Unger, P.E.
Executive Officer

cc: Listed on following page

cc: Len Racioppi/Sara Morey, ExxonMobil
James Anderson, Cardno ERI
David Vick
Michelle F. Smith
Thomas Clark, Coast Aluminum and Architectural, Inc.
William Macnider, CSI Electric Contractors, Inc.
James Stull, Continental Heat Treating
Michael Francis, Demetriou, Del Guercio, Springer & Francis, LLP
Ashley Arthur/Howard Schwimmer, Rexford Industrial Realty, LP
Preston Brooks, Cox Castle & Nicholson LLP
Rick Fero, Fero Environmental
Wayne Praskins, United States Environmental Protection Agency
Gene Lucero, Omega Chemical Site Potentially Responsible Parties Organized Group
Elizabeth Weaver, Norton Rose Fulbright US LLP

EXHIBIT 2

CALIFORNIA
Water Boards

Edmund G. Brown Jr.
Governor

Matthew Rodriquez
Secretary for
Environmental Protection

Los Angeles Regional Water Quality Control Board

January 19, 2018

Ms. Marla Madden
ExxonMobil Environmental Services Co.
8941 Atlanta Avenue, # 384
Huntington Beach, CA 92646

RETURN MAIL
RETURN RECEIPT REQUESTED
CLAIM NO. 7013 1090 0000 7172 5317

SUBJECT: REQUIREMENT FOR ADDITIONAL SOIL VAPOR AND SOIL INVESTIGATIONS, PURSUANT TO CALIFORNIA WATER CODE SECTION 13267 ORDER

SITE: FORMER EXXONMOBIL JALK FEE PROPERTY, 10607 NORWALK BOULEVARD, SANTA FE SPRINGS, CA (SCP NO. 0203, SITE ID NO. 1848000)

Dear Ms. Madden:

Los Angeles Regional Water Quality Control Board (Regional Board) staff reviewed the October 30, 2017, *Site Assessment Report* (Report), prepared and submitted by Cardno ERI on your behalf for the referenced site. The Report was required by the Regional Board in the June 20, 2017 amendment to the California Water Code (CWC) section 13267 order originally dated August 24, 2010.

SUMMARY OF THE REPORT

The Report provides the results of a soil and soil vapor investigation conducted at the site in August 2017. Four soil borings (B38 through B41) were advanced in the vicinity of B22 to a total depth of approximately 60 feet below ground surface (bgs). Soil samples were collected at 5-foot intervals from 5 feet bgs to 60 feet bgs, and analyzed for volatile organic compounds (VOCs) and total petroleum hydrocarbons (TPH). One permanent multi-depth soil vapor probe (SVP15) was installed, with probes located at approximately 5, 15, 30, 60, and 85 feet bgs. Soil vapor samples were collected and analyzed for VOCs and TPH.

REGIONAL BOARD RESPONSE

Based upon review of the information submitted in the Report and case files, the Regional Board provides the following responses:

1. The data collected to date indicate that the extent of VOCs in soil is not fully defined in the vicinity of the soil borings described below:
    a. Tetrachloroethene (PCE) was detected in all soil samples collected from the four soil borings advanced in August 2017 in the vicinity of boring B22. PCE concentrations in soil ranged from 0.3 micrograms per kilogram (μg/kg) to 6,300 μg/kg.
    b. The table below summarizes PCE concentrations detected in soil samples collected from soil borings advanced between 1994 and 2014.

Borings	Month/Year Advanced	PCE[1]	Distance[2]
GP-6, GP-9, GP-10	September 1994	22 – 55,000,000	30 - 50
B7, B8, SVP2	July 2012	15 – 2,470	55 - 70
B18, SVP6, SVP7	September 2012	12 – 1,860	50 - 120
B23	September 2014	45 - 125	140

Notes: 1 = Detected PCE concentration range in µg/kg
2 = Approximate distance range from the borings to the southern property boundary in feet

2. In September 2014, PCE was detected in soil vapor probe SVP9 at approximately 5 feet, 15 feet, 30 feet, 60 feet, and 85 feet bgs, at concentrations of 6,500 micrograms per cubic meter (µg/m^3), 40,000 µg/m^3, 210,000 µg/m^3, 380,000 µg/m^3, and 190,000 µg/m^3, respectively. Soil vapor probe SVP9 is located in the northern portion of the site. These results indicate that the extent of VOCs in soil vapor is not fully defined in the vicinity of SVP9.

3. A work plan (technical report) for additional soil and soil vapor investigations shall be prepared and submitted to the Regional Board via GeoTracker by **March 30, 2018**.

The due date for submittal of the technical report constitutes an amendment to the requirements of the CWC section 13267 Order originally dated August 24, 2010 (Order). All other aspects of the Order originally dated August 24, 2010, and the amendments thereto, remain in full force and effect. The required technical report is necessary to investigate the characteristics of and extent of the discharges of waste at the site and to evaluate cleanup alternatives. Therefore, the burden, including costs, of the report bears a reasonable relationship to the need for the report and benefits to be obtained. Pursuant to section 13268 of the CWC, failure to submit the required technical report by the specified due date may result in civil liability administratively imposed by the Regional Board in an amount up to one thousand dollars ($1,000) for each day the technical report is not received.

If you have any questions, please contact Mr. Luis Changkuon, Project Manager, at (213) 576-6667 or luis.changkuon@waterboards.ca.gov.

Sincerely,

Samuel Unger

Samuel Unger, P.E.
Executive Officer

cc: Len Racioppi/Sara Morey, ExxonMobil
James Anderson, Cardno ERI
David Vick and Michelle F. Smith
Thomas Clark, Coast Aluminum and Architectural, Inc.
William Macnider, CSI Electric Contractors, Inc.
James Stull, Continental Heat Treating
Michael Francis, Demetriou, Del Guercio, Springer & Francis, LLP
Howard Schwimmer, Rexford Industrial Realty, LP
Preston Brooks, Cox Castle & Nicholson LLP
Rick Fero, Fero Environmental
Wayne Praskins, United States Environmental Protection Agency
Gene Lucero, Omega Chemical Site Potentially Responsible Parties Organized Group
Elizabeth Weaver, Norton Rose Fulbright US LLP

EXHIBIT 3

Marla D. Madden
ExxonMobil Environmental Services Company
Lead Project Manager

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ExxonMobil

March 25, 2015

Mr. Arthur Heath
California Regional Water Quality Control Board
Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, California 90013

SUBJECT **Request to Name Continental Heat Treating as Discharger**
Former ExxonMobil Jalk Fee Property
10607 Norwalk Boulevard
Santa Fe Springs, California
CRWQCB-LAR Case No. 0203; Site I.D. No. 1848000

Mr. Heath:

Enclosed for review is the report which summarizes the evidence presented by ExxonMobil Environmental Services Company (EMES) during the meeting held with representatives of the California Regional Water Quality Control Board – Los Angeles Region (CRWQCB-LAR) on March 3, 2015 regarding the above-referenced site. Cardno ERI prepared this report for EMES, on behalf of ExxonMobil US Production Company (ExxonMobil).

This report presents conclusive evidence that ExxonMobil could not be responsible for the chlorinated solvents present in the soil on the Jalk Fee property because ExxonMobil did not use chlorinated solvents during its operations on the Jalk Fee property, CHT used significant quantities of solvents in its degreasing operations from approximately 1969 to 1995, and CHT had poor operational practices as documented by various agency citations and notices of violation, which resulted in various discharges of solvents and other chemicals to the ground. Additionally, an updated site conceptual model is presented, which demonstrates that preferential pathways exist between the CHT and Jalk Fee properties and explains the migration of the chlorinated solvents from the CHT property to the Jalk Fee property.

Based on the evidence presented in this report, EMES, on behalf of ExxonMobil, requests that the CRWQCB-LAR identify CHT as the discharger and responsible party for the chlorinated solvents identified in the soil on the CHT, Jalk Fee and 10711 Norwalk Boulevard properties; rescind its Order dated August 24, 2010 requiring ExxonMobil to assess and monitor the extent of chlorinated solvents; and formally remove ExxonMobil as the named discharger and responsible party for the chlorinated solvents on the subject properties.

Please call the undersigned at (714) 964-4935 for any questions regarding the content of this document.

Sincerely,

Marla D Madden

Marla D. Madden
Project Manager

Attachment: **Request to Name Continental Heat Treating as Discharger, Former ExxonMobil Jalk Fee Property, 10607 Norwalk Boulevard, Santa Fe Springs, California**, prepared by Cardno ERI.

C: w/attachment:
Mr. Luis Changkuon, California Regional Water Quality Control Board – Los Angeles Region
Mr. Thomas Clark, Coast Aluminum and Architectural Inc./Clark Holdings, LLC, property owner
Mr. William Macnider, CSI Electrical Contractors, Inc., property owner
Ms. Michelle F. Smith, property owner
Mr. John Maple, property owner

C: w/o attachment:
Mr. James Anderson, Cardno ERI

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March 25, 2015
Cardno ERI 08115504.R17

Mr. Arthur Heath
California Regional Water Quality Control Board
Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, California 90013

SUBJECT **Request to Name Continental Heat Treating as Discharger**
Former ExxonMobil Jalk Fee Property
10607 Norwalk Boulevard
Santa Fe Springs, California
CRWQCB-LAR Case No. 0203; Site I.D. No. 1848000

Mr. Heath:

At the request of ExxonMobil Environmental Services Company (EMES), on behalf of ExxonMobil US Production Company (ExxonMobil), Cardno ERI has prepared this request to name Continental Heat Treating (CHT) as discharger for the above-referenced site (Plate 1). This report summarizes the evidence EMES presented to representatives of the California Regional Water Quality Control Board – Los Angeles Region (CRWQCB-LAR) on March 3, 2015, namely that ExxonMobil did not use chlorinated solvents on the Jalk Fee property and therefore could not be the discharger of the PCE identified in the soil beneath the subject site, and that CHT used extensive quantities of solvents in its degreasing operations from approximately 1969 to 1995, had poor operational practices that resulted in spills of solvents and other chemicals to the ground surface, and received various agency citations and notices of violation (NOVs) for releases of solvents and other chemicals. In addition, an updated site conceptual model was presented, which demonstrates the preferential pathways that allowed chlorinated solvents released from the CHT facility to migrate and be observed on the Jalk Fee property.

The evidence presented by EMES is consistent with the same conclusions the CRWQCB-LAR has already reached, as demonstrated by the CRWQCB-LAR's letter dated June 23, 2010 to CHT (Appendix A). The CRWQCB-LAR stated that significant quantities of PCE were stored and used by CHT, that primary sources of PCE contamination (degreaser, storage area, etc.) have been identified at the CHT property, that releases of chlorinated solvents at CHT have impacted the subsurface, that the pipe trench leading from the degreaser to the north end of the building may have created a potential preferential pathway for the migration of PCE, and that no primary sources of PCE contamination have been identified on the Jalk Fee property.

Therefore, EMES, on behalf of ExxonMobil, requests that the CRWQCB-LAR review the evidence and identify CHT as the discharger and responsible party for the chlorinated solvents identified in the soil on the CHT, Jalk Fee and 10711 Norwalk Boulevard properties; rescind its Order dated August 24, 2010 requiring ExxonMobil to assess and monitor the extent of chlorinated solvents; and formally remove ExxonMobil as the named discharger and responsible party for the chlorinated solvents on the subject properties.

The following sections will present documentation demonstrating that 1) there is no primary source of chlorinated solvents on the Jalk Fee property, 2) CHT used and stored significant quantities of chlorinated solvents, 3) CHT is the source of chlorinated solvents based on the history of spills and releases as documented from various agency inspections and NOVs, and 4) preferential pathways exist between the CHT and Jalk Fee properties, which explain the migration of the chlorinated hydrocarbons in soil from the CHT property to the Jalk Fee property.

HISTORY OF JALK FEE PROPERTY

The Jalk Fee property was used as an oil field from approximately the 1920s until 1996. It was originally operated by ExxonMobil, and later leased and operated by Hathaway Oil Company (Hathaway). In the 1990s, ExxonMobil and Hathaway ceased oil production and removed the infrastructure from the site.

ExxonMobil owned the property during its time of use as an oil field. In 2001, ExxonMobil sold the property to SFS Norwalk. In 2003, the property was developed with paved parking and several industrial buildings, and remains in the same configuration today. The businesses on the eastern half of the property are Coast Aluminum and Architectural Inc. and Contents Restorers of California, and based on interviews with their management conducted during building inspections associated with the preparation of Cardno ERI's *Addendum to Work Plan for Indoor Air Assessment* dated November 14, 2014 for the subject site, the businesses are not known to have used chlorinated solvents in their operations.

From the 1920s until its redevelopment in 2003, the Jalk Fee property had a dirt surface and was unpaved, as can be observed in the historical aerial photos, which would allow rainwater and spills/releases from the adjacent paved CHT property to run off onto and infiltrate into the upper vadose zone of the Jalk Fee property (see Plate 1 and Appendix B for the historical aerial photos).

ExxonMobil has had internal discussions with its personnel who managed oil field operations at various locations, who confirmed that chlorinated solvents were not standard chemicals used in its oil field production operations. This is reinforced by the CRWQCB-LAR's letter dated June 23, 2010 to CHT, which stated that the "Jalk Fee property was used for oil production operations and no primary sources(s) of PCE contamination have been identified [on the property]" (Appendix A). Additionally, file reviews conducted with the City of Santa Fe Springs and the County of Los Angeles did not identify agency records or NOVs, indicating that chlorinated solvents were stored, used or released onto the Jalk Fee property (Appendix C).

In 2014, Cardno ERI conducted a review of the State Water Resources Control Board's online GeoTracker information database of various oil field sites across the State of California that had current or closed environmental cases, and was unable to identify any oil field site that had chlorinated solvents as a contaminant of concern. Additionally, Cardno ERI spoke with representatives of the County of Santa Barbara Environmental Health Services and the California Regional Water Quality Control Board – Central Valley Region, which are agencies that have extensive oil field operations and clean-up projects in their areas of responsibility, and the representatives from both agencies were not aware of any oil field sites within their jurisdictions that had chlorinated solvent contamination.

Levine-Fricke's report dated December 6, 1991 claims that a tenant of Mobil who rented the Jalk Fee property may have used chlorinated solvents on the eastern portion of the property (Levine-Fricke, 1991). The report doesn't cite any source evidence for this statement, and ExxonMobil is unaware of any information that supports this claim. Further, ExxonMobil has conducted extensive reviews of its lease files and has no record that any company or person rented the property during its period of operation or ownership, other than Hathaway. As stated previously, Hathaway was an oil production company, and oil field operators did not use solvents as standard chemicals. Thus, there is no evidence that ExxonMobil, a tenant, or the subsequent property owners and their tenants ever used chlorinated solvents on the property. Therefore, there is no primary source of chlorinated solvents from historical operations on the Jalk Fee property, and the chlorinated solvents in soil must be from an off-site source.

HISTORY OF CHT PROPERTY

The building that is currently present at the CHT property was constructed in 1969, at which time the majority of the property would also have been paved for parking, as is apparent in aerial photographs of the site (Appendix B). Based on information provided by CHT, since commencing operations at the site, the CHT business has cleaned metal parts and processed them with heat. This process requires the cleaning of the metal parts to remove cutting oils and debris, which was performed by placing the metal parts in a solvent-based vapor degreaser. Thus CHT conducted degreasing operations and used chlorinated solvents from approximately 1969 to 1995, as supported by the following documentation.

- Blueprints obtained from the City of Santa Fe Springs file dated 1968 identify a Detrex degreaser (Item #19) in the eastern area of the building (Appendix D).
- The 1968 blueprints also identify a ‘degreaser – future’ (Item #81), located 50 feet south of the north building wall, and 200 feet west of the east building wall (Appendix D).
- A City of Santa Fe Springs Industrial Waste Survey dated December 12, 1969, which indicated CHT was doing metal degreasing (Appendix E).
- A City of Santa Fe Springs Industrial Waste Disposal Permit issued to CHT and dated January 20, 1970, which includes discharge to the sewer of “wastes from…degreasing metals” (Appendix F).
- An inspection report of April 5, 1982, referenced in McLaren Hart’s September 23, 1993 letter, noted in the Special Hazards and Conditions section that a degreaser was present in northeast portion of the building (Appendix G).
- A County of Los Angeles survey report dated March 16, 1984, which identifies that 150 gallons per month of PCE were being used and stored in drums. The report also identifies the use of 1,1,1-trichloroethane at the property, which was another chlorinated solvent commonly used for metal degreasing (Appendix H).
- A County of Los Angeles survey report dated May 19, 1989, which identifies that CHT is conducting degreasing using PERC (another name for PCE); generating 2,200 gallons of PERC per year; storing the PERC in 55 gallon containers, presumed to be drums; disposing of 400 gallons of PERC; and conducting parts wiping, with the excess rags containing oil and solvent stored in covered cans (Appendix I).
- An attachment from a letter from CHT to Mobil Exploration & Producing U.S., Inc. (Mobil) dated July 30, 1993 is a diagram of the CHT facility, which shows a degreaser at the western edge of the CHT building (Appendix J).
- A Los Angeles County Fire Department Request for Service dated November 4, 1993 for the CHT property, which states, “possible illegal discharge into subsurface from PCE metal degreaser” (Appendix K).
- A Los Angeles County Fire Department Health Hazardous Materials Division Industry Survey dated October 6, 1994, which has a hand-drawn map that identifies the ‘position of old degreaser’ inside the

building, and a second hand-drawn map showing a waste storage area for 200 gallons of PCE (‘accum containment 12” concrete w/ roof PERC 200 G’) on the property. The bottom hand-drawn map has “South” written towards the top of the map, placing the waste storage area in the southwest area of the CHT property, which is consistent with other documentation of the storage location at the property. Although the upper hand-drawn map does not have an indicated directional orientation, it is logical to assume that it was drawn in the same orientation as the lower map. Additionally, the hand-drawn ‘area 12X12’ to the right of the building in the document would be in the sidewalk or street if the map orientation were north to the top, whereas it would be inside the property in a south to the top orientation, providing further support that the two maps have the same south to the top of page orientation. Based on this, the ‘old degreaser’ is 40 feet west of the east wall of the building and in close proximity to the northern wall of the building (Appendix L).

- An undated Los Angeles County Fire Department Small Quantity Generator Contingency Plan, which indicates that a 200-gallon tank is being used to store PCE, and 300 gallons of waste PCE are being stored in drums (Appendix M).
- A Los Angeles County Fire Department Case Synopsis dated October 19, 1995 for the CHT Project, which states, “Eventually the old location of the degreaser was established. It appeared this old location was close enough to the northern property line…” (Appendix N).

As shown in these building records, CHT performed vapor degreasing at the property from approximately 1969 through 1995, which necessitated the storage of hundreds of gallons of chlorinated solvents at any time on the property and the generation of significant quantities of waste solvent, such as 2,200 gallons per year in the 1989 record. Over this 26-year operational period, the records show that CHT had one degreaser in the eastern portion of the building (Detrex #19); a second degreaser in the central portion of the building (Item #81), which is the location that is most consistent with depictions in the reports submitted by CHT to the CRWQCB-LAR; a third degreaser along the western end of the building; and possibly even a fourth degreaser at an unidentified location along the northern edge of the building.

In addition to the degreasing operations inside the building and the storage of waste PCE in the southwestern area of the property, it also appears that CHT utilized the northwestern portion of the property as an equipment storage and repair area based on review of the historical aerial photos and several reports (Appendices B and O). Given that storage and repair of equipment occurred in this area of the site, it is likely that the cleaning of parts also occurred here, which is directly adjacent to the area of the Jalk Fee property where the highest PCE concentrations have been observed (Plate 1).

Regulatory oversight and inspections started to become more common in the late 1970s and early 1980s. These regulatory inspections demonstrate that CHT’s practices resulted in numerous documented releases and spills to the ground throughout its operations at the property. The various inspections, investigation reports and violations are summarized below and documented in Appendices G, I, N and P through AC.

- A County of Los Angeles Project Planning and Pollution Control Division Notice dated July 11, 1978 and issued to CHT, which states, "you are hereby instructed to clean the interceptor…also maintained [maintain] the interceptor in good operating condition at all times." At the bottom of the notice is a hand written note, "Violation Corrected 7/2?/78." (Appendix P)
- A County of Los Angeles Department of Health Services Official Notice of Violation dated March 16, 1984 issued for the property at 10643 South Norwalk, where CHT is located, which requires, "you are hereby directed to remove oil from ground in rear storage area" (Appendix Q).
- An Investigation Worksheet dated December 8, 1986 from the City of Santa Fe Springs Public Works Department, which is investigating a complaint that CHT "is discharging industrial waste over the driveway." The report further identifies that "water with vivid blue-green streaks of color was flowing at several gallons per hour into Norwalk Blvd. from Continental's cooling tower area" (Appendix R).
- McLaren Hart's *Perchloroethylene (PCE) and Heavy Metals in Soil at the Jalk Lease* letter dated September 23, 1993, which identifies that three fires occurred in CHT's degreasing equipment, all of which could have resulted in the release of solvents from the degreasing equipment (Appendix G).
  - Degreaser Tank Fire (Code 6205) – 10/2/87
  - Fire in Degreaser (Code 6225) – 4/9/88
  - Fire in Degreaser (Code 6229 – 8/1/88
- An Investigation Worksheet dated October 5, 1987 from the City of Santa Fe Springs, which is investigating a complaint of "blue-green water being discharged to the street" and identifies that "the recent earthquake (10/04/87) had broken several pieces of equipment at this site and a discharge similar to that of 12/08/86 was occurring" (Appendix S).
- An Investigation Worksheet dated February 23, 1988 from the City of Santa Fe Springs, which is investigating a complaint of "discharging I.W. [industrial waste] to street." The worksheet also states "Notice of Violation #0060 was given" (Appendix T).
- A County of Los Angeles Department of Health Services Notice of Violation and Order to Comply dated May 19, 1989 and issued to CHT to 1) "Discontinue the disposal of hazardous waste to an unauthorized point(s)…any waste oil onto the ground"; 2) "Store all hazardous waste in compatible containers which are closed and in good condition…keep lids and bungs on, don't overfill"; 3) Remove and legally dispose of oily surface in rear asphalted yard…discharge of oil waste both onto asphalt top and onto soil (SW corner or rear yard)"; 4) Unlabeled barrels that Mr. Bastian indicated contained either PERC or waste oil"; and 5) "Facility has a continuing problem with mineral oil disg [*sic*] out on the asphalted area" (Appendix U).

- A County of Los Angeles Department of Health Services survey report dated May 19, 1989, with remark of “Apparent motor oil discharge(s) with one auto-type oil filter on ground SW corner” (Appendix I).
- A County of Los Angeles Fire Department Order to Comply dated October 6, 1994, which required “Provide a corrective action plan for unauthorized releases of hazardous waste or constituents – evaluate the area vicinity 120’ W. of the east wall and 30’ S. of the north wall for soil contamination by chlorinated hydrocarbon solvent” (Appendix V).
- A Los Angeles County Fire Department Case Synopsis dated October 19, 1995 for the CHT site in which the agency case worker wrote, “Eventually the old location of the degreaser was established. It appeared this old location was close enough to the northern property line that leaks, sloppy operations or spills could have migrated offsite despite employees’ statements to the contrary…A single boring to a depth of 10’ immediately adjacent but exterior to the concrete sump of the old industrial vapor degreaser was proposed.” The soil sample collected at 6 inches in depth indicated PCE and TCE concentrations of 7.514 and 4.759 mg/kg, respectively. (Appendix N)
- A City of Santa Fe Springs Fire Department Inspection Report & Notice of Violation dated May 25, 2006, for “Continental Heat Treating violated City Ordinance…by having oil in the 3rd stage of their clarifier. Oil must be removed from the clarifier and maintained such that oil is kept out of the sewer system” (Appendix W).
- A City of Santa Fe Springs Fire Department Inspection Report & Notice of Violation dated May 9, 2007, for “Continental Heat Treating violated City Code…by failing to maintain pretreatment equipment in good working order. The third stage of the clarifier had oil in it. Continental Heat Treating must maintain the clarifier to prevent oil from entering the sewer system” (Appendix X).
- A City of Santa Fe Springs Fire Department Inspection Report & Notice of Violation dated May 8, 2012, for “Continental Heat Treating violated…by not maintaining industrial waste pretreatment equipment. There was oil in the clarifier.” (Appendix Y).

As documented by these agency inspection reports and NOVs, the limited periodic agency visits to the site over the past three decades have documented numerous instances of chemical releases onto the ground at the property.

SUBSURFACE TRANSPORT MECHANISM/SITE CONCEPTUAL MODEL

The agency inspection records and NOVs demonstrate that CHT’s operational practices caused numerous chemical spills to both the asphalted and soil surface on the CHT property. The following section will demonstrate that two subsurface transport mechanisms were present, which resulted in the movement of chlorinated solvents from the CHT property to the Jalk Fee property.

First, the 1968 blueprints identify subsurface pipe trenches running between the two degreasers and various pieces of equipment within the building. Most significantly, one pipe trench branches off the east-west pipe trench that connects to degreaser #19, runs to the north, and terminates outside of the CHT building near the Jalk Fee property boundary. A second pipe trench runs north from degreaser #81 and terminates at the northern edge of the CHT building. It is unclear from the blueprints if the northern ends of the two pipe trenches are connected to anything, or what type of piping was contained within the trenches. Regardless, based on standard construction methods, the utility trenches would have been backfilled with sand or other similar material that would have a higher permeability than the surrounding soil. Therefore, these trenches would provide a preferential pathway directly from the degreasers to the northern edge of the CHT building and the southern boundary of the Jalk Fee property, allowing the migration of chlorinated solvent vapors (Appendix D). The CRWQCB-LAR reached much the same conclusion in its letter to CHT dated June 23, 2010 (Appendix A).

Second, extensive assessment has been conducted in the southeastern portion of the Jalk Fee property and the northwestern portion of the CHT property, which has allowed for a thorough understanding of the near surface vadose zone lithology between the two properties. Two cross-sections were generated for the area to the west of the CHT building and surrounding Jalk Fee well MW6, where the maximum PCE concentrations have been detected on the Jalk Fee property (Appendix Z, Figures 5.1.1 and 5.1.2). In addition, plan view figures of the distribution of low (clay/silt) and high permeability soils (sand) at 6, 10 and 16 feet bgs of the CHT and Jalk Fee property boundary area show that a laterally continuous, shallow, low permeability silt/clay layer is present under much of the CHT property (Appendix AA, Figures 5.2.1, 5.2.2 and 5.2.3). This silt/clay layer starts to dip along the northern part of the CHT property and continues to dip northward onto the Jalk Fee property to a depth of 15 to 16 feet bgs. Soil above the silt/clay layer on the northern CHT property and on the Jalk Fee property is generally characterized as sand. It should be remembered that the Jalk Fee property was unpaved and essentially an open field until 2003. Therefore, chlorinated solvents released by CHT along the northern portion of the CHT property or directly released onto the Jalk Fee property would infiltrate downward through the higher permeability surface sand until reaching the low permeability unit and then would migrate along the northward dipping contact between the high and low permeability units onto the Jalk Fee property.

The figures in Appendix AA also show the soil samples collected during the assessment activities in the southern portion of the Jalk Fee property and the northern portion of the CHT property, which have total chlorinated solvent concentrations greater than 1,000 mg/kg at 6, 10 and 16 feet bgs. The figures in Appendix AB (Figures 5.3.1 and 5.3.2) show plan view and vertical distributions of the total chlorinated solvent concentrations in proximity to the property boundary between the two sites. Most notably, elevated concentrations of chlorinated solvents are located at a shallow depth on, or immediately adjacent to the CHT boundary (Areas 1, 2 and 3 on Figures 5.3.1 and 5.3.2). However, near the northwest corner of the CHT building, elevated total chlorinated solvent concentrations occur further onto the Jalk Fee property in a narrow northwest trending band, with elevated concentrations becoming deeper with distance from the CHT property boundary. Specifically, chlorinated solvents were measured in soil at concentrations from south to north of 2,517 mg/kg at 4 feet bgs at location T9A-1A (a trench excavation sample located 10 feet north of the property boundary), 350.8 mg/kg at 15 feet bgs at location EX2-26 (an excavation verification sample collected 30 feet north from the property line), and 59,800 mg/kg at 15 feet bgs at location GP-6 (a geoprobe sample located 45 feet north of the property boundary) (Appendix AC). These samples all occurred in sand, and the two samples collected at a depth of 15 feet bgs are located at the contact between the sand and clay/silt units. Specifically, sample EX2-26 is located along a sand-clay/silt basal contact, and the GP-6 sample from 15 feet bgs is located at a sand-clay/silt lateral contact. The relationship between the stratigraphic contacts and the distribution of elevated chlorinated solvent concentrations suggests that the solvent-containing soil in this area is derived from a lateral transport mechanism. This is further supported by the soil samples collected in the vicinity of location GP-6, which are significantly lower in total chlorinated solvent concentrations. Specifically, the two samples collected from location GP-6 at shallower depths (5 and 10 feet bgs) had total chlorinated solvent concentrations of 0.33 mg/kg and 0.021 mg/kg, respectively, and the soil sample collected above sample EX2-26 at 6 feet bgs [sample EX2-26(A)] had a total chlorinated solvent concentration of 0.715 mg/kg (Appendix AC). This distribution pattern indicates that surface releases of chlorinated solvents were not occurring in these areas, as surface releases would have resulted in similar to higher concentrations of chlorinated solvents with residual saturation in the shallower soil samples. Furthermore, the presence of the elevated shallow detections abutting the CHT-ExxonMobil property line supports that chlorinated solvent release(s) occurred in the vicinity of the property line and transport occurred to the north onto the Jalk Fee property. This transport was likely facilitated by runoff from the CHT property (including roof runoff from the CHT building), which caused the movement of chlorinated solvents away from the property line onto the Jalk Fee property.

ExxonMobil historically has conducted several remedial excavations on the Jalk Fee site to facilitate the sale and redevelopment of the property, which are depicted on Plate 2. Any soil samples discussed above from the excavation areas are pre-excavation samples or confirmatory samples taken from the base and sides of the excavations. The two largest and most northerly excavation areas on the Jalk Fee property, under the current Contents Restorers of California building, were excavated to a maximum depth of 19 feet bgs; TPH-containing soil was removed, and PCE was not detected in the verification samples, with the exception of only one sample (JF-M3-S35-NW-13 collected from excavation M3 at 0.27 mg/kg). The three excavations that extended along and close to the CHT property boundary went as deep as 15 feet bgs**,** and both TPH and elevated PCE concentrations were measured in the pre-remediation and/or verification samples. (Appendix AC)

Elevated concentrations of total petroleum hydrocarbons and chlorinated hydrocarbons, however, are generally not co-located across the majority of the Jalk Fee site (Appendix AD, Figure 4.6). For example, the TPH concentrations in the northern excavation areas do not contain chlorinated solvents, whereas several of the near surface soil samples collected in the vicinity of the property line contain both elevated TPH and chlorinated solvents. Although the soil samples in the vicinity of the property line contain both chlorinated solvents and TPH, the respective concentrations are generally both low, or with either PCE or TPH significantly higher in concentration than the other constituent. These results reinforce the site conceptual model in which chlorinated solvents from CHT released along the northern portion of the CHT property or directly onto the Jalk Fee property infiltrated downward through the higher permeability surface sand, until reaching the low permeability unit, and then migrated along the northward dipping contact between the high and low permeability units onto the Jalk Fee property.

SUMMARY AND CONCLUSIONS

As the CRWQCB-LAR has already acknowledged and demonstrated with its letter dated June 23, 2010, CHT is the only primary source of chlorinated solvents on the CHT and Jalk Fee properties.

- There are no primary sources of PCE on the Jalk Fee property as chlorinated solvents are not typically used in oil field activities, no evidence of PCE use at the Jalk Fee property has been identified, and other CA regulatory agencies and GeoTracker do not identify chlorinated solvent contamination at other oil field properties.
- The surface of the Jalk Fee property was unpaved soil until the property was redeveloped in 2003, allowing surface spills and precipitation to migrate downward.
- CHT had several primary sources of chlorinated solvents including multiple degreasers within its building, storage areas, and the northwestern area of the site where equipment storage and repairs were likely conducted.
- CHT used significant quantities of chlorinated solvents for degreasing operations from approximately 1969 through 1995, including 2,200 gallons a year in 1989.
- Inadequate operational and housekeeping practices by CHT resulted in numerous releases/spills of chlorinated solvents and other chemicals, which were identified during infrequent agency inspections, resulting in various NOVs.
- Several pipe trenches led from the degreasers to the northern edge of the building and property line, which had higher permeable backfill and would have been preferential pathways for the migration of chlorinated solvent vapor from the CHT building to the Jalk Fee property.
- Assessment activities have identified that a low permeability silt/clay unit is present in the near surface vadose zone between both properties and generally dips to the north, providing an additional preferential pathway for subsurface chlorinated solvents to migrate along the contact plane from the CHT property onto the Jalk Fee property.

- The distribution pattern of subsurface PCE indicates that the PCE was released at the surface from CHT at or adjacent to the property boundary and then migrated vertically to deeper depths and laterally to the north onto the Jalk Fee property.

Based on the evidence provided, it has been demonstrated that CHT is the source of the chlorinated solvents observed in soil beneath the CHT, Jalk Fee and 10711 Norwalk Blvd properties. Therefore, EMES, on behalf of ExxonMobil, requests that the CRWQCB-LAR identify CHT as the discharger and responsible party for the chlorinated solvents identified on the CHT, Jalk Fee and 10711 Norwalk Boulevard properties; rescind its Order dated August 24, 2010 requiring ExxonMobil to assess and monitor the extent of chlorinated solvents; and formally remove ExxonMobil as the named discharger and responsible party for the chlorinated solvents.

LIMITATIONS

For documents cited that were not generated by Cardno ERI, the data taken from those documents is used “as is” and is assumed to be accurate. Cardno ERI does not guarantee the accuracy of this data and makes no warranties for the referenced work performed nor the inferences or conclusions stated in these documents.

This document and the work performed have been undertaken in good faith, with due diligence and with the expertise, experience, capability and specialized knowledge necessary to perform the work in a good and workmanlike manner and within all accepted standards pertaining to providers of environmental services in California at the time of investigation. No soil engineering or geotechnical references are implied or should be inferred. The evaluation of the geologic conditions at the site for this investigation is made from a limited number of data points. Subsurface conditions may vary away from these data points.

For questions concerning this report, please contact Mr. James Anderson at 805 644 4157, extension 181805.

Sincerely,

PROFESSIONAL GEOLOGIST
ANDREW B. NELSON
exp. 9/30/15
NO 8360
STATE OF CALIFORNIA

James Anderson
Senior Engineer
for Cardno ERI
Direct Line 805 644 4157, ext. 181805
Email: james.anderson@cardno.com

Andy Nelson
Senior Geologist
P.G. 8360
for Cardno ERI
Direct Line 805 644 4157, ext. 181809
Email: andy.nelson@cardno.com

Enclosures:

References
Acronym List

Plate 1	Generalized Site Plan
Plate 2	Excavation Area Location Map

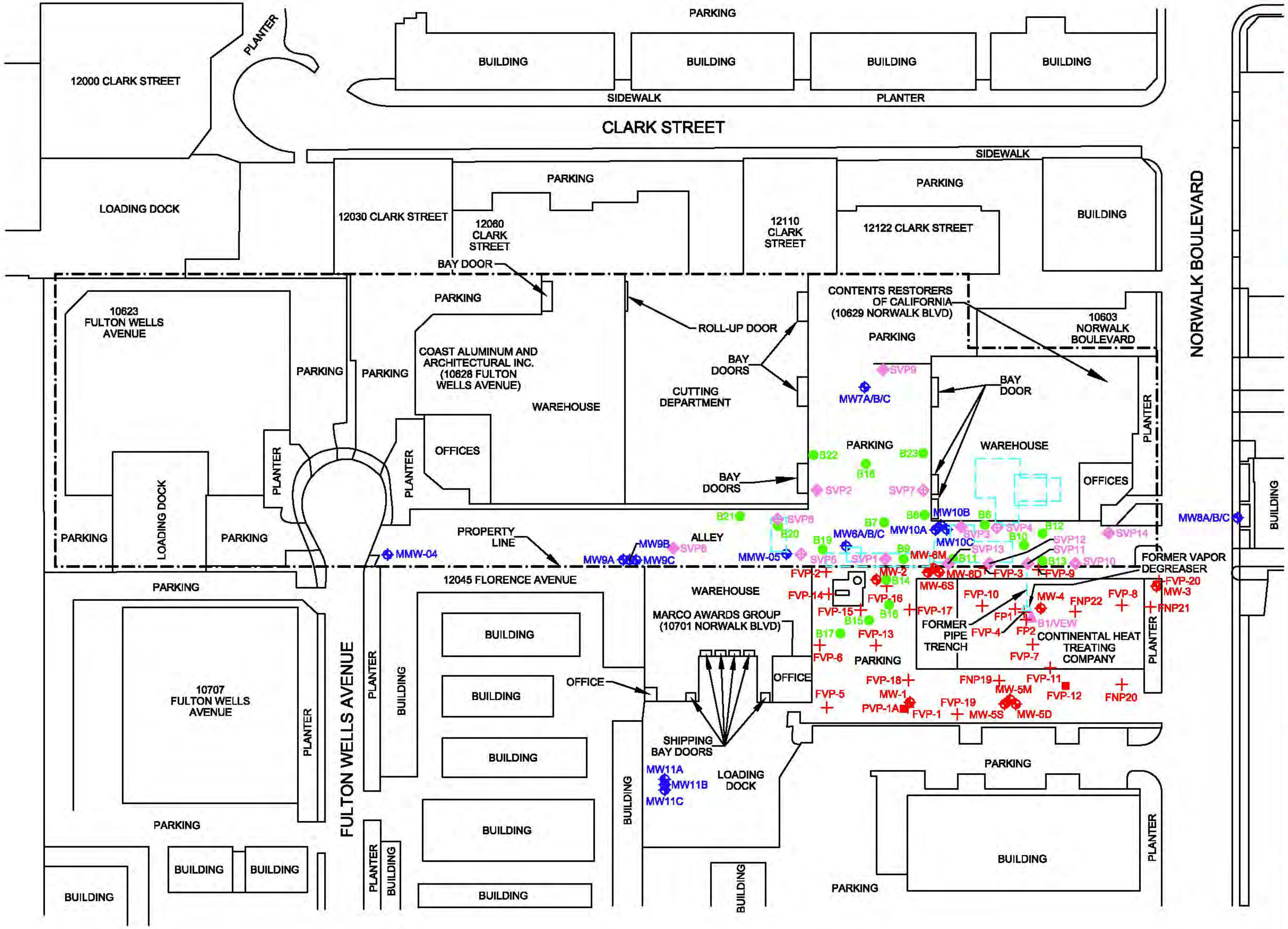
Appendix A	June 23, 2010 CRWQCB-LAR Response to Letter Dated May 19, 2010
Appendix B	1956-2005 Aerial Photos
Appendix C	Public Agency Records Requests and Response for Jalk Fee Property
Appendix D	August 20, 1968 CHT Blueprints
Appendix E	December 12, 1969 City of Santa Fe Springs Industrial Waste Survey
Appendix F	January 20, 1970 City of Santa Fe Springs Industrial Waste Disposal Permit
Appendix G	September 23, 1993 McLaren Hart PCE and Heavy Metals in Soil at the Jalk Lease Letter
Appendix H	March 16, 1984 County of Los Angeles Survey Report
Appendix I	May 19, 1989 County of Los Angeles Survey Report
Appendix J	Map of CHT Building from CHT Letter to ExxonMobil
Appendix K	November 4, 1993 Los Angeles County Fire Department Request for Service
Appendix L	October 6, 1994 Los Angeles County Fire Department Health Hazardous Materials Division Industry Survey

REFERENCES

Levine-Fricke. December 6, 1991. *Subsurface Soil Investigation* – Draft, Jalk Fee Property, 10607 Norwalk Boulevard, Santa Fe Springs, California.

ACRONYM LIST

µg/L	Micrograms per liter
µs	Microsiemens
1,2-DCA	1,2-dichloroethane
acfm	Actual cubic feet per minute
AS	Air sparge
bgs	Below ground surface
BTEX	Benzene, toluene, ethylbenzene, and total xylenes
CEQA	California Environmental Quality Act
cfm	Cubic feet per minute
COC	Chain of Custody
CPT	Cone Penetration (Penetrometer) Test
DIPE	Di-isopropyl ether
DO	Dissolved oxygen
DOT	Department of Transportation
DPE	Dual-phase extraction
DTW	Depth to water
EDB	1,2-dibromoethane
EPA	Environmental Protection Agency
ESL	Environmental screening level
ETBE	Ethyl tertiary butyl ether
FID	Flame-ionization detector
fpm	Feet per minute
GAC	Granular activated carbon
gpd	Gallons per day
gpm	Gallons per minute
GWPTS	Groundwater pump and treat system
HVOC	Halogenated volatile organic compound
J	Estimated value between MDL and PQL (RL)
LEL	Lower explosive limit
LPC	Liquid-phase carbon
LRP	Liquid-ring pump
LUFT	Leaking underground fuel tank
LUST	Leaking underground storage tank
MCL	Maximum contaminant level
MDL	Method detection limit
mg/kg	Milligrams per kilogram
mg/L	Milligrams per liter
mg/m^3	Milligrams per cubic meter
MPE	Multi-phase extraction
MRL	Method reporting limit
msl	Mean sea level
MTBE	Methyl tertiary butyl ether
MTCA	Model Toxics Control Act
NAI	Natural attenuation indicators
NAPL	Non-aqueous phase liquid
NEPA	National Environmental Policy Act
NGVD	National Geodetic Vertical Datum
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and Maintenance
ORP	Oxidation-reduction potential
OSHA	Occupational Safety and Health Administration
OVA	Organic vapor analyzer
P&ID	Process & Instrumentation Diagram
PAH	Polycyclic aromatic hydrocarbon
PCB	Polychlorinated biphenyl
PCE	Tetrachloroethene or perchloroethylene
PID	Photo-ionization detector
PLC	Programmable logic control
POTW	Publicly owned treatment works
ppmv	Parts per million by volume
PQL	Practical quantitation limit
psi	Pounds per square inch
PVC	Polyvinyl chloride
QA/QC	Quality assurance/quality control
RBSL	Risk-based screening levels
RCRA	Resource Conservation and Recovery Act
RL	Reporting limit
scfm	Standard cubic feet per minute
SSTL	Site-specific target level
STLC	Soluble threshold limit concentration
SVE	Soil vapor extraction
SVOC	Semivolatile organic compound
TAME	Tertiary amyl methyl ether
TBA	Tertiary butyl alcohol
TCE	Trichloroethene
TOC	Top of well casing elevation; datum is msl
TOG	Total oil and grease
TPHd	Total petroleum hydrocarbons as diesel
TPHg	Total petroleum hydrocarbons as gasoline
TPHmo	Total petroleum hydrocarbons as motor oil
TPHs	Total petroleum hydrocarbons as stoddard solvent
TRPH	Total recoverable petroleum hydrocarbons
UCL	Upper confidence level
USCS	Unified Soil Classification System
USGS	United States Geologic Survey
UST	Underground storage tank
VCP	Voluntary Cleanup Program
VOC	Volatile organic compound
VPC	Vapor-phase carbon



EXPLANATION

⊕	MW11C	Groundwater monitoring well
⊕	MW8A/B/C	Nested groundwater monitoring well
⊕	MW-6S	Continental Heat Treating groundwater monitoring well
+	FVP-20	Continental Heat Treating soil vapor sampling probes
▲	B1/VEW	Soil vapor extraction well
⊕	SVP7	Soil vapor sampling well
◆	SVP14	Deep multi-depth soil vapor well
◆	SVP13	Shallow multi-depth soil vapor well
■	PVP-1A	Continental Heat Treating soil sample location
●	B23	Soil boring

N

SOURCE:
Modified from a map
provided by
GOOGLE EARTH

APPROXIMATE SCALE

0 120 240
FEET

FN11550006

GENERALIZED SITE PLAN

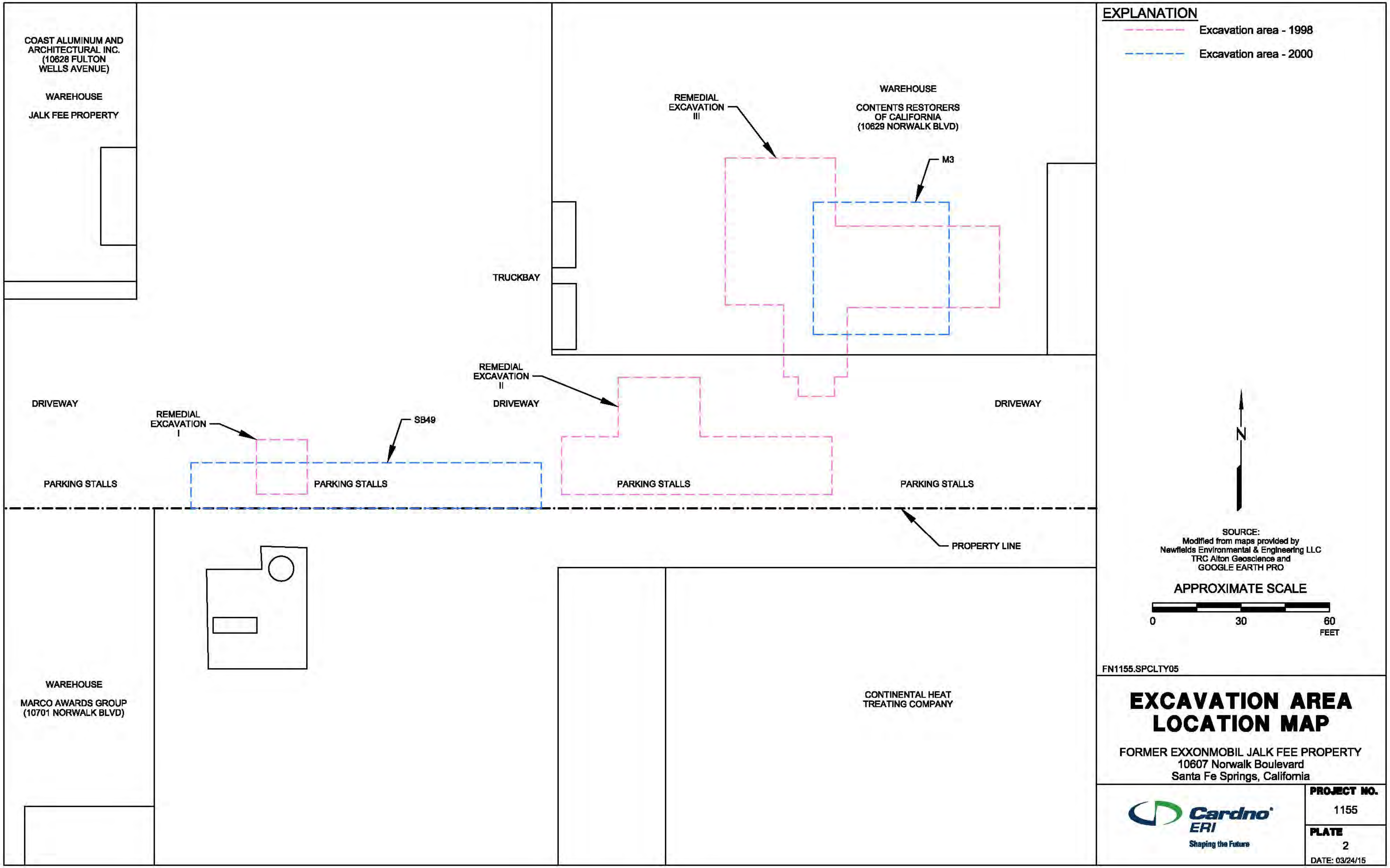
FORMER EXXONMOBIL JALK FEE PROPERTY
10607 Norwalk Boulevard
Santa Fe Springs, California

Cardno® ERI
Shaping the Future

PROJECT NO.
1155

PLATE
1

DATE: 03/24/15



SOURCE:
Modified from maps provided by
Newfields Environmental & Engineering LLC
TRC Alton Geoscience and
GOOGLE EARTH PRO

FN1155.SPCLTY05

EXCAVATION AREA LOCATION MAP

FORMER EXXONMOBIL JALK FEE PROPERTY
10607 Norwalk Boulevard
Santa Fe Springs, California

Cardno ERI
Shaping the Future

PROJECT NO.
1155

PLATE
2

DATE: 03/24/15

APPENDIX A

JUNE 23, 2010 CRWQCB-LAR RESPONSE TO LETTER DATED MAY 19, 2010

California Regional Water Quality Control Board
Los Angeles Region

320 W. 4th Street, Suite 200, Los Angeles, California 90013
Phone (213) 576-6600 FAX (213) 576-6640 - Internet Address: http://www.waterboards.ca.gov/losangeles

Linda S. Adams
Cal/EPA Secretary

Arnold Schwarzenegger
Governor

June 23, 2010

Mr. James Stull
Continental Heat Treating
10643 Norwalk Boulevard
Santa Fe Springs, CA 90670

RESPONSE TO LETTER DATED MAY 19, 2010 FROM MR. MICHAEL FRANCIS OF DEMETRIOU, DEL GUERCIO, SPRINGER & FRANCIS, LLP – CONTINENTAL HEAT TREATING (CHT), 10643 SOUTH NORWALK BOULEVARD, SANTA FE SPRINGS (SCP NO. 1057, SITE ID NO. 204GW00)

Dear Mr. Stull:

Los Angeles Regional Water Quality Control Board (Regional Board) staff received a letter from your attorney, Mr. Michael Francis of Demetriou, Del Guercio, Springer & Francis, LLP, dated May 19, 2010, providing comments to the Regional Board following the issuance of the California Water Code (CWC) section 13267 Order dated May 5, 2010 (Order). The Order requires preparation and submittal of technical report(s) for the lateral and vertical delineation of impacted soil, soil-gas, and groundwater on and offsite (if necessary), including the installation of three on-site groundwater monitoring wells in accordance with a work plan dated March 2, 2002, and subsequently approved in a letter from Regional Board staff dated April 16, 2002.

Mr. Francis indicates that the Regional Board "cites to and relies upon numerous erroneous allegations" in the Order. Regional Board staff relies upon documentation and data provided by consultants representing individual sites. Our decisions and actions are based upon the assumption that the information provided to us is accurate and representative of conditions at a site. Below are some of the comments provided by Mr. Francis (italicized) followed by Regional Board staff responses:

- *... your May 5, 2010 letter states that there was a pipe trench from the degreaser to the north end of the building and continuing westward along the property line. This was a utility trench and it did not convey or contain perchloroethylene ("PCE").*

  Several of the alleged errors pertain to a report by McLaren-Hart (McLaren Report) dated September 23, 1993, as referenced in the letter by Mr. Francis. The McLaren Report indicates that a pipe trench was shown going from the degreaser to the north end of the building, just west of the electrical panel. This conduit, regardless of its intended use, may have created a preferential pathway for tetrachloroethene (PCE) migration.

- *Second, the RWQCB mis-stated the February 15, 1993 purported hazardous materials registration forms. Such forms did not report an average PCE use of 125 gallons per day and a maximum daily use of 250 gallons per day. Instead, such forms reported an average PCE storage of 125 gallons per day and a maximum daily storage of 250 gallons.*

The McLaren Report indicated an average use of 125 gallons per day and a maximum daily use of 250 gallons per day. However, the term "use" may have been used in the McLaren Report to address quantities of PCE stored in the degreaser.

- *Furthermore, you state that CHT annually generated 1.5 tons of waste PCE. Please note that 1.5 tons of PCE is equivalent to approximately 225 gallons of PCE. This annual volume of PCE translates to an average daily PCE use of approximately one half gallon.*

  The numbers provided by Mr. Francis translate to an average daily PCE ***waste*** of one half gallon, which does not represent how much PCE was used for daily operations in the degreaser tank. According to the McLaren Report, the PCE degreaser capacity was 500 gallons. It is reasonable to assume that this tank was filled to appropriate levels to accommodate daily operations at CHT.

- *Third, you indicate there was a degreaser formerly located in the northeast portion of the on-site building. CHT requests the RWQCB provide CHT with the documentation of such purported degreaser location.*

  The McLaren Report indicates that an inspection report dated April 5, 1982 (included in the Industrial Waste Permit file with the Los Angeles County Sanitation District), noted that a degreaser was present in the northeast portion of the building.

- *With respect to the degreaser you described as being "in-ground," that unit was in fact a free standing degreaser that was installed in a reinforced concrete vault.*

  According to the report by Trilogy Regulatory Services dated December 21, 2004, "The degreaser was an in-ground metal-walled tank set within a concrete vault."

- *Fourth, you state that certain site assessment data associated with the Property indicate certain impacts to the Property's soil matrix, soil gas and groundwater. However, as explained further below, the adjacent Jalk Fee property was/is heavily contaminated.*

  Primary sources of PCE contamination (degreaser, storage area, etc.) have been identified at CHT. Impact to the subsurface has been detected in soil gas samples at multiple locations throughout CHT, and in the area of the former degreaser from the ground surface to groundwater (approximately 60 to 70 feet below ground surface [bgs]) in both soil gas and soil matrix samples. To date, the extent of subsurface PCE contamination has not been defined or remediated adequately.

  The adjacent Jalk Fee property was used for oil production operations and no primary source(s) of PCE contamination have been identified. However, PCE contaminated soil was encountered at Jalk Fee's southern property boundary, adjacent to CHT. During their site redevelopment activities in approximately 2000, the majority of PCE impacted soil to a depth of approximately 15 feet bgs was removed from the Jalk Fee property.

- *In addition, the Omega Chemical Site's 4.5 mile PCE plume passes beneath the Property. Thus, those known upgradient contamination sources may have caused, in whole or part, the observed soil matrix, soil gas and groundwater impacts to the Property. Contrary to your assertions, the soil gas PCE concentrations observed beneath the Property at the capillary fringe suggest such* *levels are the result of the Omega PCE plume and/or the Jalk Fee property soil and groundwater contamination.*

The historic soil matrix and soil gas data shows high levels of PCE and trichloroethene (TCE) contamination from the surface to groundwater at CHT. The highest soil matrix PCE and TCE concentrations were detected at 0.5 feet bgs at 7,514 and 4,759 micrograms per kilogram (µg/kg), respectively, adjacent to the former degreaser. Releases at CHT have impacted the subsurface, including, soil matrix, soil gas, and groundwater, and have contributed to the regional Omega groundwater plume. CHT has been identified as a responsible party in the US Environmental Protection Agency's Omega Chemical groundwater plume investigation and cleanup.

- *Fifth, the CHT soil vapor extraction ("SVE") system operations were terminated because the Jalk Fee property's petroleum hydrocarbon contamination migrated on to the Property and interfered with the SVE's operations. Such Jalk Fee property petroleum hydrocarbon caused the CHT SVE system to be shut down.*

  Total petroleum hydrocarbons (TPH) contamination seen in soil gas probes at CHT from approximately 5 feet bgs to the groundwater interface indicate a potential source of TPH contamination at CHT. Additional subsurface investigation(s) at CHT will help determine the impact of TPH contamination associated with historic operations at CHT.

- *Finally, there is no data that confirms an allegation that the CHT property is a source of groundwater contamination.*

  Due to the elevated concentrations of chlorinated volatile organic compounds (VOCs) and TPH contamination detected in soil gas and soil matrix samples in the area of the former degreaser from near ground surface through the entire soil column to approximately 60 feet bgs (capillary fringe), groundwater has been impacted from releases at CHT. However, no groundwater wells have been installed at CHT to determine how extensive this impact may be.

- *CHT requests the RWQCB provide CHT with a copy of the McLaren Report. ...CHT requests the RWQCB provide CHT with a copy of the recent RWQCB groundwater monitoring directive that was issued in connection with the Jalk Fee property and provide CHT with a copy of the Jalk Fee workplan for such ordered groundwater monitoring.*

  In accordance with the Freedom of Information Act (FOIA), you may request a file review of the CHT and Jalk Fee case files. A copy machine is available for your use with a charge of $0.15 per page. Please send a file review request for each case via fax to (213) 576-6713 or via email to Laura Gallardo at lgallardo@waterboards.ca.gov . Please include the site name, address, Site Cleanup Program number (SCP No. 1057 [CHT], SCP No. 0203 [Jalk Fee]), and your contact information. A representative from the Regional Board will contact you to confirm the appointment. In addition, most recently submitted reports/documents and Regional Board correspondence have been uploaded to GeoTracker. You may search, review, and download the case information from the GeoTracker database at the following address: http://geotracker.waterboards.ca.gov/ .

- *...CHT will delay the implementation of the RWQCB approved groundwater monitoring workplan until: (1) such work can be coordinated with the RWQCB directed Jalk Fee property* *groundwater monitoring; and (2) the RWQCB directed soil and soil gas delineation work, on the Property, is complete.*

Accordingly, the September 15, 2010 due date for the submittal of a groundwater well installation and sampling report will not be met.

At this time, the work required at the Jalk Fee site is irrelevant to the requirements issued in the Order. To date, no groundwater wells have been installed at CHT despite a work plan being submitted in March 2002 and the issuance of a work plan approval letter by the Regional Board dated April 16, 2002. The installation of the approved groundwater monitoring wells will be an initial step in evaluating impact to groundwater from releases at CHT. These wells will provide basic hydrologic information needed to understand subsurface conditions at CHT, which will be used for the installation of additional on and offsite groundwater wells, as needed, to delineate the lateral and vertical extent of releases at CHT. Therefore, in accordance with the Order, you are required to complete the installation of the groundwater monitoring wells as proposed in the work plan dated March 2, 2002 and as approved in the Regional Board's work plan approval letter dated April 16, 2002. As directed in the Order, a groundwater well installation and sampling report is due to the Regional Board by **September 15, 2010**. Failure to comply with the requirements of the Order will result in additional enforcement action(s) being taken by the Regional Board.

- *Finally, with respect to the RWQCB's "Chemical Storage and Use Questionnaire," CHT respectfully requests the RWQCB advise CHT of the RWQCB's statutory authority to request this information.*

Please refer to California Code of Regulations (CCR), Title 23, section 2907, which is a summary of the regulatory provisions contained in State Water Resources Control Board Resolution No. 92-49. Resolution No. 92-49 is available online at the following address:

http://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/1992/rs1992_0049.shtml .

If you have any questions, please feel free to contact the project manager Mr. David Young at (213) 576-6733 or via email at dyoung@waterboards.ca.gov.

Sincerely,

Samuel Unger, PE
Interim Executive Officer

cc: Mr. Michael A. Francis, Demetriou, Del Guercio, Springer & Francis, LLP

APPENDIX B

1956-2005 AERIAL PHOTOS

INQUIRY #: 2807888.5

YEAR: 1956

= 400'

N

INQUIRY #: 2807888.5

YEAR: 1968

= 480'

INQUIRY #: 2807888.5

YEAR: 1976

= 666'

INQUIRY #: 2807888.5

YEAR: 1989

= 666'

INQUIRY #: 2807888.5

YEAR: 1994

= 666'

N


INQUIRY #: 2807888.5
YEAR: 2002
= 666'
N
EDR Environmental Data Resources Inc

INQUIRY #: 2807888.5

YEAR: 2005

= 604'

APPENDIX C

PUBLIC AGENCY RECORDS REQUESTS AND RESPONSE FOR JALK FEE PROPERTY

COUNTY OF LOS ANGELES
Public Health

CYNTHIA A. HARDING, M.P.H.
Interim Director

JEFFREY D. GUNZENHAUSER, M.D., M.P.H.
Interim Health Officer

Public Health Investigation Administration
LEOLA MERCADEL
Chief, Public Health Investigation

5555 Ferguson Drive, Suite 120-04
Commerce, California 90022
TEL (323) 890-7801 • FAX (323) 728-0217

www.publichealth.lacounty.gov

February 25, 2015

CARDNO
ROBERT SERRATO
4572 TELEGRAPH RD #916
VENTURA, CA 93003

SUBJECT: 10607 Norwalk Blvd. Santa Fe Springs, CA 90670

I, the undersigned, being the Custodian of Records, certify that a thorough search of our files, carried out under my direction and control, revealed no records as named in your request for records.

It is to be understood that this does not mean that records do not exist under another spelling, another name, or under another classification, but that with the information furnished our office, and to the best of our knowledge, no such records exist in our files.

Sincerely,

Christian Sten, Deputy Health Officer
Public Health Investigation

COR ID No. 151126

Request - NO Records
Revised 3/15/13

PUBLIC HEALTH INVESTIGATION
CUSTODIAN OF RECORDS
REQUEST FOR PUBLIC RECORDS

TEL (323) 890-7806 **FAX (323) 728-0217**

Complete the Custodian of Records Request for Public Records Form in blue or black ink, or type.
If you have any questions about completing the form or requesting Hazardous Materials reports call (323) 890-7806.

Submit your request to Public Health Investigation, Custodian of Records Office to Fax Number (323) 728-0217, Email to phicor@ph.lacounty.gov, or mail to:

Public Health Investigation
5555 Ferguson Drive Suite 120-04
Commerce, CA 90022

***Required Information**

REQUESTOR INFORMATION		
Name *		Cardno
Address *		4572 Telephone Road, Suite 916
City *		Ventura
State *		California
Zip *		93003
Telephone No. *		805-644-4157
Fax No.		805-644-5610
Website/Email		robert.serrato@cardno.com

CONTACT PERSON INFORMATION ***(If different from Requestor)***		
Name		Robert Serrato
Telephone No.		805-290-3275

DELIVERY OF RECORDS ***(If different from Requestor)***		
Address		
City		
Zip		

RECORD INFORMATION Type of Record * ***(Choose only one per request)***

ENVIRONMENTAL HEALTH DISTRICT SURVEILLANCE		**ENVIRONMENTAL HEALTH PROTECTION**		**HEALTH HAZARDOUS MATERIALS**		**ALL OTHERS**	
Apartment, Condo, Home Inspections	☐	*Beaches*	☐	*CalARP*	☑	*Animal Bite Report*	☐
Apartment, Condo, Home and Institution Lead Inspections	☐	*Landfills*	☐	*Emergency Response*	☑	*Medical Marijuana ID*	☐
Food Borne Outbreak	☐	*Public Swimming Pools*	☐	*Hazmat Site Inspections*	☑		
Food Poisoning	☐	*Recycled Water*	☐	*Hazmat Site Mitigation*	☑		
Food Vehicles	☐	*Residential Pools*	☐				
Motels and Hotel Inspection	☐	*Septic Tanks*	☐				
Retail Food Inspection	☐	*Sewage*	☐				
Schools and Day Care Inspection	☐	*Water Wells*	☐				
Street Vendor	☐						

Other Type of Record: ☐

REQUEST INFORMATION ***(Provide as much information possible)***		
Incident Date/Time		
Incident/Food Borne Illness/Outbreak Summary No.		
Type of Disease		
Inspector Name (If known)		
Incident Location		
Owner Name		
Victim/Patient/Complainant Name		
Date of Birth		
Medical Record No.		
Location of Records		
Site/Street Address		10607 Norwalk Boulevard
Site/City		Santa Fe Springs
Site/Zip		90670

Office Use Only
Appointment

Date ______________________

Time ______________________

Date	# of pages
To	From
Co/Dept	Co.
Phone #	Phone #
Fax #	Fax #

Santa Fe Springs Fire-Rescue

11300 Greenstone Ave • Santa Fe Springs CA 90670
(562) 944-9713 • FAX (562) 941-1817 • fire@santafesprings.org

REQUEST FOR SITE INFORMATION

NOTE: To accommodate your request, please allow time for confidential information to be removed prior to viewing. If Fire staff performs work outside public viewing, the information will not be released until payment is received.

SEARCH REQUESTED BY

COMPANY/ORGANIZATION: CARDNO

E-MAIL ADDRESS: ROBERT.SERRATO@CARDNO.COM

PRINT NAME: ROBERT SERRATO

SIGNATURE:

TITLE: ASSISTANT PROJECT MANAGER

PHONE NUMBER: 805-290-3275

DATE: 2/20/15

REASON FOR THIS REQUEST: REVIEW RECORDS FOR EVIDENCE OF PCE/SOLVENTS RELEASE

TYPE OF INFORMATION REQUESTED: NOTICE OF VIOLATIONS, INSPECTION RECORDS, PERMITS, WASTE MANIFESTS, REPORTS, CORRESPONDENCE

Fees for service

- Public viewing of records is free of charge.
- $5.00 per box will be assessed for retrieval of historical documents stored off-site. Per copy charge is .20.

File review hours

- 9:00 AM – 11:00 AM
- Please contact our office to reserve an appointment time. We can no longer accept walk-ins.

NAME OF COMPANY AT SITE	**ADDRESS**
EXXONMOBIL	10607 NORWALK BLVD, SANTA FE SPRINGS, CA

NOTE: Some information may be confidential and is not disclosable to the general public. Confidential information includes facility maps, contacts, trade secrets, etc. To see such information, a release from the business owner must be attached to this form.

OFFICE USE ONLY

CHARGE FOR ARCHIVED FILES $ ________

CHARGE FOR COPIES $ ________

CHARGE FOR MAILING $ ________

TOTAL AMOUNT DUE $ ________

REQUEST PROCESSED BY ________________

DATE RECEIVED ________________

DATE COMPLETED ________________

APPENDIX D

AUGUST 20, 1968 CHT BLUEPRINTS

PLANT EQUIPM T SCHEDULE

			MINIMUM SERVICE DROP SIZE												
EQUIP. I.D.	PLANT INV. NO.	DESCRIPTION	NAT. GAS	COMP. AIR	NITROGEN	HYDROGEN	EXOTHERMIC	ENDOTHERMIC	COOLING WATER SUPPLY	COOLING WATER RETURN	QUENCH OIL SUPPLY	QUENCH OIL RETURN	PLANT WATER	INDUST. WASTE	REMARKS
01	—	BOIL-OFF TANK	¾"										¾"	2"	2" INDUST. WASTE FLOOR DRAIN. CONTR. FURNISHED OWNER PIPING FROM TANK TO FLOOR DRAIN.
02	HD-2	SALT FURNANCE-AJAX							½"	½"					ELECTRIC
03	ND-1	NEUT. SALT DRAW DEMPSY													ELECTRIC
04	D-5	TWIN CHAMP.-LIQUID TEMP. BATH 18"ø x 36"	1"												
05	D-6	TWIN CHAMP-LIQUID TEMP. BATH 18"ø x 36"	1"												
06	C-1	LIQUID CARBURIZING BATH 22"ø x 24"	1"	½"											
07	—	BRINE QUENCH TANK											¾"	3"	2" INDUST. WASTE FLOOR DRAIN CONTR. FURN. OWNER INSTALLED
08	C-2	LIQUID CARBURIZING BATH 12"ø x 36"	1"												
09	—	OIL QUENCH TANK									3"	3"			
10	C-3	LIQUID CARBURIZING BATH 18"ø x 36"	1"												
11	C-4	LIQUID CARBURIZING BATH 18"ø x 36"	1"												
12	S-4	SALT DRAW FURNACE	1½"												
13	—	SURFACE PLATE-36"x48"													NO SERVICES REQUIRED
14	D-2	BOX DRAW FURNACE	1½"												
15	HN-1	FURNACE H_2/N_2 ATMOS.	1½"		½"	½"			1"	1"					
16	HN-2	FURNACE H_2/N_2 ATMOS.	1½"		½"	½"			1"	1"					
17	HN-3	FURNACE H_2/N_2 ATMOS.	1½"		½"	½"			1"	1"					
18	HN-4	FURNACE H_2/N_2 ATMOS	1½"		½"	½"			1"	1"					FUTURE
19	—	DEGREASER - DETREX	¾"						¾"	¾"					
20	—	COLD BOX-DEEP FREEZE													ELECTRIC
21	—	COLD BOX-DRY ICE													NO SERVICES REQUIRED
22	—	STRAIGHTNING PRESS-80 TON													SELF CONTAINED HYDRAULIC
23	—	BENCH CENTERS													NO SERVICES REQUIRED
24	—	STRAIGHTNING PRESS-60 TON													SELF CONTAINED HYDRAULIC
25	—	DRAW FURNACE-28"ø x 40"													FUTURE ELECTRIC
26	D-8	DRAW FURNACE-28"ø x 40" LEEDS AND NORTHING.													ELECTRIC
27	D-1	DRAW FURNACE - 24"ø x 30"	1½"												
28	D-4	DRAW FURNACE 24"ø x 30" [illegible]													
29	[illegible]	[illegible]													
30	D-11	DRAW FURNACE 18"ø x 25" LEEDS & NORTHING													
31	D-3	DRAW FURNACE (HOMO) 22"ø x 25" - LEEDS & NORTHING			½"	½"									
32	D-7	DRAW FURNACE (HOMO) 18"ø x 18" - LEEDS & NORTHING			½"	½"									
33	—	DRAW FURNACE (BEAVER) 30"ø x 48"	1½"	¾"											
34	D-10	DRAW FURNACE (BEAVER) 30"ø x 48"	1½"	¾"											
35	—	FURNACE - BEAVER AUTO	1½"	1"			2"	1½"	1"	1½"					
36	—	FURNACE BEAVER AUTO.	1½"	1"			2"	1½"	1"	1½"					
37	H6	FURNACE BEAVER AUTO.	1½"	1"			2"	1½"	1"	1½"					
38	—	FURNACE LINDBERG ATMOS. CONT. (FUT.)	1½"	1"			1½"		1"	1½"					
39	NC-1	FURNACE LINDBERG ATMOS. CONT.	1½"	1"			1½"		1"	1½"					
40	—	GENERATOR - EXOTHERMIC	2"				3"		¾"	1"					
41	—	GENERATOR EXOTHERMIC	2"					2"	1"	1½"					
42	—	GENERATOR - ENDOTHERMIC 1500 CF - LINDBERG-HYEN.	2"				2"	2"	1"	1½"					
43	—	GENERATOR - EXOTHERMIC - 1000 CF	2"				3"		¾"	1"					
44	—	GENERATOR - ENDOTHERMIC	1½"					2"	1"	1½"					
45	—	GENERATOR ENDOTHERMIC - 750 CF.	1½"					2"	1"	1½"					
46	H-5	FURNACE ATMOS. HARDENING	1½"	¾"			1½"	1½"							
47	—	WATER QUENCH TANK (PORTABLE)													
48	—	OIL QUENCH TANK (PORTABLE)													
49	H-1	FURNACE ATMOS. LINDBERG.	1½"	¾"				1½"	1"	1"					
50	H-2	FURNACE ATMOS. LINDBERG.	1½"	¾"				1½"	1"	1"					
51	—	OIL QUENCH TANK 60"ø x 144													
52	—	BRINE QUENCH TANK 60"ø x 144													
53		FURNACE - ATMOS. LINDBERG.	1½"	¾"				1½"	1"	1"					
54	H-3	FURNACE (HOMO) LEEDS & NORTHING	¾"	½"				1½"	1"	1"					
55	H-4	FURNACE HOMO GEN'L. ELECT.	¾"	½"				1½"	1"	1"					
56	—	FURNACE - HOMO (FUTURE)	¾"	½"				1½"	1"	1"					
57	O-1	FURNACE - SEMI MUFFEL OPEN FIRE - LINDBERG	1½"	¾"											
58	O-2	FURNACE - MUFFEL	1½"												
59	O-3	FURNACE - MUFFEL	1½"												
60	S-1	SALT DRAW FURNACE	1½"												
61	S-2	SALT DRAW FURNACE	1½"												
62	S-3	SALT DRAW FURNACE	1½"												
63	—	SAND BLAST - HYDRO-HONE VAPOR BLAST		¾"											
64	—	SAND BLAST - HYDRO-HONE VAPOR BLAST		¾"											
65	—	SAND BLAST - HYDRO-HONE DRY-BLAST		¾"											
66	—	SAND BLAST - HYDRO-HONE VAPOR BLAST (FUT.)		¾"											¾" AIR EACH ITEM BY OWNER - 1½" SUPPLY TO AREA BY CONTRACTOR.
67	—	SAND BLAST - HYDRO HONE DRY BLAST (FUT.)		¾"											
68	—	SAND BLAST - HYDRO HONE DRY BLAST (FUT.)		¾"											
69	—	COOLING FAN													
70	—	AIR COMPRESSOR							½"	½"					STANDBY
71	—	AIR COMPRESSOR							½"	½"					STANDBY
72	—	OIL QUENCH HEAT EXCH. 24-6-36-8-88							1"	1"	2"	2½"			
73	—	QUENCH OIL CIRC. PUMP													
74	—	QUENCH OIL SEPARATOR													
75	—	COOLING TOWER PRITCHARD # 103													
76	—	COOLING TOWER DOVER # 72													SEE PLAN DWG. P-1 FOR SERVICE LINE SIZES TO EQUIP. RQ'D. EQUIP. HOOK-UP BY OWNER
77	—	COOLING WATER CIRC. PUMP													
78	—	COOLING WATER CIRC. PUMP (STAND BY)													
79	—	AIR COMPRESSOR							¾"	¾"					
80	—	AIR COMPRESSOR							¾"	¾"					
81	—	DEGREASER	¾"						¾"	¾"					FUTURE

NOTE

1. SEE DWG. E-6 FOR SCHEDULE OF ELECTRICAL SERVICES
2. SERVICE DROP SIZES SHOWN ARE MINIMUM SIZES REQUIRED AT OVERHEAD PIPING HEADER. THEY DO NOT REFLECT SIZE OF CONNECTION AT EQUIPMENT.

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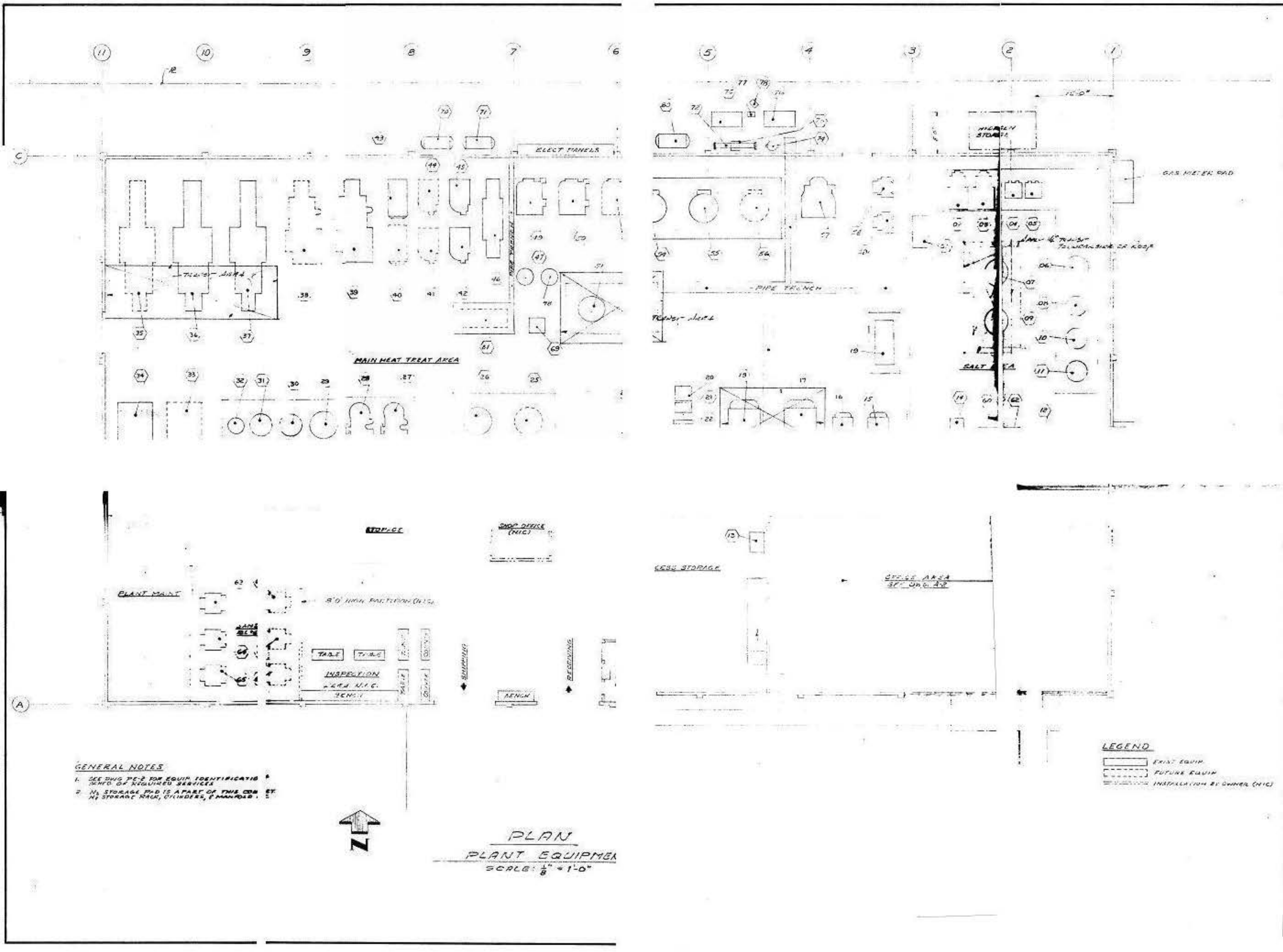
80
81

DESIGNED
DRAWN W.H.W.
CHECKED
APPROVED
DATE AUG 24 1961
JOB NO. 6802
DWG. NO. PE-2
REV. NO.

SCHEDULE
PLANT EQUIPMENT



GENERAL NOTES

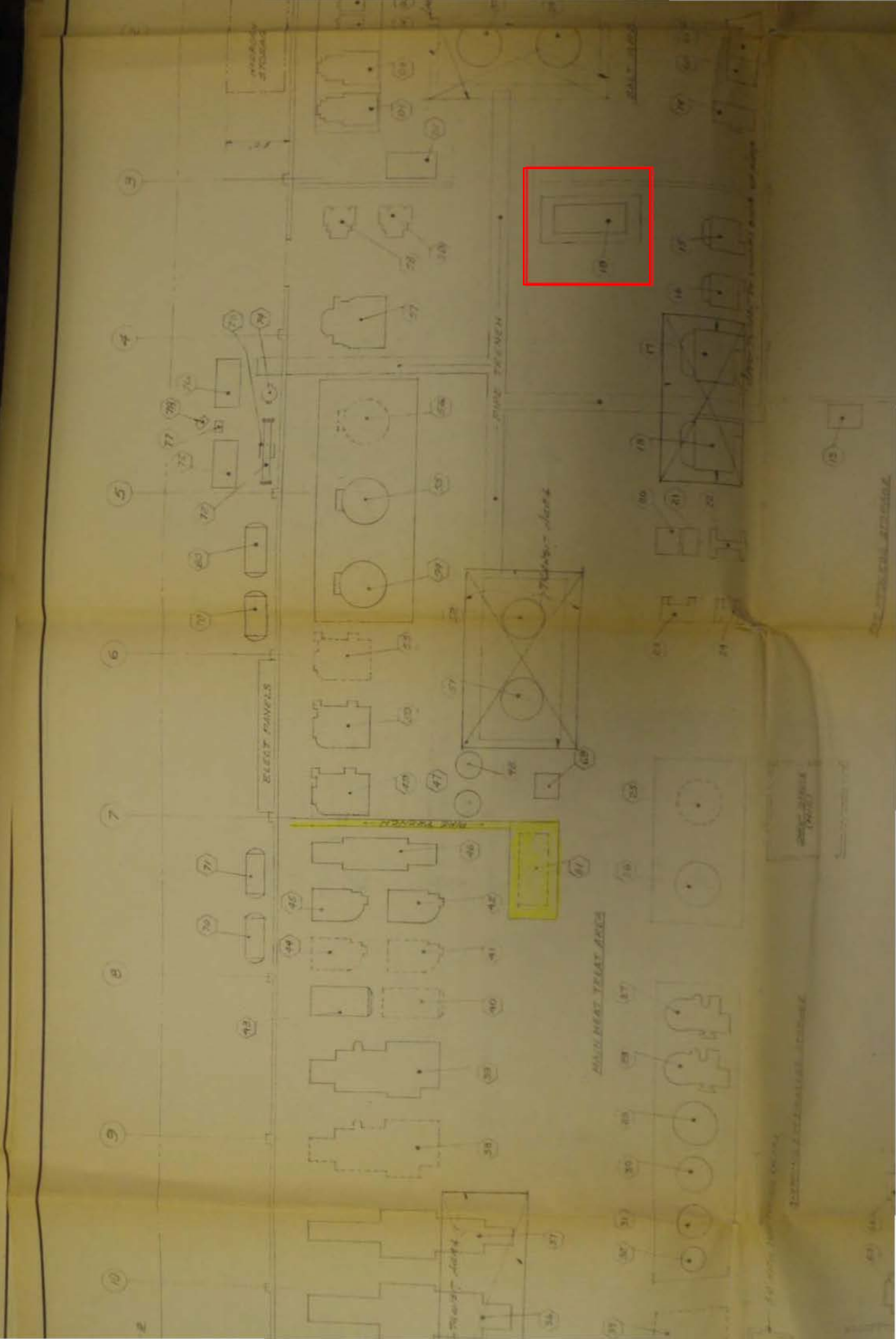
1. SEE DWG PE-2 FOR EQUIP. IDENTIFICATIO &
SCHED. OF REQUIRED SERVICES
2. N₂ STORAGE PAD IS A PART OF THIS CON ET.
N₂ STORAGE RACK, CYLINDERS, & MANIFOLD . S

PLAN
PLANT EQUIPMEN
SCALE: $\frac{1}{8}$" = 1'-0"

CONTINENTAL HEAT TREATING CORPORATION
NORWALK BOULEVARD
SANTA FE SPRINGS, CALIFORNIA

PLAN
-ANT EQUIPMENT

DESIGNED
DRAWN R.D.M
CHECKED
APPROVED
DATE AUG
JOB NO. G802
DWG. NO. PE-1
REV. NO.


3
4
5
6
7
8
9
10
ELECT PANELS
PIPE TRENCH
MAIN HEAT TREAT AREA

APPENDIX E

DECEMBER 12, 1969 CITY OF SANTA FE SPRINGS INDUSTRIAL WASTE SURVEY

INDUSTRIAL WASTE SURVEY

City SANTA FE SPRINGS
I. File No. REQUESTED I-6585-1H
S.M.D. No. 0515.75
Permit No. REQUESTED 4365

Firm Name: CONTINENTAL HEAT TREATING
Address: 10643 NORWALK BLVD Tel. No. 944-8808
between FLORENCE AVE and CLARK AVE
Contact Name JETT WEEKS Title: MAINTENANCE SUPT.
Business and Processes: HEAT TREATING, DEGREASING, AND RINSING.

TYPE AND QUANTITY I.W.: OIL, SALT AND CYANIDE; 110 GALLONS A DAY

WASTE DISPOSAL:

Sewer: S.M.D. 0515.75 San Dist. 18 Volume 110 GALS. A DAY
Surface Drainage TO STREET Cooling Water RECIRCULATED Uncontaminated NONE
Ground NONE
Other NONE

PRETREATMENT FACILITIES:

Location EAST END OF BLDG. OUTSIDE
Trap: Standard NOTT. (1000) Non Standard NONE
Other: NONE

REQUIREMENTS AND DATA:

Inspection YES Frequency MONTHLY Permit REQUESTED
New Industry YES Resurvey NO T.C. Requested YES
Classification 201 Method of Disposal 1

REMARKS AND RECOMMENDATIONS:

COLLING TOWER HAS A SMALL AMOUNT OF BLEEDOFF. FLO-R DRAINS WERE NOT INSTALLED AS DRAINAGE FROM RINSE TANKS ARE CONNECTED DIRECTLY TO INTERCEPTOR. PERMIT APPLICATION LEFT AT SITE.

Survey by: Robert B.W. Hartley Date: 12-12-69

76 1 5198—CE 659—Cdb 2-62

APPENDIX F

JANUARY 20, 1970 CITY OF SANTA FE SPRINGS INDUSTRIAL WASTE DISPOSAL PERMIT

Region 10

V

CITY OF SANTA FE SPRINGS

January 27, 1970

Mr. Robert L. Williams
City Manager
Santa Fe Springs, California

Dear Mr. Williams:

CONTINENTAL HEAT TREATING CORPORATION
10643 SOUTH NORWALK BOULEVARD
FILE NO. I-6585-1H

We are transmitting Industrial Waste Disposal Permit No. 4365 to your office for processing and delivery to the permittee. This permit has been prepared in accordance with the ordinance requirements of the City of Santa Fe Springs. The permit regulates the disposal of industrial wastes produced on this location.

Please advise this office when this permit has been delivered.

Yours very truly,

John A. Lambie
CITY ENGINEER

Original Signed

C. G. Brisley, Jr.
Deputy

CGB:NB-vs 8

Enclosures

dc: I-6585-1H, Per. Issd., Region 10, GM, NB, Extra

CITY OF SANTA FE SPRINGS

INDUSTRIAL WASTE DISPOSAL PERMIT

No. 4365

File: I-6585-1H

Date: 1/20/70

Permission is hereby given under Chapter 18 of the City Code (As amended) to Continental Heat Treating Corporation

10643 South Norwalk Boulevard
(Mailing Address)

to discharge waste material from or upon the premises located at

10643 South Norwalk Boulevard

Wastes covered by this permit shall consist of:

washdown and wastes from heat treating, quenching, and degreasing metals.

and shall comply with all provisions of applicable ordinances of the City of Santa Fe Springs including the special conditions and limitations marked (x) on the second page of this permit.

In accordance with Section No. 18-114 of the City Code of the City of Santa Fe Springs, this permit is not transferable from one location to another and it may be revoked if used contrary to the provisions of the Ordinance.

This permit is automatically suspended without notice if the Industrial Waste Permit Fee or Annual Renewal is not paid within 60 days from the day on which said fee is due.

John A. Lambie
CITY ENGINEER

2/70

SPECIAL CONDITIONS AND LIMITATIONS

INDUSTRIAL WASTE DISPOSAL PERMIT NO. 4365

JAN 20 1970

All wastes shall be disposed of in accordance with the conditions marked below:

(X) A standard pretreatment facility designated by the City Engineer as sand & grease interceptor 1,000 gallon capacity Standard No. ____.

( ) A grease interceptor of a type approved by the City Engineer with a flow capacity __________ gallons per minute and grease retention capacity of __________ pounds.

( ) A garbage grinder approved by the City Engineer and equipped a valve operating to automatically shut off the water supply when the grinder is not in use.

( ) Special facilities constructed in accordance with plans approved by the City Engineer, which plans are hereby made a part of this permit.

( ) Special Facilities:

(X) Further special conditions and limitations as listed below.

The Sanitary Sewer and Industrial Waste Chapters of the City Code contain certain restrictions on the use of sanitary sewers and other methods of the disposal of industrial wastes. A copy of this ordinance may be obtained by applying to the City Hall, 11710 Telegraph Road, Santa Fe Springs, California 90670.

In general, the intent of the ordinance is to prevent the discharge, deposit, or disposal of all wastes including any material which may cause pollution of underground or surface waters in, upon, or affecting the incorporated territory of the City of Santa Fe Springs, and to provide protection to the public sewers, industrial connection sewers, and treatment plants. Storm water or uncontaminated cooling water cannot be discharged to the sewer. All required pretreatment facilities must be regularly cleaned and otherwise maintained in good operating condition.

Compliance with the special conditions listed in this permit in no way relieves the permittee from the obligation of meeting requirements of the Sanitary Sewer Ordinance or liability for payment of costs of cleaning or repairing sewers occasioned by the violation of such ordinances.

If further information is desired, please contact the Project Planning and Pollution Control Division of the Department of County Engineer at 629-4747, extension 81385.

1. The concentration of cyanide in any waste(including HCN and $C\overline{N}$) shall not exceed 10 ppm.
2. All effluent discharged to the sanitary sewer shall be treated, when necessary, to maintain a pH between 6.0 and 9.0.

APPENDIX G

SEPTEMBER 23, 1993 MCLAREN HART PCE AND HEAVY METALS IN SOIL AT THE JALK LEASE LETTER

McLaren Hart™

September 23, 1993

Mr. T. M. Walker, P.E.
Environmental Engineer
Mobil Exploration and Producing U.S. Inc.
10735 South Shoemaker Avenue
Santa Fe Springs, CA 90670

PERCHLORETHYLENE (PCE) AND HEAVY METALS IN SOIL AT THE JALK LEASE

Dear Mr. Walker,

McLaren/Hart has completed our review of the site characterization report prepared by Levine/Fricke ("Draft Subsurface Soil Investigation, Jalk Fee Property, 10607 Norwalk Boulevard, Santa Fe Springs, California"). The report included data showing that the soil contains crude oil, which would be expected in an active oil field. The report also documented that the soil contains lead, which presumably leached from metal pipes in an area known as the "boneyard", and perchloroethylene (PCE), which we believe is a result of operations at the neighboring facility.

This letter briefly explains the significance of the findings which were presented in the Levine and Fricke report and makes recommendations on how Mobil should proceed.

HEAVY METALS

Total lead, mercury, and zinc were detected in the boneyard in the southwest corner of the property at maximum concentrations of 1,750, 34.1, and 10,000 milligrams per kilogram (mg/kg), respectively. These concentrations exceed the Total Threshold Limit Concentration (TTLC) of 1,000, 20, and 5,000 mg/kg. Soluble lead and zinc were also detected at maximum concentrations of 151 and 474 milligrams per liter (mg/l). These concentrations exceed the Soluble Threshold Limit Concentration (STLC) of 5 and 250, respectively. Samples exceeding the TTLC and STLC were found at both the three foot and the eight foot depths. No samples were collected below eight feet.

Although the lead samples were collected from random sample locations, it appears that the lead is confined to the northeast corner of the boneyard, representing approximately one third of the

STAFF\TERRELL\B\135.LTD

16755 Von Karman Avenue, Irvine, CA 92714 (714) 756-2667 FAX (714) 756-8460

total surface area of the boneyard, approximately 6,100 square feet. Excavation of this area to a depth of eight feet would result in approximately 1,800 cubic yards of soil.

Since the data show that metal concentrations were increasing between 3 and 8 feet, it is reasonable to assume that the soil below 8 feet may contain metals exceeding the cleanup criteria. We recommend additional sampling below eight feet prior to excavation to define the vertical extent of heavy metals.

PERCHLOROETHYLENE (PCE)

Perchloroethylene and related compounds [trichloroethylene (TCE) and 1,2-dichloroethylene (DCE)] were detected in the soil at the Jalk ~~Fee~~ Lease. These chlorinated compounds are used in such industries as dry cleaning, electronics, aerospace, and metal treating, but are not used in oil production. The maximum concentration of PCE in soil at the Jalk Fee is 2,500,000 parts per billion (ppb). The following sections describe the possible source of PCE at this location.

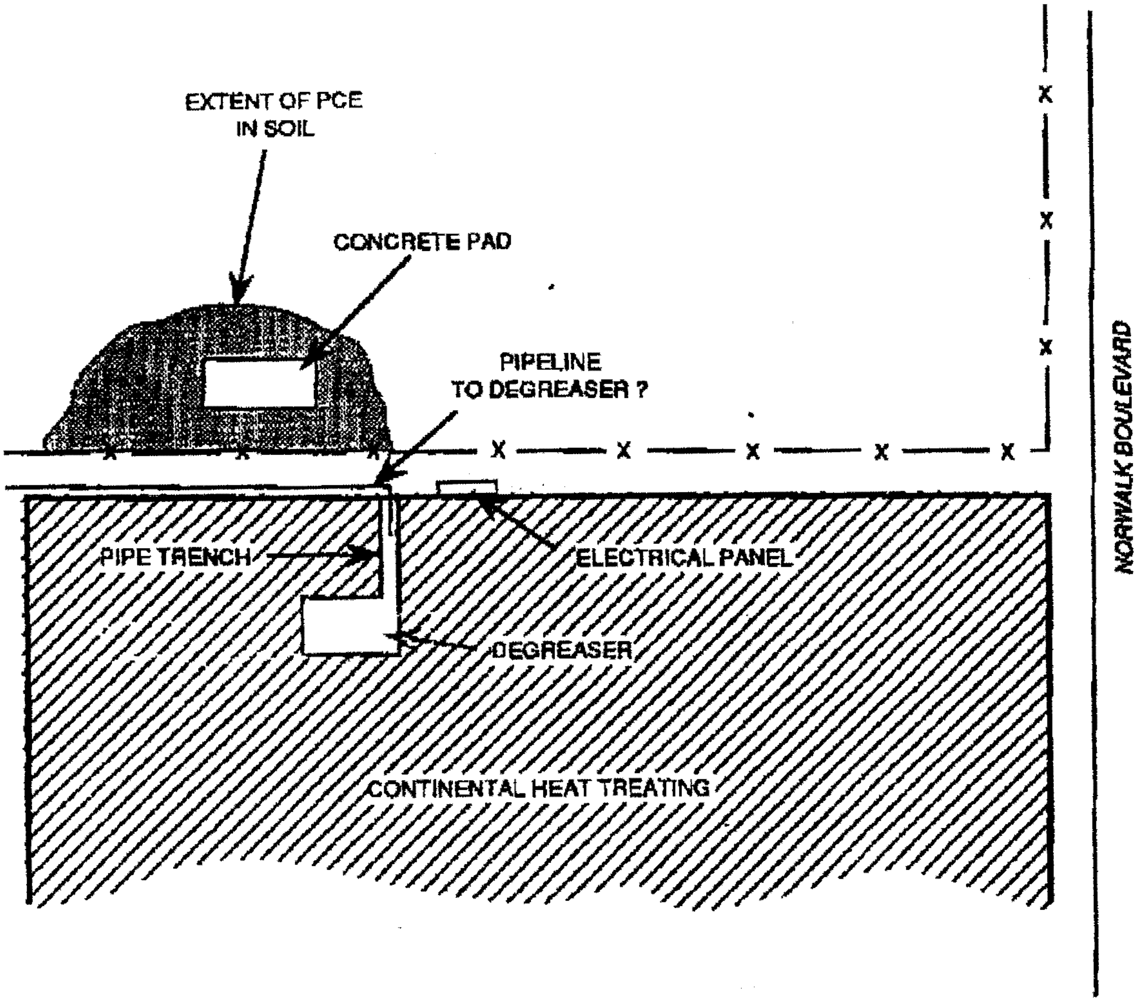
Santa Fe Springs Fire Department Record Review

In an attempt to identify possible sources of the PCE at the Jalk lease, McLaren/Hart reviewed the files at the Environmental Compliance Section of the City of Santa Fe Springs Fire Department. A written request to review the file on Continental Heat Treating was submitted by FAX on Tuesday, May 11, 1993 and the file was reviewed on Wednesday, May 12th. The following is a summary of the information in the file relevant to the PCE on the Jalk lease.

Use of PCE at Continental Heat Treating

The Continental Heat Treating facility was designed in 1968 and began operation in 1969. The facility drawings (Job # 6802, PE-1) dated August 20, 1968 showed a degreaser located approximately 120 feet west of the northeast corner of the building and 30 feet south of the northern wall of the building. A pipe trench was shown going from the degreaser to the north end of the building, just west of the electrical panel. The PCE on the Jalk lease was found in the area beginning exactly where the pipe trench left the building and continuing west to the northwest corner of the building. (See Figure 1)

In a letter to the City of Santa Fe Springs dated March 30, 1987, Continental Heat Treating reported that PCE was "used for cleaning of parts prior to heat treating." The hazardous material registration forms (February 15, 1993) reported an average PCE use of 125 gallons per day and a maximum daily use of 250 gallons per day. The Business Plan described a 500 gallon above ground PCE tank, although the location of this tank could not be determined from the information in the file.



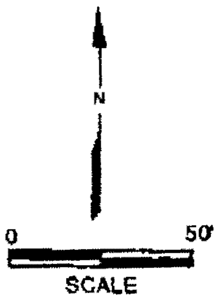


FIGURE 1
DISTRIBUTION OF
PERCHLOROETHYLENE (PCE) ON
JALK LEASE NEAR CONTINENTAL
HEAT TREATING DEGREASER

SD	5-20-93	McLaren Hart	
DXD			
	5-20-93		
			S9305114

Documented Annual PCE Waste Generation

The hazardous materials registration forms (February 15, 1993) reported that 1.5 tons of PCE are generated each year at the facility. In the March 30, 1987 letter to the City of Santa Fe Springs, Continental Heat Treating reported that the PCE was stored in a tank provided by Acto Kleen Corporation and was disposed by Acto Kleen for recycling.

Hazardous Waste Code Violations

Continental Heat Treating has operated under an Industrial Waste Permit from the Los Angeles County Sanitation District and predecessor agencies since the 1970's. Permit # 4365 was issued on January 27, 1970 and Permit #4827 was issued on November 18, 1976. These permits did not include limits or sampling requirements for PCE.

Various inspections, violations, and complaints over the years were included in the file. These included:

- A Notice was issued on July 11, 1978 from the LA County Engineer ordering Continental Heat Treating to "clean the interceptor by July 18, 1978" and "maintain the interceptor in good operating condition at all times."
- An inspection report of April 5, 1982 noted under "Special Hazards and Conditions" that a degreaser was present in the northeast portion of the building.
- A complaint to the Fire Department was recorded on October 5, 1987 that blue-green water was being discharged to the street. This was attributed to the recent earthquake (October 4, 1987) which had broken several pieces of equipment at the site and that "a discharge similar to that of December 8, 1986 was occurring."
- A Notice of Violation (NOV) was issued on February 23, 1988 for discharging cooling tower blow down water to the street.
- The Santa Fe Springs Fire Department cited Continental Heat Treating on June 14, 1988 for failure to disclose certain materials on the 1987 plot plan.

Possible Explanations

Illegal and accidental discharges of chlorinated solvents to soil are typically not reported and are not discovered until a site characterization is performed. The data from the Levine/Fricke report showing PCE in the soil, the use of large quantities of PCE on the adjoining site, the location of the PCE in soil relative to the degreaser and pipe trench on the Continental facility, and the complete absence of any use of chlorinated solvents of any kind by Mobil E & P, very strongly points to Continental Heat Treating as the source of the PCE on the Jalk Fee.

The following possible explanations are based on the information we were able to find and on past experience with similar situations. We cannot say which of these explanations is most likely or whether there is another possible explanation for the observed PCE.

Intentional or Unintentional Discharge. One possible explanation is that PCE from the degreaser or from the above ground storage tank was discharged to the ground by an employee or contractor working on site. This could have resulted from any number of activities such as overflow, spillage, a broken pipe, or an intentional discharge of waste PCE.

Fires. Three degreaser fires were reported in the Continental Heat Treating file at the Santa Fe Springs Fire Department:

- Degreaser Tank Fire (Code 6205) 87/10/02;
- Fire in Degreaser (Code 6225) 88/04/09;
- Fire in Degreaser (Code 6229) 88/08/01.

Earthquake. The file made reference to two earthquakes (December 8, 1986 and October 4, 1987) that resulted in broken equipment and discharge of chemicals. Although these references were made to the cooling tower blowdown water, it is also possible that the piping between the degreaser and the PCE storage tank were among the "several pieces of equipment" that were damaged at the same time.

I would be happy to discuss this matter with you at any time. Please call me at (714) 752-3211 if you have any questions or requests for additional information.

Sincerely,

Dennis Dineen

Dennis Dineen
Managing Principal Geoscientist
Assistant Regional Manager, Irvine

STAFF\TERRELLB\135.LTB

APPENDIX H

MARCH 16, 1984 COUNTY OF LOS ANGELES SURVEY REPORT

COMPANY NAME Tower Industries INC

STREET 10643 S. Norwalk Bl. - S. F. S. 90670

OWNER " " " Ray Berry - Pres

PERSON INTERVIEWED & TITLE Dennis Hugie - Production Mgr

PHONE NO. 685-6920

EMERGENCY NO.

NO. EMPLO 42

L.A. CO. PW# 153090-101

INDUSTRIAL WASTE NO

EPA NO. CAD053858296

SAFETY SHOWER No

EATING AREA Yes

TOILET & WASHING FACILITIES ADEQUATE Yes

PERSONNEL PROTECTIVE DEVICES ADEQUATE Yes

PLANT SANITATION ADEQUATE yes

TYPE OF FACILITY & DESCRIPTION OF OPERATION/PRODUCTS: Heat Treating of Steel (including Stainless)

PROCESS	MATERIAL	CONTROL	I.H. HAZARD	HAZARDOUS WASTE TYPE	VOL/LBS	STORAGE METHOD	DISPOSAL METHOD	MANIFEST
Heat Treatment including annealing C ~~hardening~~ Oil + water quenching	steel Quenching oil	type of oil?		Oil	110 gal/MO	Sump	Removed by Hayley - Lakewood Oil Service to BKK Manifest req.	Yes
Parts cleaning (1) degreasing Vapor Degreaser - Perchlorethylene (2) 111 trichlorethane (3) abrasive blasting using glass (Silica) beads (4) Acetone	Perchlorethylene 1-1-1 Trichlorethane acetone	~~how used~~ not ~~described in waste~~?		1-1-1 T.C.E Acetone	4 gal/MO	Drum	removed by Supplier ACTO Kleen 7869 Paramount Bl Pico Rivera	
				Perchlorethylene	150 gal/MO	Drum		
— how disposed?		Trash		Cyanide Wastes	~4 gal/MO	DRUM in Bermed area	Removed to BKK by Nash Salvage 16211 Placid Dr - Whittier	

not described in process section

Is this molten bath for carburizing

Describe the process
anneal - heat in oven - slow cool
case hardening - what types

NUMBER OF UNDERGROUND STG TANKS 1 gasoline + 6000 gal

VOLUME & TYPE OF WASTE IN UNDERGROUND TANK —

PRIVATE DISPOSAL SYSTEMS ON PREMISES: YES ___ NO ✓

ACCESS TO STORM DRAIN INLET ON PREMISES: YES ___ NO ✓

CHLORINATED HYDROCARBON USED: YES ✓ NO

SEWER CONNECTION ON PREMISES: YES ✓ NO

REMARKS: AQMD permits in force (gasoline tanks, abrasive blasting)

VIOLATIONS: oil on small area - NOV to be sent

REFERRAL TO:

ACTION:

SURVEY CONDUCTED BY 3/16/84

APPENDIX I

MAY 19, 1989 COUNTY OF LOS ANGELES SURVEY REPORT

COUNTY OF LOS ANGELES DEPARTMENT OF HEALTH SERVICES
HAZARDOUS WASTE CONTROL PROGRAM

SIC.
DATE: 5-19-89
p1

COMPANY NAME Continental Heat Treating	STREET 10643 Norwalk Bl	CITY & ZIP SFS 90670	DISTRICT SE
OWNER Stull, James, - owner	PERSON INTERVIEWED & TITLE Bastian, Mike, G.M.	PHONE NO. (213) 944-8808 EMERGENCY NO.	NO. EMPLOYEES 48

L.A. CO. PHL NO. 153090-101
INDUSTRIAL WASTE NO.
EPA NO. CAD053582955

SAFETY SHOWER nw
EATING AREA ok
TOILET & WASHING FACILITIES ADEQUATE ok
PLANT SANITATION ADEQUATE ok

TYPE OF FACILITY & DESCRIPTION OF OPERATION/PRODUCTS:
Metal Heat Treating

HAZARDOUS WASTE

PROCESS	MATERIAL	TYPE	VOL/LBS	STORAGE METHOD	DISPOSAL METHOD	MANIFEST	CONTROL	I.H. HAZARD
(1) Degreasing →	PERC →	~~2,200 g~~ Waste PERC	2,200 gal year	55 gal steel	Acto-Kleen (Pico Rivera)	400 gal (10 drum) 3/21/89	AAP Disposal 87746425	?/89 completed
quenching	mineral oil	min oil water mix		clarifier pumped once per quarter yr	Disposal Control Service	8774641705 84497012 11-29-88 1200 Gal.	Dan Lemmo Reardon 89586539	7/25/89
(3) Floor sweepings spills	Dry absorbant	— —	irregular →		Disposal Control Service.	13 drum 12-5-88 87595747	Casmalia Resource mgmt	
(4) Retort & (5) ~~N2~~ Tempering Vacuum Furnace cooling & backfill →	H_2 N_2		approx 2500 gal ~~w~~ approx 5000 gal 2 tanks	nw used in process →	to atmosphere as reacted + unreacted gas			

NUMBER OF UNDERGROUND STORAGE TANKS:
VOLUME & TYPE OF WASTE IN UNDERGROUND TANK(S):
PRIVATE DISPOSAL SYSTEMS ON PREMISES: YES ___ NO ___

ACCESS TO STORM INLET ON PREMISES: Yes ✓ No ___
CHLORINATED HYDROCARBON USED: YES ✓ NO ___
SEWER CONNECTION ON PREMISES: YES ✓ NO ___

REMARKS: Hauls approx 1/quarter all wastes
apparent motor oil discharge(s) with one auto-type oil filter on ground SW corner.

VIOLATIONS:

REFERRAL TO:
ACTION:
SURVEY CONDUCTED BY: James Odling / G Broughton

COUNTY OF LOS ANGELES DEPARTMENT OF HEALTH SERVICES

SIC.

HAZARDOUS WASTE CONTROL PROGRAM

DATE: 5/19-89 p2

COMPANY NAME	STREET	CITY & ZIP	DISTRICT
OWNER	PERSON INTERVIEWED & TITLE	PHONE NO. EMERGENCY NO.	NO. EMPLOYEES

L.A. CO. PHL NO.	INDUSTRIAL WASTE NO.	EPA NO.

TYPE OF FACILITY & DESCRIPTION OF OPERATION/PRODUCTS:

SAFETY SHOWER ____

EATING AREA ____

TOILET & WASHING FACILITIES ADEQUATE ____

PLANT SANITATION ADEQUATE ____

		HAZARDOUS WASTE						
PROCESS	MATERIAL	TYPE	VOL/LBS	STORAGE METHOD	DISPOSAL METHOD	MANIFEST	CONTROL	I.H. HAZAR
Truck Service	oils grease				Service Company			
Vacuum pumps	oil	waste oil			onto ground & asphalt top at rear yard.			
Hydraulic pump								
Parts cleaning by blasting (of tool steel)	Steelshot glass beads	dust		swept to	domestic trash			

NUMBER OF UNDERGROUND STORAGE TANKS:

VOLUME & TYPE OF WASTE IN UNDERGROUND TANK(S):

PRIVATE DISPOSAL SYSTEMS ON PREMISES: YES ___ NO ___

ACCESS TO STORM INLET ON PREMISES: Yes ___ No ___

CHLORINATED HYDROCARBON USED: YES ___ NO ___

SEWER CONNECTION ON PREMISES: YES ___ NO ___

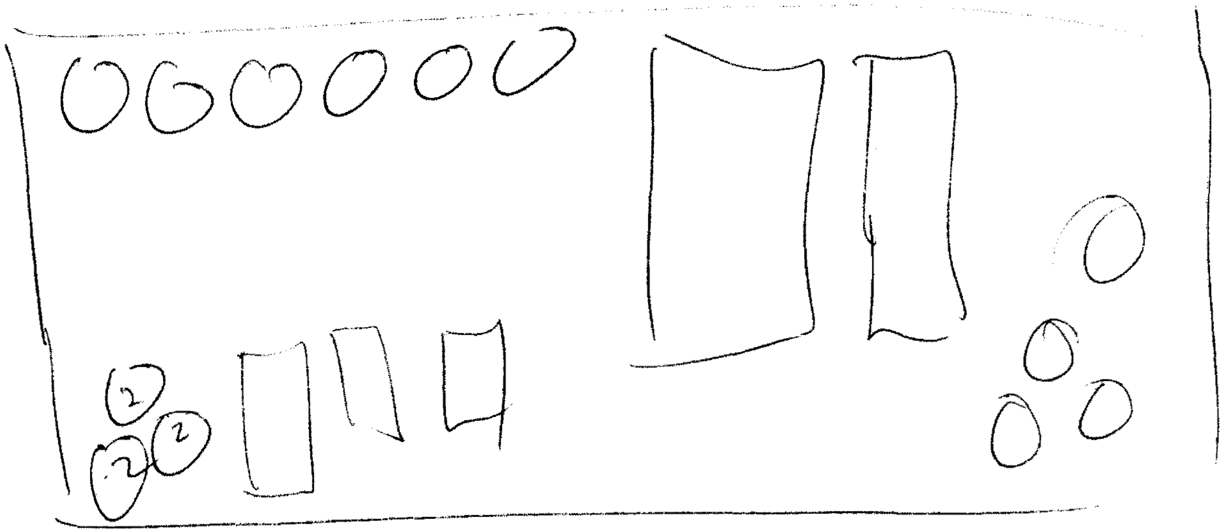
REMARKS: AQMD for ovens & vapor degreaser

VIOLATIONS:

REFERRAL TO:

ACTION:

SURVEY CONDUCTED BY:



Rear sw

COUNTY OF LOS ANGELES DEPARTMENT OF HEALTH SERVICES
HAZARDOUS WASTE CONTROL PROGRAM

SIC.

DATE: 5-19-89 R3

COMPANY NAME

STREET

CITY & ZIP

DISTRICT

OWNER

PERSON INTERVIEWED & TITLE

PHONE NO.

EMERGENCY NO.

NO. EMPLOYEES

L.A. CO. PHL NO.

INDUSTRIAL WASTE NO.

EPA NO.

SAFETY SHOWER ____________

EATING AREA ____________

TOILET & WASHING FACILITIES ADEQUATE ____________

PLANT SANITATION ADEQUATE ____________

TYPE OF FACILITY & DESCRIPTION OF OPERATION/PRODUCTS:

		HAZARDOUS WASTE						
PROCESS	MATERIAL	TYPE	VOL/LBS.	STORAGE METHOD	DISPOSAL METHOD	MANIFEST	CONTROL	I.H. HAZARD
Carbonitriding of steel	Anhyd NH_3	→	600 gal tank	→ Consumed in process				
Parts wiping	rags	oil solvent		→ covered cans →	Prudential	overall service		

NUMBER OF UNDERGROUND STORAGE TANKS:

VOLUME & TYPE OF WASTE IN UNDERGROUND TANK(S):

PRIVATE DISPOSAL SYSTEMS ON PREMISES: YES ___ NO ___

ACCESS TO STORM INLET ON PREMISES: Yes ___ No ___

CHLORINATED HYDROCARBON USED: YES ___ NO ___

SEWER CONNECTION ON PREMISES: YES ___ NO ___

REMARKS:

VIOLATIONS:

REFERRAL TO:

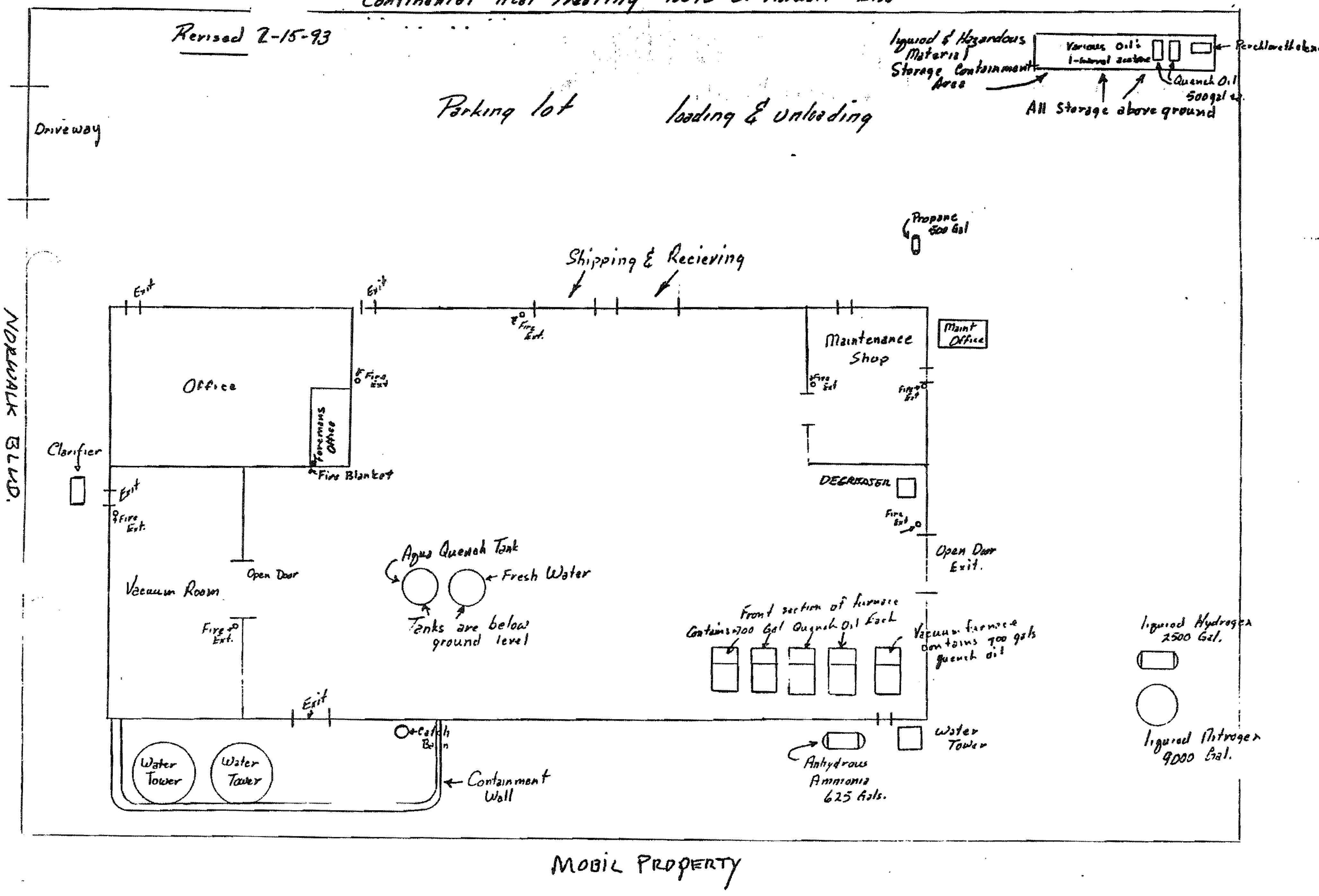
ACTION:

SURVEY CONDUCTED BY:

APPENDIX J

MAP OF CHT BUILDING FROM CHT LETTER TO EXXONMOBIL

Continental Heat Treating 10643 S. Norwalk Blvd



APPENDIX K

NOVEMBER 4, 1993 LOS ANGELES COUNTY FIRE DEPARTMENT REQUEST FOR SERVICE

HAZ MAT

Request For Service

Form #RS1
rev 2.0 • 5/92

Los Angeles County
Fire Department
Prevention Bureau

Hazardous Waste
Control Program

Log # [yynnnn]: 933143-118

Received by: LR Date: 11/4/93

Log entry by: LR Date: 11/4/93

☐ Emergency Response ☐ Illegal Storage

☒ Illegal Disposal Onsite ☐ Clean-up

☐ Illegal Disposal Offsite ☐ Public Health License

Name: Continental Heat Treating Phone:

Address: 10643 Norwalk City: Santa Fe Springs

Substance: Solvents Zip: 90670

Scope: Attached Report indicates possible illegal discharge into subsurface from PCE metal degreaser. Warrants Inspection.

Status:

Section Assign To: ○ SGV ○ SFV ● SE ○ SB ○ C ○ M ○ ER ○ ENF ○ SM Date:

Inspector Assign To: GB Assign By: Jr Date: 11-5-93

Service Requested By: LR

Address: Phone:

Jim [illegible] a Call

JMJ

11/4/93 Refered to enforcement for action

APPENDIX L

OCTOBER 6, 1994 LOS ANGELES COUNTY FIRE DEPARTMENT HEALTH HAZARDOUS MATERIALS DIVISION INDUSTRY SURVEY

PHL# 606073 **INDUSTRY SURVEY** Los Angeles County Fire Department • Prevention Bureau
Health Hazardous Materials Division

LACoFD HHMD • IS1
v3.2 • 4/93

Code 101 SIC# 3398 EPA# CA005385029 ☒Pending ☐NA

DBA CONTINENTAL HEAT TREATING INC

Owner ~~JAMES G. STILL~~

Partner

Address (number dir street name type) 10643 S NORWALK BL

unit # City SFS Zip 90670

Mailing SA

Phone 310 944 8808

Interviewed RAY CROSS

Title MECHANIC

Product/Service HEATING TRE

Start Date '69 # of employees 33

# of shifts 3 Operating hours x5

Viol Rank 3

CA Waste Code	1 221	2 223	3 213	4 211
Amt (PGT) Pounds, Gallons, Tons; per quarter				600 G

☐ HWUT

☐ HRF Mtl/Qty

Referrals ☐ AQMD ☐ B&S ☐ Fire ☐ IW ☐ OSHA ☐ SDHS ☐ ____________

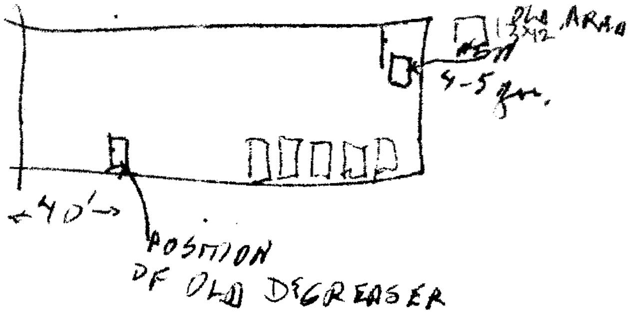
Viol 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33
34 35 36 37 38 39 40 (41) 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 (63) 64 65 99

Visit Date	Start Time	Insp	Action	Time Invested	Special Circumstances
10/06/94	10:15	081	C -N	2:30	complaint ~~94~~ 4933143-118
0d 96	015			:	~~with Lance Ralston~~
/ /	:		C	2:—	Lance RALSTON
/ /	:			:	

Signature(s) Roger F Baker

Action codes: A-Abate C-Complaint E-Enforce H-Hearing I-Insp M-site Mit N-NOV O-no viol P-PHL Inv R-Revisit S-Samples T-Time ext X-other Z-non-gen

1037



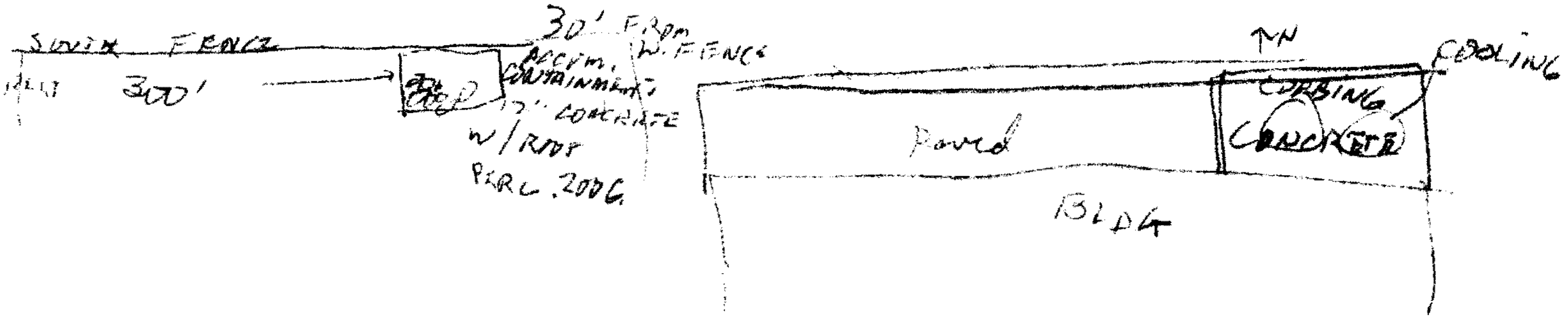
FIN DEE GRAINS

24 hr. 33-0206111

310 697-0903

DENNIS HUGIE

→ ROCHEM.



APPENDIX M

UNDATED LOS ANGELES COUNTY FIRE DEPARTMENT SMALL QUANTITY GENERATOR CONTINGENCY PLAN

LOS ANGELES CO TY FIRE DEPARTMENT-HEALT AZ MAT DIVISION
SMALL QUANTITY GENERATOR CONTINGENCY PLAN

You are required by the California Code of Regulations, Title 22 to design, operate and maintain your business to minimize hazards to human health and the environment from any unplanned releases of hazardous materials.

Section 1 General Business Information

Name of Business CONTINENTAL HEAT TREATING CO. INC.

Address 10643 S. NORWALK B.VD City SANTA FE SPRINGS Zip 90670

Phone Number(310) 944 -8808 Emergency Phone(310) 697 - 0903

Description of Business HEAT TREATING METAL PARTS

Number of Employees 30 Operating Hours(M-F) 24HRS M-F Sat Sun

Business Owner JAMES G. STULL Home Phone Number(714) 675 -0408

Address 319 GRAND CANAL City BALBOA ISLAND Zip 92662

Property Owner ANNA HATHAWAY TRUST Phone Number(714) 661 - 6969 C.P.A.

Section 2 Hazardous Material / Waste Activities - List all Chemicals at your business.

RAW MATERIALS				HAZARDOUS WASTE	
Chemical Name or Trade Name*	Specific Usage	Quantity of Chemicals Stored	Manner of Storage	Quantity of Waste Stored	Manner of Storage
OIL	QUENCH OIL	500 GAL	TANK	300 GAL	DRUMS
PERCHLORETHLENE	DEGREASING	200 GAL	TANK	300 GAL	DRUMS
ACETONE	CLEANING	55	DRUM	0	0
AMMONIA	CARBONITRIDE	250	TANK	0	0

*Obtain from your Supplier the Material Safety Data Sheets for trade name chemical and attach to this form.

Section 3 Emergency Coordinator

Your company is required to list the names, addresses, and telephone numbers for your emergency coordinators(EC). The EC shall have the authority to commit resources and shall have the responsibility for coordinating the company's activities to mitigate an unplanned release of hazardous materials.

Name of EC DENNIS HUGE AfterHours Phone(310) 697- 0903

Address 141 NORTH VIRGINIA ST. City LA HABRA Zip 90631

Alternate EC RAY CROSS AfterHours Phone(909) 674 - 1529

Address 29264 NORTHPOINTE City LAKE ELSINORE Zip 92530

Section 4 Notification

The EC must notify the following agencies in the event of a release, fire, or explosion which could threaten human health or the environment.

Fire 911 Health Haz Mat (213) 890-4317 Police 911

If the EC determines that evacuation of local areas may be advisable, the EC Shall notify the above agencies and the State Office of emergency Services at 1-800-852-7550.

List an Emergency Response Contractor you may use in the event of a major Hazardous Materials Spill.

Name PACIFIC ENVIRONMENTAL MGMT. Emergency Phone(800) 777 - 3363

List all hospitals or clinics you may use in the event of hazardous materials exposures or injuries.

Hospital or Clinic HEALTH FIRST MEDICAL Phone(310) 949 - 9328

Address 11817 E. TELEGRAPH RD City SANTA FE SPRINGS

The EC shall report to the Health Haz Mat Division within 15 days all details of any incident where this contingency plan was activated.

Section 5 Emergency Procedures.

Attach a description of what your employees will do to prevent or stop a hazardous materials spill at your facility. (Training is required for procedures involving the handling of hazardous wastes.)

Section 6 Site Map

Attach a map of your company and indicate the locations of the following:

*Layout work areas
*Fire Extinguishers
*Chemical Storage
*Alarms - Telephone
*Employee Protect'n Equip
*First Aid Stations
*Gas & electrical shut-off
*Emergency Exits
*Waste Storage
*Offices & Restrooms
*All Drains & Clarifiers
*Emergency Shut-offs
*Material Safety Sheets
*Underground Tanks
*Above Ground Tanks
*Evacuation Routes
*Emergency Equipment
*Leak detection devices

*Indicate schools, residences, and public gathering places less than a block away from your facility.

Section 7 Additional Requirements

This Contingency Plan must be updated on a continuous basis and copied to our office. This Contingency Plan is designed for your use in the event of a hazardous materials incident. You must keep copies of your completed plan at your facility at all times. Review the contents of the plan with your employees and make the location of your completed plan known and accessible to them.

Send your completed Contingency plan to the following address:

County of Los Angeles Fire Department-Prevention Bureau/HEALTH HAZ MAT DIVISION
7300 E Alondra Blvd. #203, Paramount, Calif. 90723
Phone: (310) 790-1810, Fax: (310) 790-8002

Your Inspector is: GEORGE BAKER

CONTINGENCY PLAN - SUPPLEMENTAL INFORMATION

BUSINESS NAME CONTINENTAL HEAT TREATING CO. INC.

ADDRESS 10643 S. NORWALK BLVD. CITY SANTA FE SPRINGS ZIP 90670

Section 5: Emergency Procedures

In the event of a OIL spill, the following procedures will be followed.

- ☒ Using DRY SORB the spilled material will be contained and prevented from going onto the ground or off the property.
- ☒ The absorbed OIL & DRY SORB will be placed in a leak-proof container with tight fitting lid, labelled "Hazardous Waste" and held as hazardous waste until lawfully disposed.
- ☒ Based on the:
  - ☒ Material Safety Data Sheet
  - ☐ Personal knowledge
  - ☐ Other

  of the Material, the following precautions should be taken when handling the spilled material:

  Wear:
  - ☐ Gloves and goggles
  - ☐ Respirator
  - ☒ Boots and Apron
  - ☐ Other

See Reverse side, page 4 for Site Map

SECTION 6 SITE MAP

(See page 2, Section 6 for requested information, as applicable)

CONTINGENCY PLAN - SUPPLEMENTAL INFORMATION

BUSINESS NAME CONTINENTAL HEAT TREATING CO. INC.

ADDRESS 10643 S. NORWALK BLVD. CITY SANTA FE SPRINGS ZIP 90670

Section 5: Emergency Procedures

In the event of a PERCHLORETHLYENE spill, the following procedures will be followed.

☒ Using DRY SORB
the spilled material will be contained and prevented from going onto the ground or off the property.

☒ The absorbed DRY SORB
will be placed in a leak-proof container with tight fitting lid, labelled "Hazardous Waste" and held as hazardous waste until lawfully disposed.

☒ Based on the:

- ☒ Material Safety Data Sheet
- ☐ Personal knowledge
- ☐ Other____________________

of the Material, the following precautions should be taken when handling the spilled material:

Wear:

- ☒ Gloves and goggles
- ☒ Respirator
- ☒ Boots and Apron
- ☐ Other____________________

See Reverse side, page 4 for Site Map

CONTINGENCY PLAN - SUPPLEMENTAL INFORMATION

BUSINESS NAME CONTINENTAL HEAT TREATING CO. INC.

ADDRESS 10643 S. NORWALK BLVD. CITY SANTA FE SPRINGS ZIP 90670

Section 5: Emergency Procedures

In the event of a ACETONE spill, the following procedures will be followed.

☒ Using DRY SORB
the spilled material will be contained and prevented from going onto the ground or off the property.

☒ The absorbed ACETONE AND DRY SORB
will be placed in a leak-proof container with tight fitting lid, labelled "Hazardous Waste" and held as hazardous waste until lawfully disposed.

☒ Based on the:

- ☒ Material Safety Data Sheet
- ☐ Personal knowledge
- ☐ Other____________________

of the Material, the following precautions should be taken when handling the spilled material:

Wear:

- ☒ Gloves and goggles
- ☒ Respirator
- ☒ Boots and Apron
- ☐ Other____________________

See Reverse side, page 4 for Site Map

CONTINGENCY PLAN - SUPPLEMENTAL INFORMATION

BUSINESS NAME CONTINENTAL HEAT TREATING CO. INC.

ADDRESS 10643 S. NORWALK BLVD. CITY SANTA FE SPRINGS ZIP 90670

Section 5: Emergency Procedures

In the event of a AMMONIA (NH3) spill, the following procedures will be followed.

☒ Using DRY SORB
the spilled material will be contained and prevented from going onto the ground or off the property.

☒ The absorbed DRY SORB
will be placed in a leak-proof container with tight fitting lid, labelled "Hazardous Waste" and held as hazardous waste until lawfully disposed.

☒ Based on the:

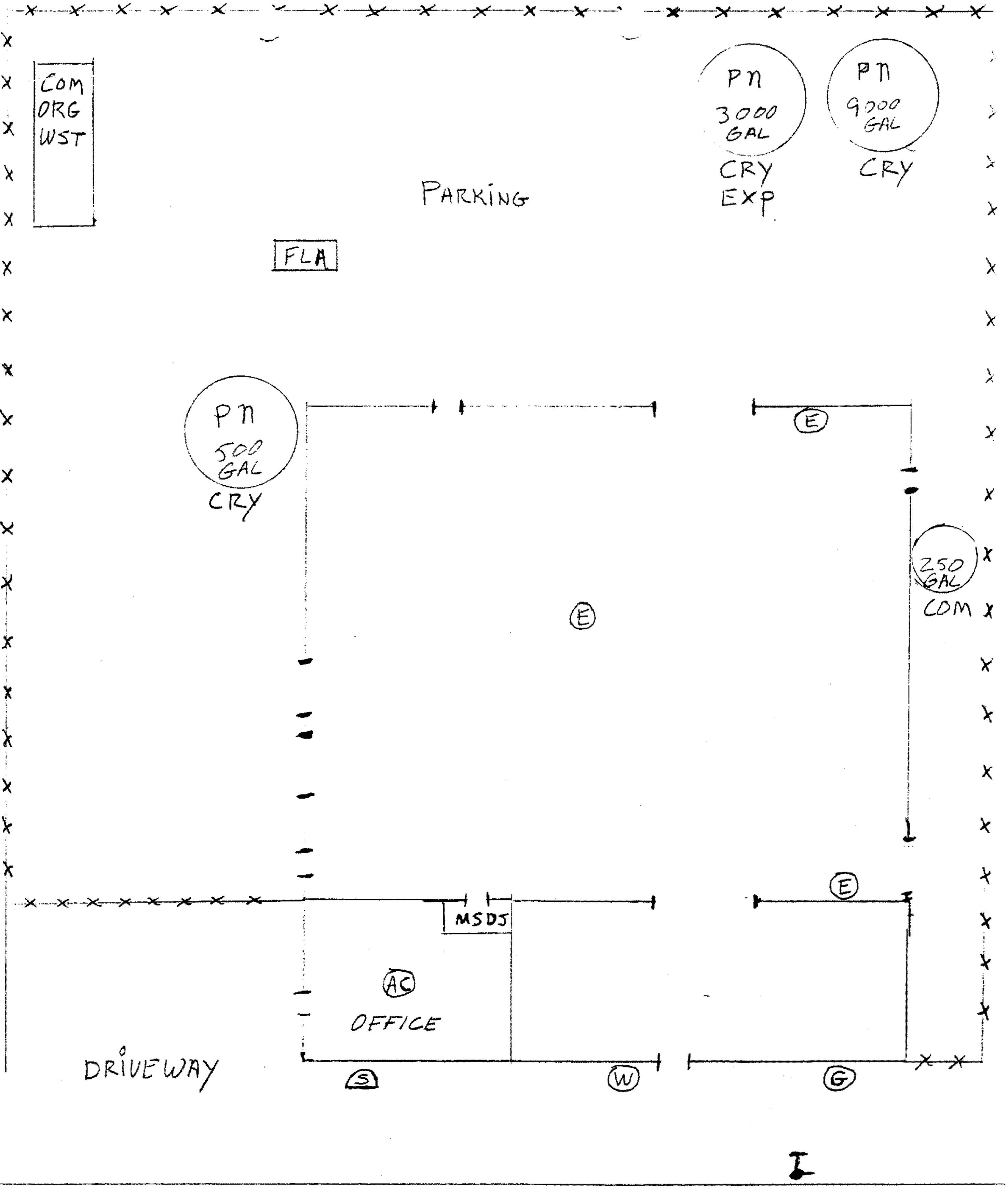
- ☒ Material Safety Data Sheet
- ☐ Personal knowledge
- ☐ Other

of the Material, the following precautions should be taken when handling the spilled material:

Wear:

- ☐ Gloves and goggles
- ☒ Respirator (APPROBED)
- ☐ Boots and Apron
- ☒ Other FULL PROTECTIVE CLOTHING

See Reverse side, page 4 for Site Map



10643 So Norwalk Blvd.

APPENDIX N

OCTOBER 19, 1995 LOS ANGELES COUNTY FIRE DEPARTMENT CASE SYNOPSIS

LOS ANGELES COUNTY FIRE DEPT/HHMD/SMU

CASE SYNOPSIS

Date: October 19, 1995

Log Number: 951668-377
Project Mgr: G Baker
SMU Priority: III
HW Generator: Yes
Generator #: 606073-101

Project: CONTINENTAL HEAT TREATING

Address: 10643 S. Norwalk Blvd, Santa Fe Springs, CA 90670

Contaminants: tetrachloroethylene and trichloroethylene

Depth to Ground Water: 35 - 65' GW contamination: unknown

Responsible Party:
Continental Heat Treating
10643 S. Norwalk Blvd,
Santa Fe Springs, CA 90670
Phone #: (310)944-8808
Contact: James Stull

Consultant:
Green Environmental, Inc.
6727 Greenleaf Ave,
Whittier, CA 90601
Phone #: (310)698-5338
Contact: Kent Green

Case Description:

On November 3, 1993, a complaint from the site operator of adjacent property to the north (lessee: Mobil Exploration) was received by this Department. The complaint alleged Continental Heat Treating was responsible for all or part of the chlorinated VOC contamination on Mobil's oil production lease property at 10607 S. Norwalk Blvd. The complaint was referred to Enforcement Unit for action on November 4, 1993. No enforcement activity by September 27, 1994, prompted a routine complaint inspection October 6, 1994.

Long-time employees all denied any improper disposal, leaking or spillage of vapor degreasing solvents anywhere on the property. Furthermore, the vapor degreaser had been moved from its original location in the shop. Eventually the old location of the degreaser was established. It appeared that this old location was close enough to the northern property line that leaks, sloppy operations or spills could have migrated offsite despite employees' statements to the contrary. This inspection resulted in NOV #P14042, which included an order to provide a plan for corrective action at the old vapor degreaser location.

A single boring to a depth of 10' immediately adjacent but exterior to the concrete sump of the old industrial vapor degreaser was proposed. Three soil samples were taken as part of a preliminary assessment. The results of these samples are summarized as follows:

PCE AND TCE SOIL CONTAMINATION IN μg/Kg

BORING #	DEPTH (FT)	TRICHLORO-ETHYLENE (TCE)	TETRACHLORO-ETHYLENE (PCE)
B-1	6"	4759[3]	7514[3]
B-1	5'	21	290[3]
B-1	10'	66[3]	1855[3]

[3] exceeds 10XMCL; the Los Angeles RWQCB risk-based cleanup standards for TCE and PCE (both of which are 5μg/Kg) based on the VOC cleanup model.

The maximum TCE and PCE concentrations were 4759 and 7514 μg/Kg respectively and the means were 1615 and 3220 μg/Kg respectively.

No sample exceeded the HBSSL levels as carcinogens (PCE=8,500 and TCE=4,000 μg/Kg).

The Region IX USEPA residual PRG levels of PCE and TCE allowed (PCE(ind) = 25mg/Kg and PCE(res) = 7mg/Kg; TCE(ind) = 17mg/Kg and TCe(res) = 7.1mg/Kg) in industrial and residential soils were exceeded by PCE in the 6" sample only.

Applying the recent RWQCB model allowing the average attenuation factor of 255XMCL, three of the analyses would exceed the 1.275mg/Kg guideline concentration; PCE at 6" and 10', and TCE at 6".

The results of the preliminary assessment were sufficient documentation of a significant release to require a remedial investigation of the area. A letter was sent to Mr. Stull July 5, 1995, which directed him to determine the extent of the contamination and submit a site mitigation workplan. The workplan was prepared by Green Environmental and starts with a very limited scope investigation of the old vapor degreaser area.

Issues:

1. How much of the property needs to be evaluated in the RI?

2. Is it prudent to require a GW monitoring well at this juncture?

3. How much of the information (which the 10607 Norwalk Bl cleanup project has developed) could help economize this project?

4. Is it likely that the proposed borings and sampling protocol will define the vertical and lateral extent of the identified contamination?

Proposed Work Plan:

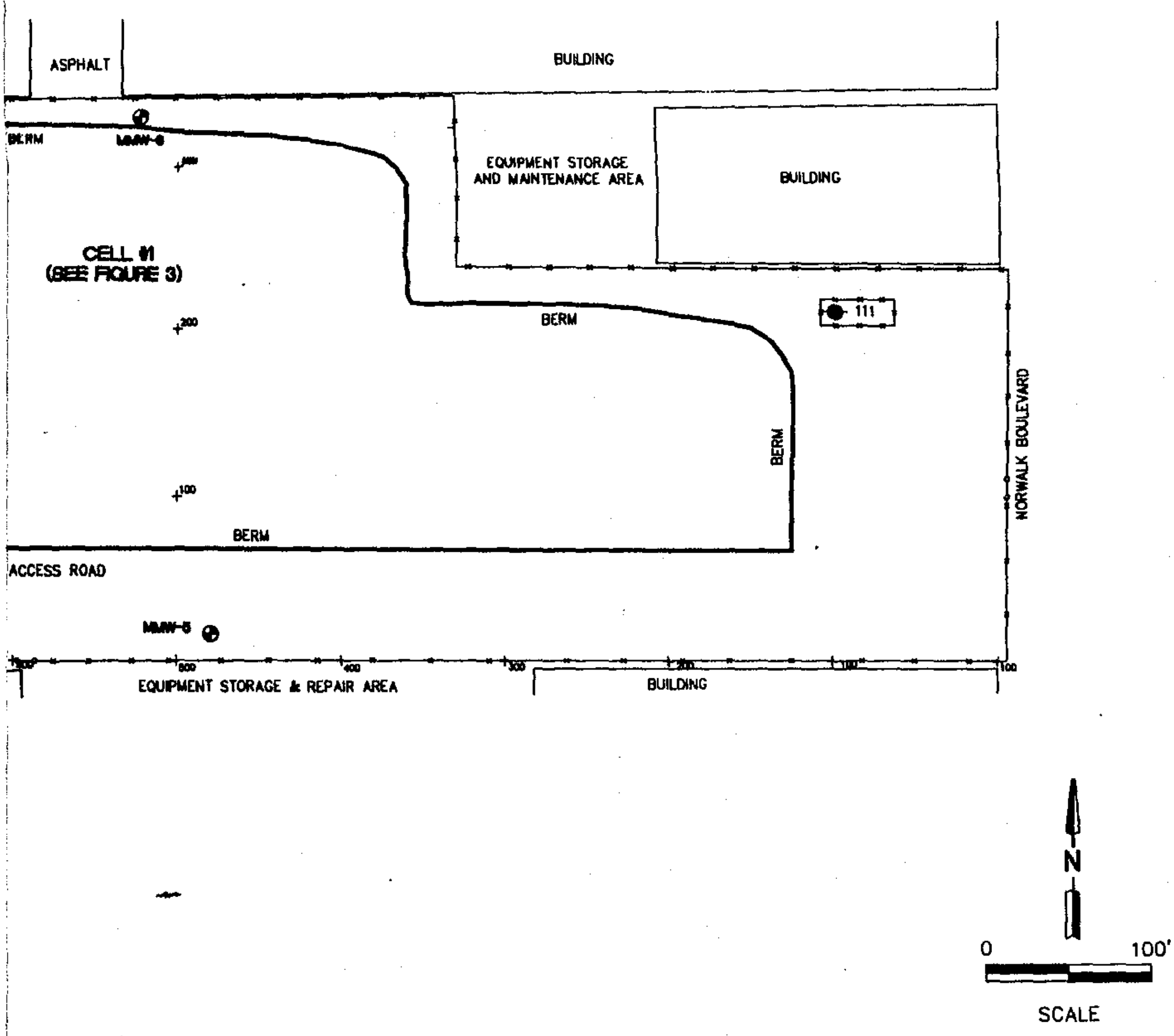
A work plan for the subsurface site investigation of the immediate area of the old vapor degreaser sump was received October 11, 1995.

A review of the submittal was completed and the following are missing or substantially defective for a complete property investigation. However, the workplan is directed only at the specified area in the immediate vicinity of the old vapor degreaser location.

1) A review of the historical use and existing information on the nature of the site mitigation problem.
2) Justification for the use of EPA method 8010 for sample analysis.
3) Justification for depth and array of borings and sampling.
4) Evaluation of public health and environmental concerns.
5) Investigation of hydrology and land use.
6) Justification for not boring to groundwater for the purpose of sampling for the known VOC contaminants.
7) A health and safety plan for the proposed investigation.
8) Justification for not submitting a work plan for at least one groundwater monitoring well, per RWQCB specifications, considering the underlying lithology of the site.

APPENDIX O

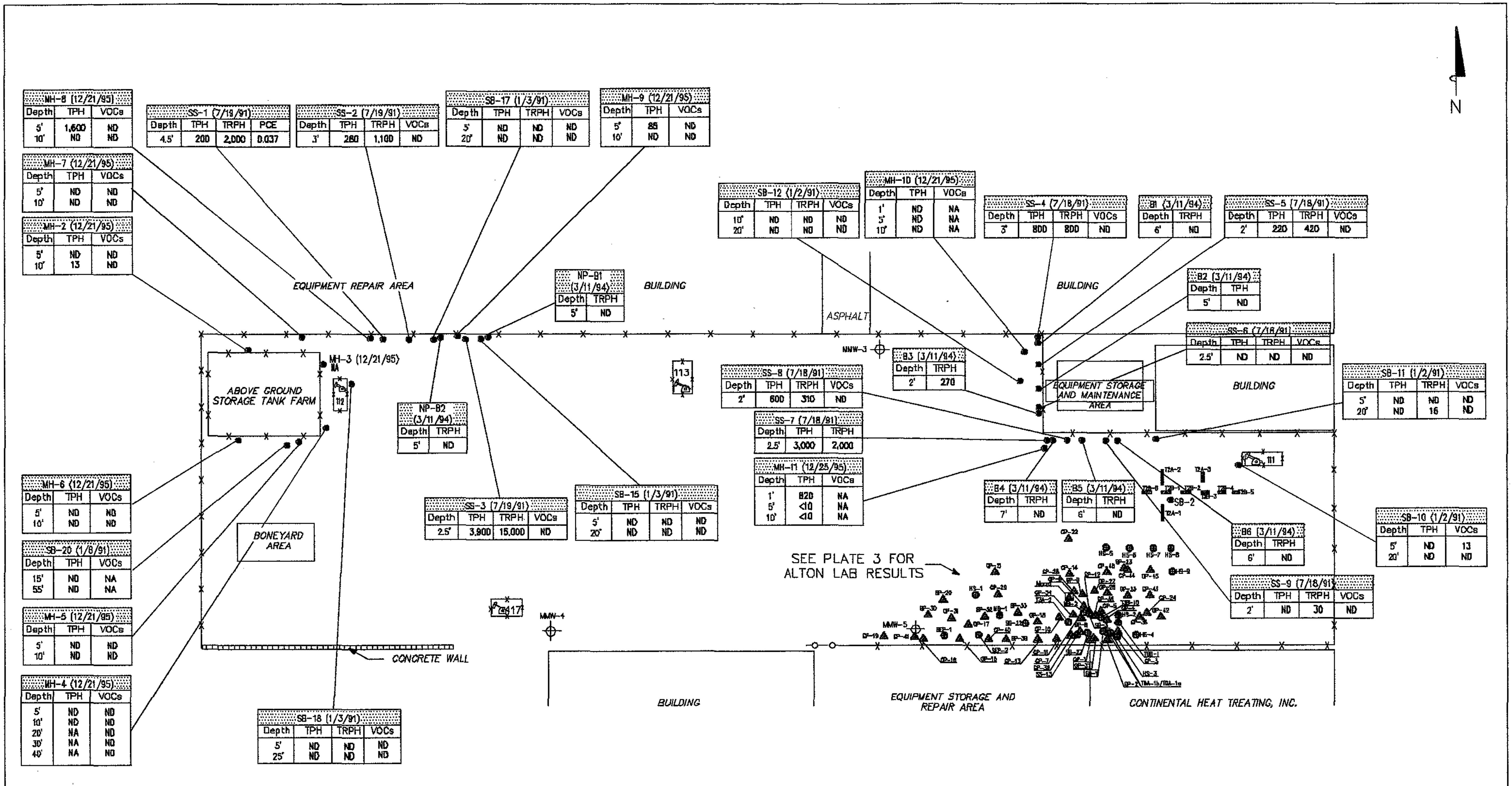
PREVIOUS CONSULTANT'S MAPS SHOWING EQUIPMENT STORAGE AND REPAIR AREA AT CHT PROPERTY



McLaren Hart

FIGURE 2
BIOREMEDIATION TREATMENT
CELL LOCATION
MOBIL JALK FEE PROPERTY
10607 NORWALK BOULEVARD
SANTA FE SPRINGS, CA

DRAWN BY E.M./V.B.	DATE 10/8/94	UNITS OF DIMENSIONS	FRAC.
CHECKED BY S.F.	DATE 10/3/94	UNLESS OTHERWISE	DEC.
APPROVED BY T.B.	DATE 10/8/94	SPECIFIED	ANG.
SCALE	REFER	SIZE	DRAWING NUMBER 8-94_FIG2



MH-8 (12/21/95)

Depth	TPH	VOCs
5'	1,600	ND
10'	ND	ND

MH-7 (12/21/95)

Depth	TPH	VOCs
5'	ND	ND
10'	ND	ND

MH-2 (12/21/95)

Depth	TPH	VOCs
5'	ND	ND
10'	13	ND

SS-1 (7/19/91)

Depth	TPH	TRPH	PCE
4.5'	200	2,000	0.037

SS-2 (7/19/91)

Depth	TPH	TRPH	VOCs
3'	280	1,100	ND

SB-17 (1/3/91)

Depth	TPH	TRPH	VOCs
5'	ND	ND	ND
20'	ND	ND	ND

MH-9 (12/21/95)

Depth	TPH	VOCs
5'	85	ND
10'	ND	ND

NP-B1 (3/11/94)

Depth	TRPH
5'	ND

NP-B2 (3/11/94)

Depth	TRPH
5'	ND

SB-12 (1/2/91)

Depth	TPH	TRPH	VOCs
10'	ND	ND	ND
20'	ND	ND	ND

MH-10 (12/21/95)

Depth	TPH	VOCs
1'	ND	NA
5'	ND	NA
10'	ND	NA

SS-4 (7/18/91)

Depth	TPH	TRPH	VOCs
3'	800	800	ND

B1 (3/11/94)

Depth	TRPH
6'	ND

SS-5 (7/18/91)

Depth	TPH	TRPH	VOCs
2'	220	420	ND

B2 (3/11/94)

Depth	TPH
5'	ND

SS-6 (7/18/91)

Depth	TPH	TRPH	VOCs
2.5'	ND	ND	ND

B3 (3/11/94)

Depth	TRPH
2'	270

SS-8 (7/18/91)

Depth	TPH	TRPH	VOCs
2'	600	310	ND

SS-7 (7/18/91)

Depth	TPH	TRPH
2.5'	3,000	2,000

MH-11 (12/25/95)

Depth	TPH	VOCs
1'	820	NA
5'	<10	NA
10'	<10	NA

SB-11 (1/2/91)

Depth	TPH	TRPH	VOCs
5'	ND	ND	ND
20'	ND	16	ND

B4 (3/11/94)

Depth	TRPH
7'	ND

B5 (3/11/94)

Depth	TRPH
6'	ND

B6 (3/11/94)

Depth	TRPH
6'	ND

SB-10 (1/2/91)

Depth	TPH	VOCs
5'	ND	13
20'	ND	ND

SS-9 (7/18/91)

Depth	TPH	TRPH	VOCs
2'	ND	30	ND

MH-6 (12/21/95)

Depth	TPH	VOCs
5'	ND	ND
10'	ND	ND

SB-20 (1/8/91)

Depth	TPH	VOCs
15'	ND	NA
55'	ND	NA

MH-5 (12/21/95)

Depth	TPH	VOCs
5'	ND	ND
10'	ND	ND

MH-4 (12/21/95)

Depth	TPH	VOCs
5'	ND	ND
10'	ND	ND
20'	NA	ND
30'	NA	ND
40'	NA	ND

SS-3 (7/19/91)

Depth	TPH	TRPH	VOCs
2.5'	3,900	15,000	ND

SB-15 (1/3/91)

Depth	TPH	TRPH	VOCs
5'	ND	ND	ND
20'	ND	ND	ND

SB-18 (1/3/91)

Depth	TPH	TRPH	VOCs
5'	ND	ND	ND
25'	ND	ND	ND

NOTES

TPH = total petroleum hydrocarbons. Reported TPH ranges are generally from C20 to C30. TRPH = total recoverable petroleum hydrocarbons. VOCs = volatile organic compounds, detected by EPA Method 8240 or 8260. PCE = tetrachloroethene. mg/kg = milligrams per kilogram. ND = not detected at limit indicated on official laboratory report. NA = not analyzed, measured, or collected. All soil sample, boring and geoprobe locations are estimated. Soil sampling data collected by Woodward-Clyde in 1988 in the eastern portion of the site and data for SB-2 and trenches were not available.

SOURCE

McLaren/Hart, 1996 Closure Report for Petroleum Hydrocarbon Issues at Mobil Jalk Fee Property, September 20.

LEGEND

SS-2 (7/19/91)

Depth	TPH	TRPH	VOCs
feet	mg/kg	mg/kg	mg/kg

	●	Soil Sample with Hydrocarbon Concentrations (mg/kg) at Depth (feet)
GP-48	▲	Geoprobe Boring
Mxxx	▣	Continuously Sampled Geoprobe Boring
HS-8	⊕	Soil Boring
T2B-1	▬	Trench
MMW-4	⌖	Monitoring Well
113		Operational Oil Well
X—X		Chain Link Fence
—O—O—		Gate

NOVEMBER 1996 TO JULY 1997 SITE ASSESSMENT SOIL SAMPLING LOCATIONS AND RESULTS

Mobil Jalk Fee Property
10607 Norwalk Boulevard
Santa Fe Springs, California

PLATE 1

APPENDIX P

JULY 11, 1978 COUNTY OF LOS ANGELES PROJECT PLANNING AND POLLUTION CONTROL DIVISION NOTICE

COUNTY OF LOS ANGELES
DEPARTMENT OF COUNTY ENGINEER
PROJECT PLANNING AND POLLUTION CONTROL DIVISION

NOTICE

Date July 11, 1978

To Mr. TED INDA

File No. I-6585-1H

Firm Name CONTINENTAL HEAT TREATING

I. W. Permit No. 4365

Location 10643 S. NORWALK BLVD., SANTA FE SPRINGS

Remarks YOU ARE HEREBY INSTRUCTED TO CLEAN THE INTERCEPTOR BY July 18, 1978. ALSO MAINTAINED THE INTERCEPTOR IN GOOD OPERATING CONDITION AT ALL TIMES.

Please telephone the office indicated below for return inspection:

DEPARTMENT OF COUNTY ENGINEER
TEL: 866-7011 EXT. 255

16623 S. BELLFLOWER BLVD.
BELLFLOWER, CALIFORNIA 90706

STEPHEN J. KOONCE
~~Harvey T. Brandt~~, COUNTY ENGINEER
C. G. Brisley, Jr., Division Engineer

By

yd 8
2-75

ADDRESS 10643 S. Norwalk Blvd., SANTA FE SPRINGS

REGION 1H

INDUSTRY CONTINENTAL HEAT TREATING

S.M.D. 15.00 I No. 6585 I.W.P. 4365 CLASS 201 DISPOSAL CODE 1

FACILITY Nott. 1000

LOCATION OF FACILITY East end of bldg. outside

COMPANY REPRESENTATIVE ~~Janis Pratt~~ PHONE 944-8808

SKETCH OR INSTRUCTIONS

Violated Connector [illegible]

APPENDIX Q

MARCH 16, 1984 COUNTY OF LOS ANGELES DEPARTMENT OF HEALTH SERVICES OFFICIAL NOTICE OF VIOLATION

(OFFICE ADDRESS)

OFFICIAL NOTICE OF VIOLATION №042136

County of Los Angeles Department of Health Services

Community Health Services Environmental Management

DATE 3/16/84

TO Tower Industries - Att: Dennis Hugie

ADDRESS 10643 S Norwalk - S F S 90670

SUBJECT Hazardous Waste

ADDRESS above

You are hereby directed to remove oil from ground in rear storage area

This notice shall be complied with as required by: ☐ *State Health and Safety Code,* ☒ *California Administrative Code,* ☒ *Los Angeles County Ordinance No. 7583,* ☐ ______ *City Ordinance No.* ______ *, Other Code* ______

CORRECTION DATE 4/23/84

RECEIVED BY U.S MAIL

MAIL SERVICE: ☒ FIRST CLASS ☐ CERTIFIED

LOS ANGELES COUNTY HEALTH OFFICER

BY H Walter

(TITLE)

H-777 (REV. 3/75)
760296

(*White* - VIOLATOR; *Canary* - SANITARIAN; *Pink* - DISTRICT DIRECTOR)

APPENDIX R

DECEMBER 8, 1986 CITY OF SANTA FE SPRINGS PUBLIC WORKS INVESTIGATION WORKSHEET

INVESTIGATION WORKSHEET

DATE & TIME OF COMPLAINT 12/8/86 8:00

INVESTIGATION BY John Hunter ON 12/8/86

Page 1 of 1

FIRM		COMPLAINTANT	
NAME	CONTINENTAL HEAT TREATING	NAME	Aziz
ADDRESS	10643 Norwalk Blvd. Santa Fe Springs	ADDRESS	City of Santa Fe Springs Public Works Department
PHONE	944-8808	PHONE	868-0511 Ext. 244

COMPLAINT:

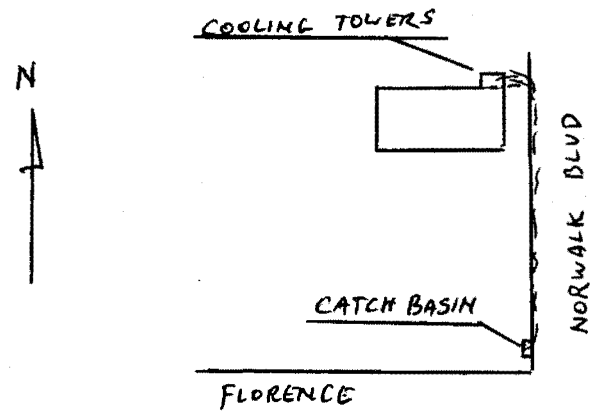
Above company is discharging industrial waste over the driveway.

REPORT:

Water with vivid blue-green streaks of color was flowing at several gallons per hour into Norwalk Blvd. from Continental's cooling tower area (See Sketch). The water flowed south, where it entered a catch basin at Florence Ave. The concrete was stained green in several areas where high water marks were deposited.

Mr. Ray Cross of Continental stated that a cooling tower pump had broken and the replacement pump was insufficient to handle the flow which caused the towers to overflow. The blue-green color was from a water treatment which is added at one part per thousand, no MSDS could be found, but, Mr. Cross claimed the water treatment contained no chrome and is considered non-hazardous.

Mr. Cross was instructed to (1) berm the cooling tower slab with sand, (2) clean the curb and gutter, and (3) to have the pump repaired or stop the flow immediately. Mr. Cross agreed to this and said the pump would be repaired this afternoon.



WITNESSES – CONTACTS

	NAME	ADDRESS	POSITION	PHONE
1	Ray Cross	Continental Heat Treating	Maint. Sup.	944-8808
2				

CALCULATIONS

SHEET ____ OF ____ SHEETS

CALC. BY ____________ DATE __________ PROJECT ______________________

CHECK BY ____________ DATE __________ ______________________

CITY OF SANTA FE SPRINGS
DEPARTMENT OF PUBLIC WORKS – ENGINEERING DIVISION

John Hunter

Continental Heating located on Norwalk Blvd; N/O Florence, is discharging industrial waste over the driveway, Please investigate and let me know the results. Actually let Richard Weaver know what are discharging and what action is being taken.

Aziz
12-3-86

APPENDIX S

OCTOBER 5, 1987 CITY OF SANTA FE SPRINGS PUBLIC WORKS INVESTIGATION WORKSHEET

INVESTIGATION WORKSHEET

DATE & TIME OF C PLAINT
10/05/87 11:00 a.m.

INVESTIGATION BY John Hunter ON 10/05/87

Page 1 of 1

FIRM		COMPLAINANT	
NAME	Continental Heat Treating	NAME	Violation observed while driving by.
ADDRESS	10643 Norwalk Santa Fe Springs, CA 90670	ADDRESS	
PHONE		PHONE	

COMPLAINT:

Blue-green water being discharged to the street.

REPORT:

The recent earthquake (10/04/87) had broken several pieces of equipment at this site and a discharge similar to that of 12/08/86 was occurring. Mr. Ray Cross was contacted and instructed to make the necessary repairs immediately.

APPENDIX T

FEBRUARY 23, 1988 CITY OF SANTA FE SPRINGS PUBLIC WORKS INVESTIGATION WORKSHEET

INVESTIGATION WORKSHEET

DATE & TIME OF COMPLAINT 1500 2/23/88

INVESTIGATION BY Dave Klunk ON 2/23/88 1600

FIRM	COMPLAINANT
NAME Continental Heat Treating	City Hall
ADDRESS 10643 Norwalk Blvd	ADDRESS
PHONE 944 8808	PHONE

COMPLAINT: Discharging I.W. to street.

REPORT: Industrial Waste Water was discharged to the street when the blow down water circulation pump froze up. This allowed the blow down water to over fill its reservoir and spill down the driveway into the street. I.W. water had a pH of 9.0 and a low concentration of an algicide. Notice of violation # 0060 was given to Ray Cross. At which time he was also requested to submit plans to prevent future occurances. Plans due 3/9/88. Because the company's project manager is on vacation an ~~[illegible]~~ extension till 3/15/88 was granted. Plans to date include:

① piping overflow lines directly to the clarifier
② ~~[illegible]~~ installation of a berm around the blower/cooling tower.
③ temporary dirt berm and trenches have been installed to prevent flow to the street.

WITNESSES — CONTACTS

	NAME	ADDRESS	POSITION	PHONE
1	Mike Bastian	Cont. Heat Treating	project manager	944880

APPENDIX U

MAY 19, 1989 COUNTY OF LOS ANGELES DEPARTMENT OF HEALTH SERVICES NOTICE OF VIOLATION AND ORDER TO COMPLY

L ...COUNTY HEALTH SERVICES

HAZARDOUS WASTE CONTROL PROGRAM

CASE NAME Continental Heat Treating

ATE	TIME	INITIALS	REMARKS
5/19/89	pm	JC, CB	① Discharge of oil waste both onto asphalt top and onto soil (SW corner or rear yard) ② Unlabelled barrels that Mr ~~[illegible]~~ Bastian ② indicated contained either PERC or waste oil ③ Incomplete manifests (no disposal facility signed copy available) ④ Seals + bungs missing on some oil waste barrels Has valid PHL
7-25-89		JD	Manifest 89485618 7/10/89 for removal of oil/absorbent. Mr Bastian states this was from both the rear area (soil) and asphalt 4 drums removed. All violations abated. Facility has a continuing problem with mineral oil drag out on the asphalted area.

COUNTY OF LOS ANGELES • DEPARTMENT OF HEALTH SERVICES

'ZARDOUS MATERIALS CONTROL PROGRAM

Owner James Stull

Business Continental Heat treating, Inc.

Address 10643 S. Norwalk Blvd

City, Zip Code 90670

Date 5-19-89

Reply refer to:
2615 South Grand Avenue, Room 607
Los Angeles, CA 90007
(213) 744- 3723
James Oelling

NOTICE OF VIOLATION AND ORDER TO COMPLY

The following conditions or practices observed at your facility are violations of the California Code of Regulations (CCR), Title 26, Division 22 or the California Health and Safety Code, Division 20, Chapter 6.5, (H&S) or both, which relate to the disposal, management, transportation, and storage of hazardous waste. YOU ARE DIRECTED TO CORRECT THE VIOLATIONS WITHIN THE TIMES SPECIFIED BELOW.

CORRECTION DATE

DISPOSAL:

5/19/89 ☒ 1. Discontinue the disposal of hazardous waste to an unauthorized point(s). (H&S 25189.5). any waste oil onto the ground

☐ 2. Legally dispose of all hazardous waste and contaminated materials (H&S 25189.5)

discharged to

☐ 3. Legally dispose of all stored hazardous waste and contaminated materials located at (H&S 25___)

C.K. 5/19/89 - reviewed by GB

MANAGEMENT:

~~6/1/89~~ ☒ 4. Submit to this office a copy of your facility's hazardous materials contingency plan and employee training plan. (CCR 67105, 67120-67126, 67140-67145)

TRANSPORTATION:

☐ 5. Discontinue the transport of hazardous waste until the following have been met:

- ☐ A. Obtain an EPA Identification Number from the State Department of Health Services at (916) 324-1781. (CCR 66472)
- ☐ B. Complete a uniform Hazardous Waste Manifest or obtain a receipt when applicable under State Department of Health Services variance procedures. (H&S 25160 and 25143)
- ☐ C. Transport all hazardous waste by a State registered hauler. (H&S 25163)

☒ 6. Submit to this office a copy of the completed hazardous waste manifest(s) used to dispose of all completed manifests (CCR 66328).

Note → ☐ 7. Keep copies at your facility of all completed manifests, receipts or both for a minimum of three (3) years and make documents available for agency review. (CCR 66492)

STORAGE:

☐ 8. Discontinue the storage of hazardous waste for longer than 90 days without a permit from the State Department of Health Services. (CCR 66508)

6/19/89 ☒ 9. Store all hazardous waste in compatible containers which are closed and in good condition. (CCR 66241 - 67243) keep lids + bungs on, don't over fill

6/19/89 ☒ 10. Properly label all containers with the following: the words, "HAZARDOUS WASTE" + PERC name and address of generator; hazardous properties; a composition and physical state of the waste; and the accumulation date. (CCR 66508) Label waste oil as waste oil

OTHER:

☐ 11. Provide this office with a site assessment and mitigation plan for the contamination at your facility.

☒ 12. Remove + legally dispose of oily surface in rear asphalted yard

Failure to fully comply with this Notice and Order may result in further legal action.

X
Owner or Authorized Representative

James Oelling / GB
Hazardous Materials Specialist

HMCP 2/89

APPENDIX V

OCTOBER 6, 1994 COUNTY OF LOS ANGELES FIRE DEPARTMENT ORDER TO COMPLY

~~Notice of Violatio~~ ~~and~~ Order to Comp

COUNTY OF LOS ANGELES • FIRE DEPARTMENT
Health Hazardous Materials Division

Owner STULL, JAMES G. CA005 385
Date 10/6/94
Business CONTINENTAL HEAT TREATING INC.
Address 10643 S. NORWALK BL.
City, ZIP Code SANTA FE SPRINGS 90670

Refer Reply To: G. BAKER
HEALTH HAZARDOUS MATERIALS DIVISION
7300 Alondra Bl Ste 203
Paramount CA 90723
Office (310) 790-1810
Fax (310) 790-8002

Violations: The conditions or practices checked below represent a violation of the referenced section of Title 22, California Code of Regulations (22 CCR, Div 4.5, Ch 10, Sec 66260.1 et seq), and/or Health & Safety Code Chapter 6.5 (H&S, Div 20, Ch 6.5, Sec 25100 et seq) for which there are civil and criminal penalties. Time granted for correction of violations does not preclude any enforcement action by this Department or other agencies. **You are directed to correct the violations within the times specified. Failure to do so will be considered an additional violation.**

HAZARDOUS WASTE DETERMINATION

Correction Date __/__/__

01 ☐ Provide a hazardous waste determination for (CCR 66262.11)

DISPOSAL

Correction Date __/__/__

Discontinue the illegal disposal of hazardous waste and/or extremely hazardous waste to an unauthorized location (H&S 25189.5):

02 ☐ trash/dumpster/ground;
03 ☐ storm drain;
04 ☐ sewer/septic system with a permit;
05 ☐ unpermitted facility.
06 ☐ Discontinue the disposal of hazardous materials containers which are not legally empty (CCR 66261.7)

EPA NUMBER/PERMITS

Correction Date __/__/__

Obtain the following from the Cal-EPA:

07 ☐ EPA Identification Number (contact Cal-EPA, 916-324-1781, for ID number) (CCR 66262.12);
08 ☐ on-site waste treatment/disposal permit for (CCR 66270.1)
09 ☐ extremely hazardous waste permit for handling and disposal of (CCR 67430.1)

STORAGE AND MANAGEMENT OF CONTAINERS

Correction Date __/__/__

Discontinue the on-site accumulation of hazardous waste:

10 ☐ longer than 90 days without an extension from DTSC (CCR 66262.34(c));
11 ☐ longer than 90 days after 100 kg has been accumulated (CCR 66262.34(d));
12 ☐ longer than 1 year or 90 days after 55 gallons has been accumulated at satellite storage.

Label the waste container with the following:

22 ☐ the words, "HAZARDOUS WASTE" (CCR 66262.34(f));
14 ☐ description of contents / hazardous property of waste / generator name and address (CCR 66262.34(f));
13 ☐ accumulation start date (CCR 66262.34(f)).

Provide hazardous waste containers which are:

15 ☐ in good condition (CCR 66265.171);
16 ☐ compatible with waste contents (CCR 66265.172);
17 ☐ closed/sealed during storage (CCR 66265.173);
18 ☐ handled/stored/segregated to minimize waste release/reaction (CCR 66265.177(c));
19 ☐ inspected at least weekly (CCR 66265.174).
25 ☐ Label hazardous materials properly within 10 days or handle as hazardous waste (CCR 66261.2(f)(1)).
26 ☐ Store hazardous materials properly within 96 hours or handle as hazardous waste (CCR 66261.2(f)(2)).
20 ☐ Properly manage used oil filters (CCR 66266.130).
21 ☐ Properly manage spent lead-acid storage batteries (CCR 66266.81).

TANK REGULATIONS

Correction Date __/__/__

23 ☐ Discontinue storing incompatibles in the same tank (CCR 66265.199).
24 ☐ Inspect tank and tank equipment daily and document in the operating record of the facility (CCR 66265.195).

Authorized rep RAY CROSS
Title MECHANIC
Page 1 of 2
Auth rep signature Ray Cross
Inspected by

LACoFD HHMD • NV1-PAR • v2.5 • 6/93

P 14042

WHITE - OWNER CANARY - DISTRICT PINK - PROCESSING UNIT

Notice of Violation and Order to Co 'y # P14042 **County of Los Angeles • HHMD**

DBA/Name CONTINENTAL HEAT TREATING, INC. Owner STULL, JAMES G.

27 ☐ Obtain a storage permit for tanks greater than 5,000 gallons of hazardous waste (CCR 66262.34(d)).
28 ☐ Provide proper secondary containment for hazardous waste tank systems (CCR 66265.193).
29 ☐ Provide a written assessment for tank system (CCR 66262.192).

RECORDKEEPING

Correction Date __/__/__

30 ☐ Keep waste analysis/test records for at least three years (CCR 66262.40(c)).
31 ☐ Send Biennial Report to DTSC (CCR 66262.41).
32 ☐ Retain copies of biennial and exception reports for at least three years (CCR 66262.40(b)).

TRAINING

Correction Date __/__/__

33 ☐ Provide a training program (CCR 66265.16).
34 ☐ Train and supervise personnel within six months of hire date and retrain as needed (CCR 66265.16(b)).
36 ☐ Keep training records on site (CCR 66265.16(d)).
37 ☐ Maintain training records until closure of facility or for at least three years (for former employees) (CCR 66265.16(e)).

CONTINGENCY PLAN/BUSINESS PLAN

Correction Date 10/6/94

38 ☐ Submit a contingency/business plan (CCR 66265.53(b)).
39 ☐ Complete contingency/business plan (CCR 66265.52).
40 ☐ Maintain copy of plan on site (CCR 66265.53).
41 ☒ Amend and update plan as necessary (CCR 66265.54).
42 ☐ Assign Emergency Coordinator to facility (CCR 66265.55).

SUBMIT UPDATE TO THIS OFFICE BY 11/6/94 (NOV 6, 1994)

PREPAREDNESS AND PREVENTION

Correction Date __/__/__

43 ☐ Maintain facility to minimize possibility of fire or release of hazardous waste or constituents (CCR 66265.31).
44 ☐ Provide an internal communications or alarm system (CCR 66265.32(a)).
45 ☐ Provide a device capable of calling outside emergency help (CCR 66265.32).
46 ☐ Provide access to communication/alarm system during waste handling (CCR 66265.34).
47 ☐ Provide fire/spill control or decontamination system (CCR 66265.32(c)).
48 ☐ Test and maintain emergency equipment (CCR 66265.33).
49 ☐ Maintain required aisle space (CCR 66265.35).

MANIFEST/RECEIPTS

Correction Date __/__/__

50 ☐ Discontinue shipping hazardous waste without a manifest (CCR 66262.42).
57 ☐ Maintain manifest copy for three years from shipment (CCR 66262.40).
51 ☐ Maintain completed modified manifest/receipt(s) on site for at least three years (CCR 66263.42).
52 ☐ Maintain used oil manifest/receipt(s) on site for at least three years (H&S 25250.8).
53 ☐ Provide manifest copies to DTSC within 30 days (CCR 66262.23).
54 ☐ Complete all applicable sections of the manifest (CCR 66262.23).
55 ☐ Determine status of waste when TSD facility manifest copy is not received within 30 days (CCR 66262.42).
56 ☐ Send Exception Report to DTSC within 45 days (CCR 66262.42).
58 ☐ Provide proper documentation for excluded recyclable materials (H&S 25143.10).

TRANSPORT

Correction Date __/__/__

59 ☐ Discontinue shipping hazardous waste by transporters lacking an EPA ID No. (CCR 66262.12).
60 ☐ Discontinue shipping hazardous waste to TSD facilities lacking an EPA ID No. (CCR 66262.12).

OTHER

Correction Date 10/06/94

61 ☐ Provide Hazardous Waste Management Performance Plan and Report for review (H&S 25244.21).
62 ☐ Provide a copy of LDR notice/certification for each shipment of restricted hazardous waste (CCR 66268.7).
63 ☑ Provide a corrective action plan for unauthorized releases of hazardous waste or constituents (H&S 25187).
64 ☐ Legally remove hazardous waste/contamination before the closure of the facility (CCR 66265.11).

#63 EVALUATE THE AREA VICINITY 120' W. OF THE EAST WALL AND 30' S. OF THE NORTH WALL FOR SOIL CONTAMINATION BY CHLORINATED HYDROCARBON SOLVENT

PROVIDE PLAN TO THIS OFFICE NO LATER THAN NOV 20, 1994.

Authorized rep RAY CROSS
Title MECHANIC
Page 2 of 2
Auth rep signature Ray Cross
Inspected by

WHITE - OWNER CANARY - DISTRICT PINK - PROCESSING UNIT

APPENDIX W

MAY 25, 2006 CITY OF SANTA FE SPRINGS FIRE DEPARTMENT INSPECTION REPORT & NOTICE OF VIOLATION

[illegible]y of Santa Fe Springs Fire Departm[illegible]t
Environme[illegible]l Protection Division ▪ Certified Unified Pro[illegible]ram Agency
11300 Greenstone Ave ▪ Santa Fe Springs ▪ CA 90670 (562) 944-9713 FAX (562) 941-1817

INSPECTION REPORT & NOTICE OF VIOLATION

Continental Heat Treating
10643 Norwalk
SFS, CA 90670

HMBP RMP
HWG SPCC
IW SW
UFC Recy.

Page 1 of ___

The following items, if applicable, have been inspected. This document constitutes a Summary of Violations and Notice to Comply if the violation (V) column is checked.
Reference: Titles 19 and 22 of the California Code of Regulations (CCR), Chapters 6.5, 6.67, and 6.95 of the Health and Safety Code (HSC), and Chapter 97 of the City Code.

Inspector(s) Richard Kallman **Inspection date** 5 / 25 / 06
Inspection consent given by Charlie Sotelo **Contact phone number** (562) 944-8808

		HAZARDOUS WASTE GENERATOR				**HAZARDOUS WASTE GENERATOR**	
	V	SUBJECT	REFERENCE		V	SUBJECT	REFERENCE
1		Hazardous waste generator permit	City Ordinance 97.400	27		Hazardous waste analysis retained for 3 yrs	CCR 66262.40(c)
2		EPA ID number (call DTSC 800-618-6942)	CCR 66262.12(a)	28	✓	Personnel training for LQG	CCR 66265.16
3		Hazardous waste determination	CCR 66262.11	29		Personnel training for generators of waste	CCR 66262.34(d), CFR
4		Proper disposal of hazardous waste	HSC 25189.5(a)	30		Contingency plan for LQG	CCR 66265.51
5		Reckless management of hazardous waste	HSC 25189.6	31		Emergency preparedness/prevention	CCR 66265.30
6		Hazardous waste labeling	CCR 66262.34(f)	32	✓	SB14 requirements for LQGs	CCR 67100.3
7		Hazardous waste accumulation time	CCR 66262.34(a-d)	33		Biennial report for RCRA LQGs	CCR 66262.40
8		Retrograde/speculative accumulation	CCR 66262.10	34		Excluded recyclable material management	HSC 25143.2-.9
9		Satellite accumulation	CCR 66262.34(e)	35		Recyclable material report	HSC 25143.10
10		Containers leaking or not in good condition	CCR 66265.171	36		Proper management of Universal Waste	CCR 66273
11		Hazardous waste container closed	CCR 66265.173(a)	37	✓	Other hazardous waste violation(s)	
12		Separation of incompatibles	CCR 66265.177			**HAZARDOUS MATERIALS BUSINESS PLAN**	
13		Management of empty containers	CCR 66261.7	38		HMBP established and filed	HSC 25503.5
14		Used oil management	CHSC 25250.4	39		Inventory and plot plan accurate	HSC 25509
15		Used oil filter management	CCR 66266.130	40		Owner/operator information accurate	Ch. 6.95, HSC
17		Contaminated textile management	HSC 25144.6			**INDUSTRIAL WASTE**	
18		Container storage inspection – weekly	CCR 66265.174	42		Discharging industrial waste w/o a permit	City Ordinance, Ch. 97
19		Tank inspection – daily	CCR 66265.195	43	○	Other violation(s)	
20		Tank operating requirements	CCR 66265.194			**STORM WATER**	
21		Hazardous waste transported w/o manifest	CCR 66262.20-23	44	✓	Storm water permit required (GIASP)	City Ordinance, Ch. 52
22		Hazardous waste manifest complete	CCR 66262.23(a)	45		Failure to implement BMPs	City Ordinance, Ch. 52
23		Manifest copies to DTSC	CCR 66262.23(a)(4)			**ABOVE GROUND PETROLEUM STORAGE**	
24		Manifest copies retained for 3 years	CCR 66262.40(a)	46	○	SPCC plan complete per requirements	CHSC 25270.5(c)
25		Consolidated manifest requirements	HSC 25160.2			**UNIFORM FIRE CODE**	
26		LDR documents retained onsite	CCR 66268.7(a)(6)	47		Uniform Fire Code	Uniform Fire Code

☐ **No hazardous waste violation(s) observed on date of inspection**
☒ **Notice to Comply: The violation(s) must be corrected by** 6-25-06.
☒ **Return "Certificate of Compliance"** **$** **Fee after this date**

Attention: The item(s) checked are in violation. A re-inspection may occur at any time to verify compliance. Non-compliance could result in re-inspection fees, permit revocation, and/or administrative/civil/criminal penalties. Any time granted for correction of the violation(s) does not preclude any enforcement action by this Department or other agencies. The giving of this notice and recent inspection of your facility is not a representation by the City of Santa Fe Springs that no other violations exist on your premises.

Program(s) inspected: ☒ HMBP ☒ HWG ☐ TP ☐ PBR ☒ RECYCLER ☐ UST ☒ CAL ARP ☒ SPCC ☒ SW ☒ IW ☒ UFC
Inspection type: ☒ Routine ☐ Other
HWG Status: ☐ RCRA LQG ☐ RCRA SQG ☒ CA ONLY ☐ RECYCLER ☐ CESQG Silver ☐ SPG
Inspection Category: ☐ Single Program ☒ Combined ☐ Joint ☒ Integrated/Multi-Media
Number of Employees: ~50

Notes: On 5-25-06 Continental Heat Treating was inspected. Facility heat treats metal parts and does copper plating on various parts.

28. Continental Heat Treating violated 22CCR66265.16 by not having a training program that meets all the requirements for Large Quantity Generators (LQG). Facility must implement a program which identifies employees that manage hazardous waste, their job title, job description, and a description of the training they receive. Implement a training program that meets LQG requirements and provide documentation to the Fire Dept.

I have read and understand the above stated violations. After these violations have been corrected, I will sign and return the "Certification of Compliance" form and submit any other required or requested information.

Signature of responsible party
Print name Charlie Sotelo
Date 5-25-06

City of Santa Fe Springs Fire Department
Environmental Protection Division ▪ Certified Unified Program Agency
11300 Greenstone Ave ▪ Santa Fe Springs ▪ CA 90670 (562) 944-9713 FAX (562) 941-1817

INSPECTION REPORT & NOTICE OF VIOLATION

Page 2 of 2

BUSINESS Continental Heat Treating
SITE ADDRESS 10643 Norwalk
CONTACT Charlie Sotelo
INSPECTED BY Richard Kallman
DATE INSPECTED 5-25-06

Reference: Titles 19 and 22 of the California Code of Regulations (CCR), Chapters 6.5, 6.67, and 6.95 of the Health and Safety Code (HSC), and Chapter 97 of the City Code.

32. Continental Heat Treating must ensure their waste minimization plan (SB14 plan) is up to date in accordance with 22CCR67100.3. Facility has plan on site, but it appears it was last updated in 1999.

37. Continental Heat Treating violated 22CCR66264.175(b)(5) by having liquid waste in their Copper plating line secondary containment. Spills into secondary containment must be removed as quickly as possible and in all cases within 24 hours. Facility must pump out containment and appropriately manage spilled material/waste.

43. Continental Heat Treating violated City Ordinance Chapter 52 by having oil in their 3rd stage of their clarifier. Oil must be removed from the clarifier and maintained such that oil is kept out of the sewer system.

44. Continental Heat Treating must ensure their stormwater pollution prevention plan is up to date. The plan on site was dated 1997. Ensure plan is accurate and still meets regulatory requirements.

46. Observation: Continental Heat Treating has in excess of 1,320 gallons of petroleum products stored aboveground. Facility is subject to SPCC requirements.

Correct violations by 6-25-06

Charlie Sotelo
5-25-06

APPENDIX X

MAY 9, 2007 CITY OF SANTA FE SPRINGS FIRE DEPARTMENT INSPECTION REPORT & NOTICE OF VIOLATION

S.F.S. FIRE DEPT.

City of Santa Fe Springs Fire Department

Environm[illegible]l Protection Division ▪ Certified Unified P[illegible]ram Agency

11300 Greenstone Ave ▪ Santa Fe Springs ▪ CA 90670 (562) 944-97[illegible]3 FAX (562) 941-1817

INSPECTION REPORT & NOTICE OF VIOLATION

Continental Heat Treating
10643 Norwalk
SFS, CA 90670

HMBP
HWG - non-RCRA LQG
ARP
UFC

RMP
SPCC
SW
Recy

Page 1 of 2

The following items, if applicable, have been inspected. This document constitutes a Summary of Violations and Notice to Comply if the violation (V) column is checked.
Reference: Titles 19 and 22 of the California Code of Regulations (CCR), Chapters 6.5, 6.67, and 6.95 of the Health and Safety Code (HSC), and Chapter 97 of the City Code.

Inspector(s) Richard Kallman **Inspection date** 5/9/07

Inspection consent given by Charlie Sotelo **Contact phone number** (562) 944-8808

HAZARDOUS WASTE GENERATOR				**HAZARDOUS WASTE GENERATOR**			
	V	*SUBJECT*	*REFERENCE*		V	*SUBJECT*	*REFERENCE*
1		Hazardous waste generator permit	City Ordinance 97.400	27		Hazardous waste analysis retained for 3 yrs	CCR 66262.40(c)
2		EPA ID number (call DTSC 800-618-6942)	CCR 66262.12(a)	28		Personnel training for LQG	CCR 66265.16
3		Hazardous waste determination	CCR 66262.11	29		Personnel training for generators of waste	CCR 66262.34(d), CFR
4		Proper disposal of hazardous waste	HSC 25189.5(a)	30		Contingency plan for LQG	CCR 66265.51
5		Reckless management of hazardous waste	HSC 25189.6	31		Emergency preparedness/prevention	CCR 66265.30
6		Hazardous waste labeling	CCR 66262.34(f)	32		SB14 requirements for LQGs	CCR 67100.3
7	M	Hazardous waste accumulation time	CCR 66262.34(a-d)	33		Biennial report for RCRA LQGs	CCR 66262.40
8		Retrograde/speculative accumulation	CCR 66262.10	34		Excluded recyclable material management	HSC 25143.2-.9
9		Satellite accumulation	CCR 66262.34(e)	35	M	Recyclable material report	HSC 25143.10
10		Containers leaking or not in good condition	CCR 66265.171	36		Proper management of Universal Waste	CCR 66273
11		Hazardous waste container closed	CCR 66265.173(a)	37		Other hazardous waste violation(s)	
12		Separation of incompatibles	CCR 66265.177			**HAZARDOUS MATERIALS BUSINESS PLAN**	
13		Management of empty containers	CCR 66261.7	38		HMBP established and filed	HSC 25503.5
14		Used oil management	CHSC 25250.4	39	○	Inventory and plot plan accurate	HSC 25509
15		Used oil filter management	CCR 66266.130	40		Owner/operator information accurate	Ch. 6.95, HSC
17		Contaminated textile management	HSC 25144.6			**INDUSTRIAL WASTE**	
18		Container storage inspection – weekly	CCR 66265.174	42		Discharging industrial waste w/o a permit	City Ordinance, Ch. 97
19		Tank inspection – daily	CCR 66265.195	43	○	Other violation(s)	
20		Tank operating requirements	CCR 66265.194			**STORM WATER**	
21		Hazardous waste transported w/o manifest	CCR 66262.20-23	44		Storm water permit required (GIASP)	City Ordinance, Ch. 52
22		Hazardous waste manifest complete	CCR 66262.23(a)	45		Failure to implement BMPs	City Ordinance, Ch. 52
23		Manifest copies to DTSC	CCR 66262.23(a)(4)			**ABOVE GROUND PETROLEUM STORAGE**	
24		Manifest copies retained for 3 years	CCR 66262.40(a)	46		SPCC plan complete per requirements	CHSC 25270.5(c)
25		Consolidated manifest requirements	HSC 25160.2			**UNIFORM FIRE CODE**	
26		LDR documents retained onsite	CCR 66268.7(a)(6)	47	○	Uniform Fire Code	Uniform Fire Code

☐ **No hazardous waste violation(s) observed on date of inspection**

☒ **Notice to Comply: The violation(s) must be corrected by** 6-10-07.

☒ **Return "Certificate of Compliance"** **$** **Fee after this date**

Attention: The item(s) checked are in violation. A re-inspection may occur at any time to verify compliance. Non-compliance could result in re-inspection fees, permit revocation, and/or administrative/civil/criminal penalties. Any time granted for correction of the violation(s) does not preclude any enforcement action by this Department or other agencies. The giving of this notice and recent inspection of your facility is not a representation by the City of Santa Fe Springs that no other violations exist on your premises.

Program(s) inspected: ☒ HMBP ☒ HWG ☐ TP ☐ PBR ☒ RECYCLER ☐ UST ☒ CAL ARP ☒ SPCC ☒ SW ☒ IW ☒ UFC

Inspection type: ☒ Routine ☐ Other

HWG Status: ☐ RCRA LQG ☒ RCRA SQG ☐ CA ONLY ☐ RECYCLER ☐ CESQG Silver ☐ SPG

Inspection Category: ☐ Single Program ☒ Combined ☐ Joint ☒ Integrated/Multi-Media

Number of Employees: 60

Notes: On 5-9-07 Continental Heat Treating was inspected. Facility utilizes furnaces to heat treat parts and copper plates various parts as well.

7. Continental Heat Treating violated 22CCR66262.34 by storing waste for longer than allowed. 1 x 55 gallon drum of waste filters was stored in the Plating Department Storage area. The drum had an accumulation start date of 11-6-06. Continental Heat Treating must not store waste for more than 90 days unless waste storage meets satellite accumulation requirements.

35. Continental Heat Treating violated CA HSC 25143.10 by not completing a recyclable material report. This report is due July 1 of even numbered years and was last completed in 2004. Continental Heat Treating must complete this report and submit it to the Fire Department.

I have read and understand the above stated violations. After these violations have been corrected, I will sign and return the "Certification of Compliance" form and submit any other required or requested information.

Signature of responsible party Charlie Sotelo

Print name Charlie Sotelo

Date 5-10-07

City of Santa Fe Springs Fire Department
Environmental Protection Division ▪ Certified Unified Program Agency
11300 Greenstone Ave ▪ Santa Fe Springs ▪ CA 90670 (562) 944-9713 FAX (562) 941-1817

INSPECTION REPORT & NOTICE OF VIOLATION

Page 2 of 2

BUSINESS Continental Heat Treating
SITE ADDRESS 10643 Norwalk
CONTACT Charlie Sotelo
INSPECTED BY Richard Fallman
DATE INSPECTED 5-9-07

Reference: Titles 19 and 22 of the California Code of Regulations (CCR), Chapters 6.5, 6.67, and 6.95 of the Health and Safety Code (HSC), and Chapter 97 of the City Code.

39. Continental Heat Treating violated HSC25509 by not having an accurated business plan inventory on site. A cylinder of nitrogen/hydrogen gas used by the ZR unit was not listed ~~and~~ as well as welding gas. Continental Heat Treating must determine if the quantity of these materials requires ~~an~~ a chemical inventory form to be submitted. Updates shall be sent to the Fire Department.

43. Continental Heat Treating violated City Code 97.60 section 20.36.610 by failing to maintain pretreatment equipment in good working order. The third stage of the clarifier had oil in it. Continental Heat Treating must maintain the clarifier to prevent oil from entering the sewer system.

47A Continental Heat Treating violated UFC8001.4.7 by not maintaining equipment in good working order. The flow meter associated with Furnace N2 was found to be leaking ammonia. Continental Heat Treating must stop the ammonia leak and ensure equipment is maintained to prevent leaks.

47B. Continental Heat Treating violated UFC8001.11.8 by having incompatible materials stored together. Acids + Bases were stored together in the storage area for the plating department. Incompatible materials must be separated by 20 feet or a non-combustible partition.

Other: Continental Heat Treating violated 19CCR2755.6 by not completing a CalARP self Audit. Self Audits are required to be completed every three years. The CalARP was initially submitted 4-29-04, so the audit was due to be completed by 4-29-07. Continental Heat Treating must complete the audit and send a copy of the audit results to the Fire Department.

Correct violations by 6-10-07

Charlie Sotelo
5-10-07

Signature
Name
Date

APPENDIX Y

MAY 8, 2012 CITY OF SANTA FE SPRINGS FIRE DEPARTMENT INSPECTION REPORT & NOTICE OF VIOLATION

Santa Fe Springs Department of Fire-Rescue

Environmental [illegible]tection Division ▫ Certified Unifie[illegible]Program Agency

11300 Greenstone Ave ▫ Santa Fe Springs ▫ CA 90670 (562) 944-9713 FAX (562) 941-1817

INSPECTION REPORT & NOTICE OF VIOLATION

Business name Continental Heat Treating

Address 10643 Norwalk

Santa Fe Springs, CA 90670

HMBP
HWG-LQG (Non)
APSA
CalARP
[illegible]

Page 1 of 1

The following items, if applicable, have been inspected. This document constitutes a Summary of Violations and Notice to Comply if the violation (V) column is checked. *Reference: Titles 19, 22, and 23 of the California Code of Regulations (CCR), Chapters 6.5, 6.67, 6.95 of the Health and Safety Code (HSC), The California Fire Code and Chapter 97 of the City Code.*

Inspector(s) Richard Fallmer **Inspection date** 5/8/12

Inspection consent given by Charlie Sotelo **Contact phone number** (562) 944-8806

		HAZARDOUS WASTE GENERATOR				**HAZARDOUS WASTE GENERATOR**	
	V	*SUBJECT*	*REFERENCE*		V	*SUBJECT*	*REFERENCE*
1		Hazardous waste generator permit	City Code 97.400	26		Contingency plan for LQG	CCR 66265.51
2		EPA ID number/CA Waste ID number	CCR 66262.12 (a)	27		Emergency preparedness/prevention LQG	CCR 66265.30
3		Hazardous waste determination	CCR 66262.11	28		SB14 requirements for LQGs	CCR 67100.3
4		Proper disposal of hazardous waste	HSC 25189.5 (a)	29		Excluded recyclable material management	HSC 25143.2 - .9
5		Reckless management of hazardous waste	HSC 25189.6 (a)	30		Proper management of Universal Waste	CCR 66273.13
6		Hazardous waste labeling	CCR 66262.34 (f)			**HAZARDOUS MATERIALS BUSINESS PLAN**	
7		Haz Waste/Satellite accumulation time	CCR 66262.34 (a-d)/(e)	31		HMBP established, implemented, filed	HSC 25503.5
8		Retrograde/speculative accumulation	CCR 66261.2 (d)	32		Minimum standards for business plans	CCR 2729
9		Hazardous waste containers closed	CCR 66265.173 (a)			**INDUSTRIAL WASTE**	
10		Containers mislabeled, deteriorated, etc.	CCR 66262.2 (f)	33		Generating industrial waste w/o a permit	City Code, Ch. 97
11		Container storage inspection - weekly	CCR 66265.174			**CALIFORNIA FIRE CODE**	
12		Management of empty containers	CCR 66261.7	34		Maximum allowable hazardous materials	CFC 2703.1.1
13		Used oil management	HSC 25250.4	35		Separation of incompatible materials	CFC 2703.9.8
14		Used oil filter management	CCR 66266.130	36		Secure compressed gas cylinders	CFC 303
15		Contaminated textile management	HSC 25144.6	37		Fire protection system maintenance	CFC 901.6.1
16		Tank inspection - daily	CCR 66265.195	38		Service and tag kitchen hood system	CFC 904.11.6.4
17		Tank operating requirements	CCR 66265.194	39		Clearance from electrical control panels	CFC 605.3
18	✓	Manifest general requirements	CCR 66262.20-23	40		Exits free from obstructions	CFC 1028
19		Manifest completed	CCR 66262.23 (a)			**STORM WATER**	
20		Consolidated manifest requirements	HSC 25160.2	41		Storm water permit required (GIASP)	City Code, Ch. 52
21		Manifest copies retained for 3 years	CCR 66262.40 (a)	42		Failure to implement BMPs	City Code, Ch. 52
22		Biennial report for RCRA LQG	CCR 66262.40 (b)			**CALARP**	
23		Hazardous waste analysis retained 3 years	CCR 66262.40 (c)	43		CalARP required	19 CCR 2745.1 (b)(3)
24		Personnel Training Plan for LQGs	CCR 66265.16			**OTHER VIOLATION**	
25		Personnel training for generators of waste	CCR 66262.34 (d), 40CFR	44	✓	Other violation(s)	

Program(s) inspected: ☒ HMBP ☒ HWG ☐ TP ☒ RECYCLER ☐ UST ☒ CAL ARP ☒ APSA ☒ SW ☒ IW ☒ CFC

Inspection type: ☒ Routine ☐ Other | HWG Status: ☐ RCRA LQG ☒ Non RCRA LQG ☐ RCRA SQG ☐ CA ONLY ☐ RECYCLER ☐ CESQG Silver ☐ SPG

Inspection Category: ☐ Single Program ☒ Combined ☒ Integrated/Multi-Media Number of Employees: 80

Notes: on 5/8/12 Continental Heat Treating was inspected. Facility heat treats metal parts and has a small plating line.

18. Continental Heat Treating violated 22CCR262.20 by not having a signed copy of manifest # 009532358JJK. Facility must obtain a copy of the signed manifest or file an exception report.

44. Continental Heat Treating violated 2036.610 by not maintaining industrial waste pretreatment equipment. There was oil in the clarifier. Facility must pump out the oil and properly maintain the equipment.

☐ **No hazardous waste violation(s) observed on date of inspection**

☒ **Notice to Comply: The violation(s) must be corrected by** 6-8-12

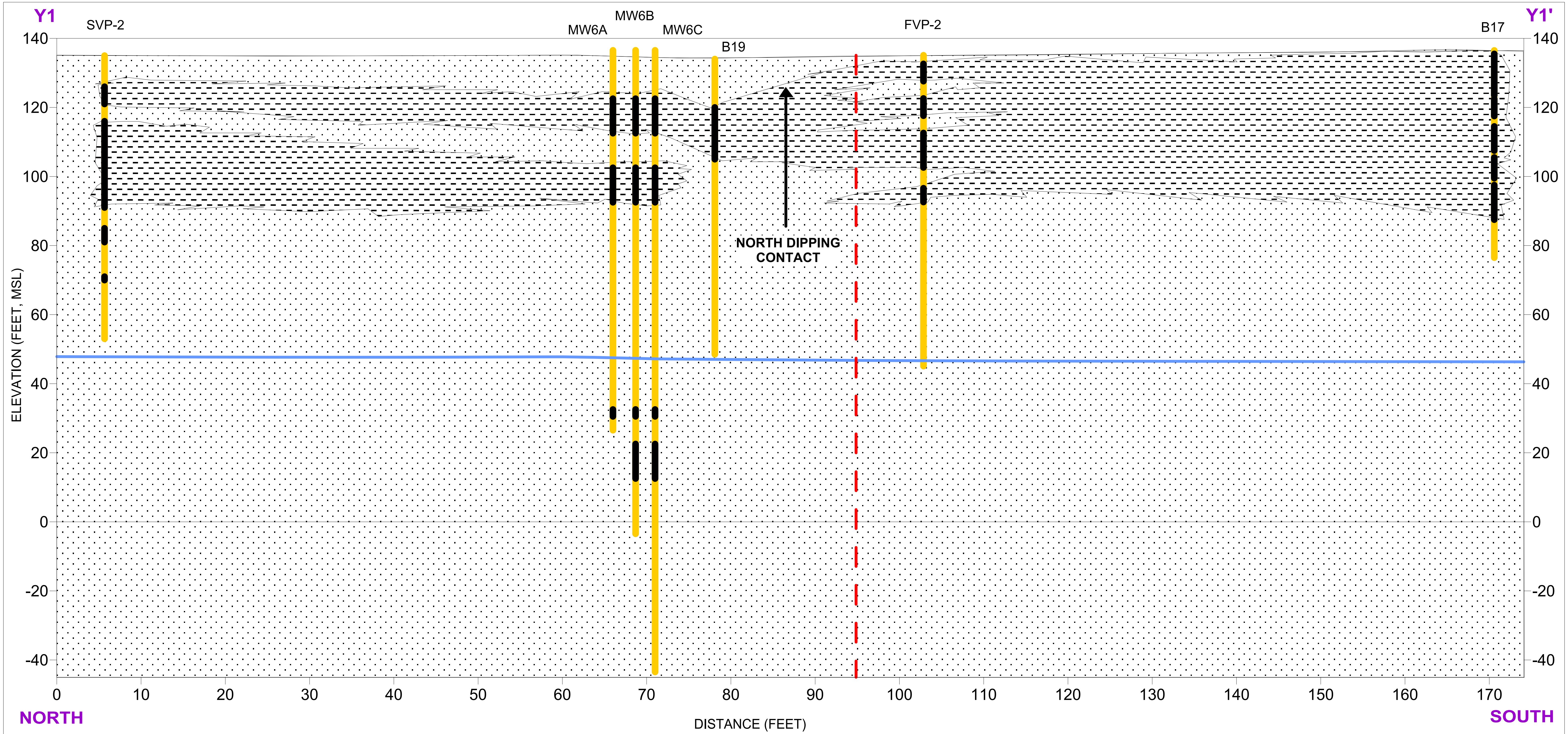
☒ **Return attached "Certificate of Compliance"**

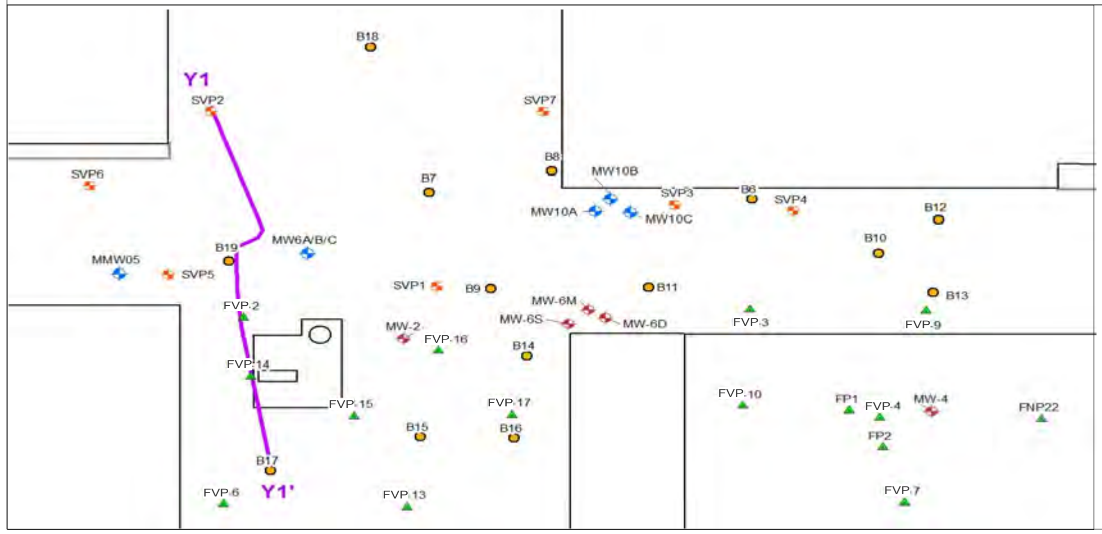
Attention: The item(s) checked is (are) in violation. All violations must be corrected. A re-inspection may occur at any time to verify compliance. Non-compliance could result in re-inspection fees, permit revocation, and/or administrative/civil/criminal penalties. Any time granted for correction of the violation(s) does not preclude any enforcement action by this Department or other agencies. The giving of this notice and recent inspection of your facility is not a representation by the City of Santa Fe Springs that no other violations exist on your premises.

Received by Charlie Sotelo | Print name Charlie Sotelo | Date 5/8/12

APPENDIX Z

JANUARY 2014 NEWFIELDS FIGURES 5.1.1-5.1.2





Legend

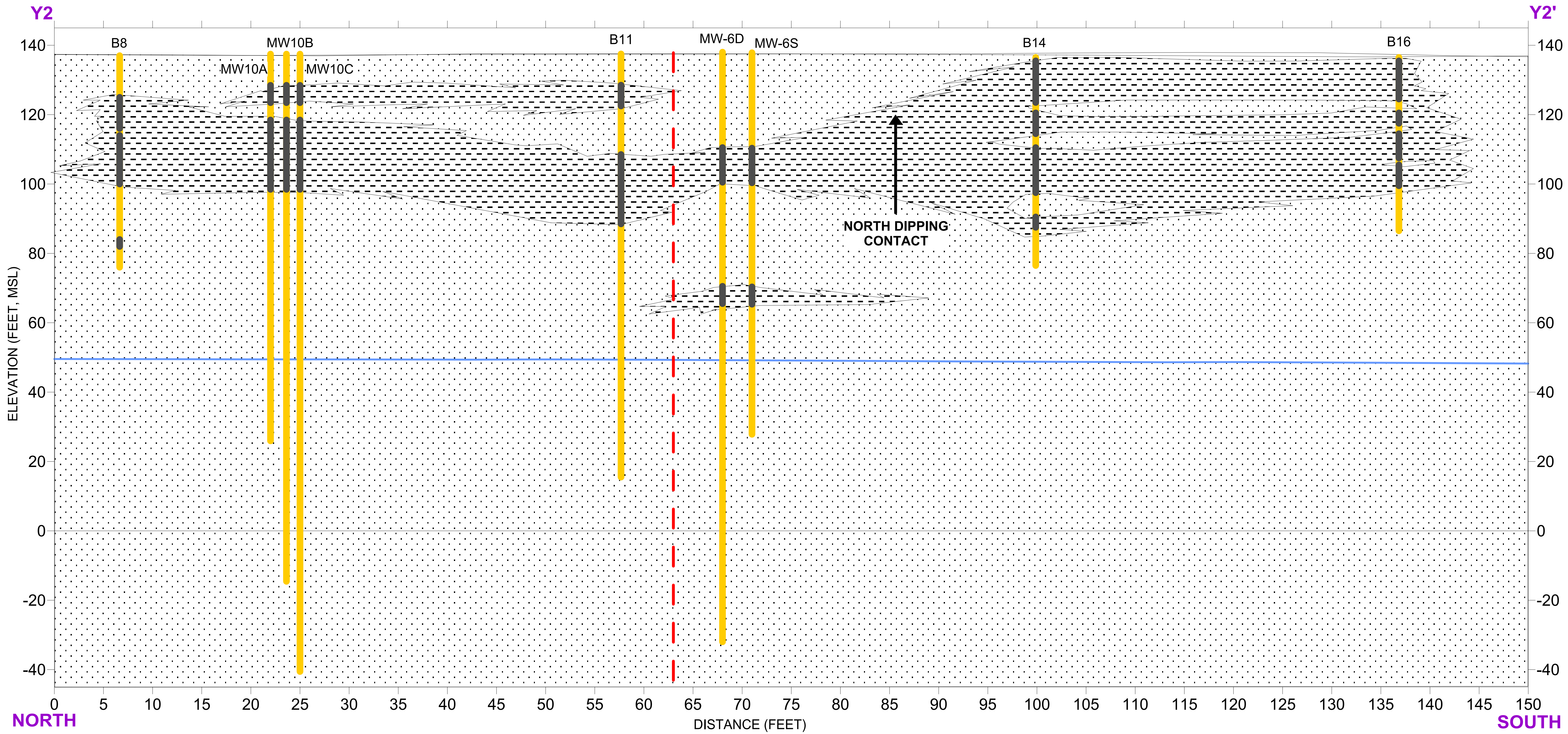
▮	SAND LAYER
▮	SILT LAYER
━	GROUNDWATER ELEVATION
‒ ‒	PROPERTY BOUNDARY
⁘	SAND
▤	SILT

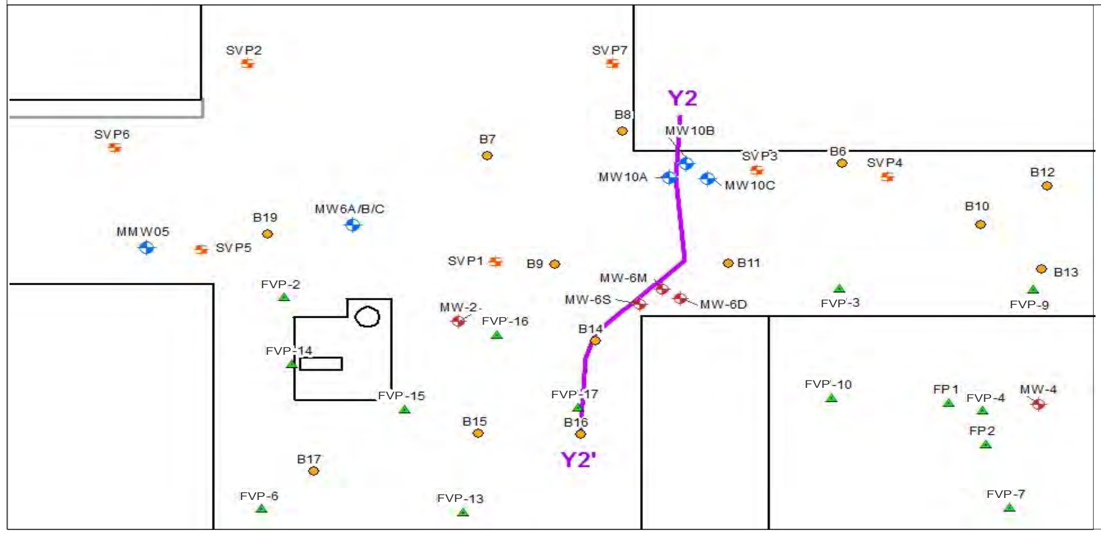
Notes:
1. All locations and dimensions are approximate.
2. Well diameters are not drawn to scale.
3. MSL - Mean Sea Level.
4. Groundwater elevations were take in November 2012.
5. MW6A, MW6B, and MW6C share the same location and are separated to show detail.

NewFields
600 Jefferson St., Suite 1040
Houston, Texas 77002
(713) 357-5244

FIGURE 5.1.1
Y1 - Y1'
CROSS SECTION
(NORTH - SOUTH)

Former ExxonMobil, Jalk Fee Property
10607 Norwalk Boulevard,
Santa Fe Springs, CA





Legend

🟨 SAND LAYER

⬛ SILT LAYER

— GROUNDWATER ELEVATION

- - PROPERTY BOUNDARY

⁘ SAND

▤ SILT

Notes:
1. All locations and dimensions are approximate.
2. Well diameters are not drawn to scale.
3. MSL - Mean Sea Level.
4. Groundwater elevations were take in November 2012.
5. MW-6S and MW-6D share the same location and are separated to show detail.
6. MW10A, MW10B, and MW10C share the same location and are separated to show detail.

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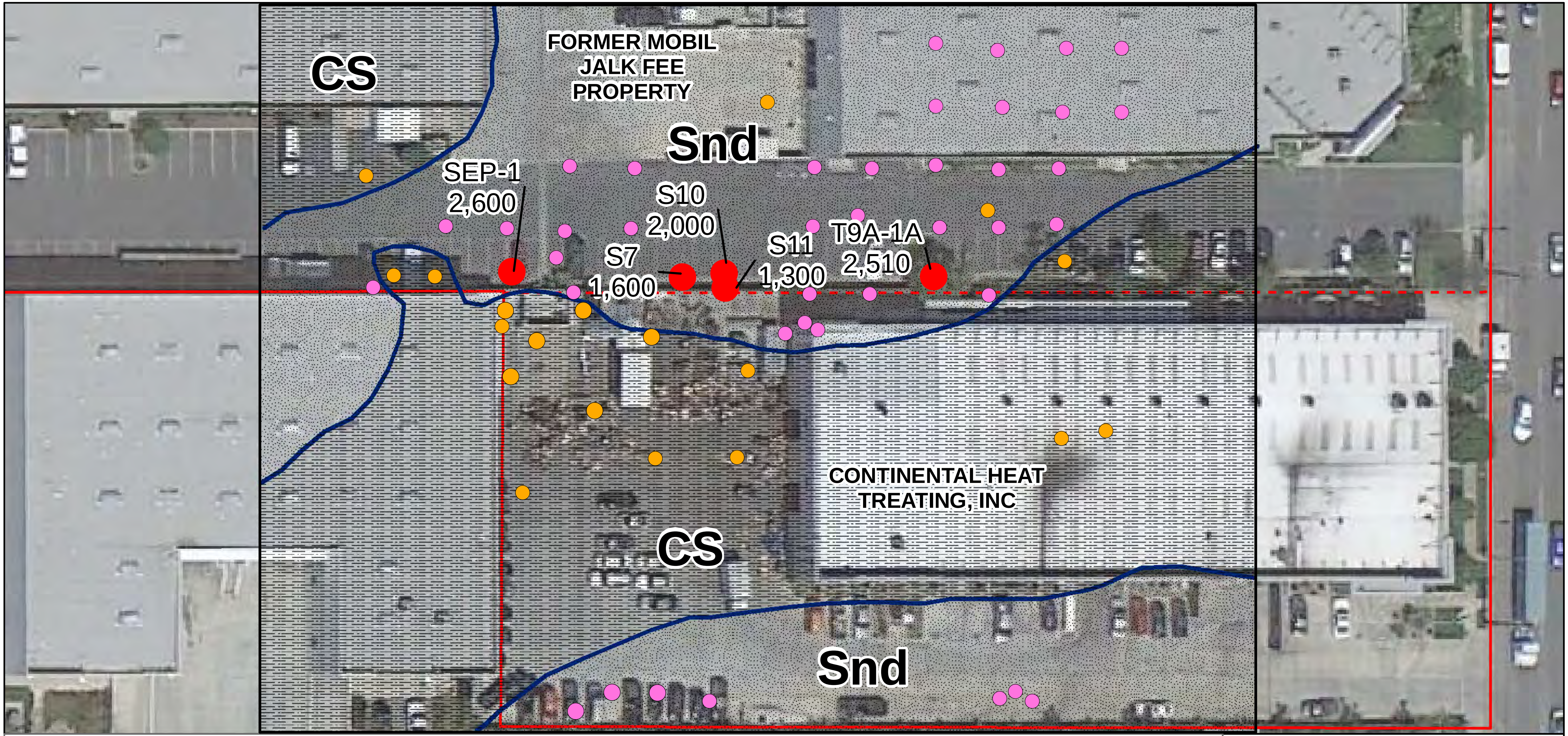
FIGURE 5.1.2
Y2 - Y2'
CROSS SECTION
(NORTH - SOUTH)

Former ExxonMobil, Jalk Fee Property
10607 Norwalk Boulevard,
Santa Fe Springs, CA

APPENDIX AA

JANUARY 2014 NEWFIELDS FIGURES 5.2.1-5.2.3



Legend

● CONCENTRATION LOCATION

APPROXIMATE CONTACT

PROPERTY BOUNDARY

[1,000] PPM CONCENTRATION OF TOTAL CHC

LITHOLOGY

● SAND (Snd)

● CLAY/SILT (CS)

LITHOLOGY TEXTURE

▨ SAND (Snd)

▤ CLAY/SILT (CS)

SOIL CONCENTRATION

🟥 > 1,000 PPM
🟪 < 1,000 PPM
🟧 < 100 PPM
🟨 < 10 PPM
🟩 < 1 PPM
🟦 < 0.1 PPM
🟦 < 0.01 PPM
🟦 ND

N W E S

0 50 100 200 Feet

Notes:

1. All locations and dimensions are approximate.
2. Snd - Sand
3. CS - Clay/Silt

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Houston, Texas 77002
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FIGURE 5.2.1

DISTRIBUTION OF CLAY/SILTS AND SANDS
6 FEET DEPTH

Former ExxonMobil, Jalk Fee Property
10607 Norwalk Boulevard,
Santa Fe Springs, CA

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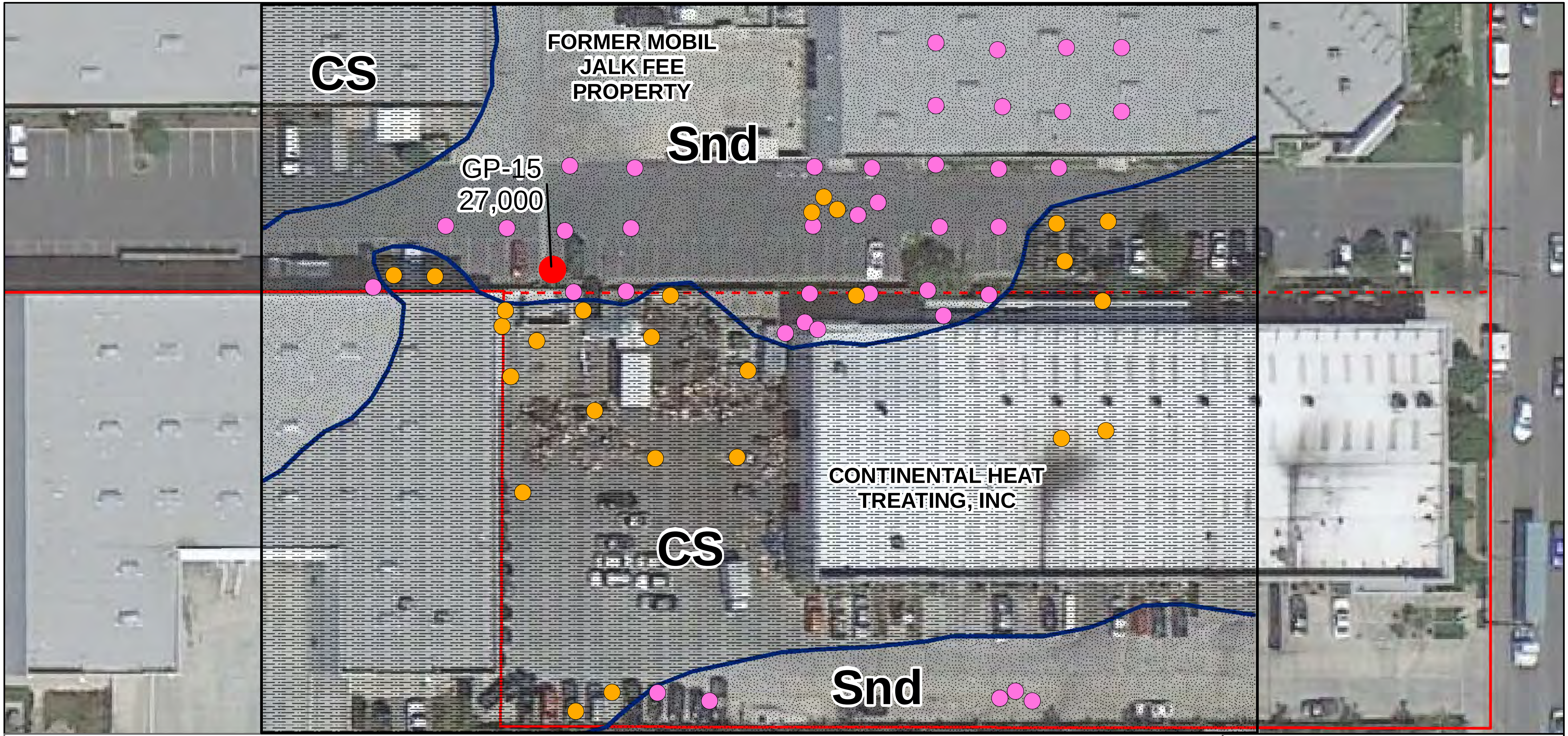

Legend

● CONCENTRATION LOCATION

APPROXIMATE CONTACT

PROPERTY BOUNDARY

[1,000] PPM CONCENTRATION OF TOTAL CHC

LITHOLOGY

● SAND (Snd)

● CLAY/SILT (CS)

LITHOLOGY TEXTURE

▨ SAND (Snd)

▤ CLAY/SILT (CS)

SOIL CONCENTRATION

🟥 > 1,000 PPM
🟪 < 1,000 PPM
🟧 < 100 PPM
🟨 < 10 PPM
🟩 < 1 PPM
🟦 < 0.1 PPM
🟦 < 0.01 PPM
🟦 ND

N W E S

Feet
0 50 100 200

Notes:

1. All locations and dimensions are approximate.
2. Snd - Sand
3. CS - Clay/Silt

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Houston, Texas 77002
(713) 357-5244

FIGURE 5.2.2

DISTRIBUTION OF CLAY/SILTS AND SANDS
10 FEET DEPTH

Former ExxonMobil, Jalk Fee Property
10607 Norwalk Boulevard,
Santa Fe Springs, CA

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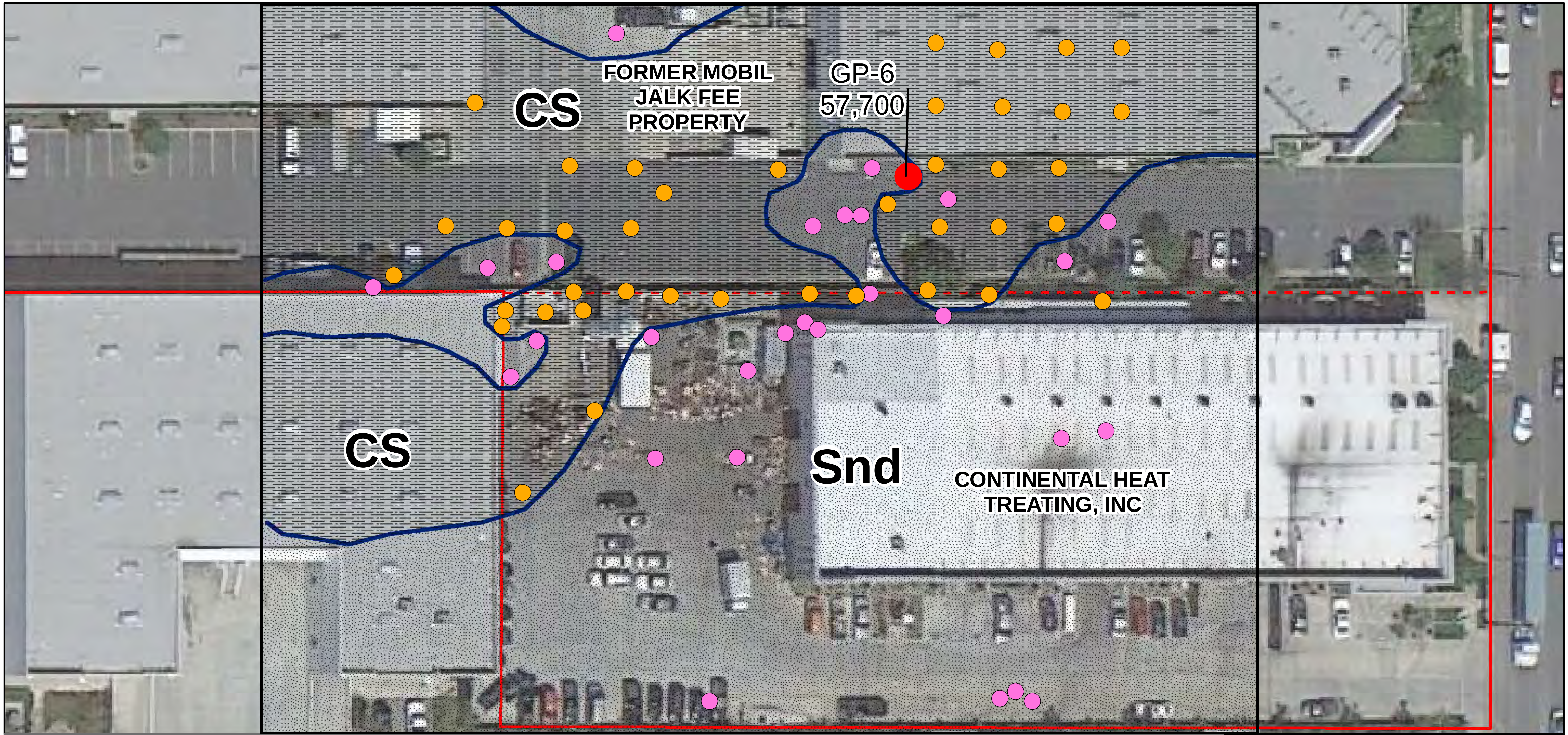

Legend

● CONCENTRATION LOCATION

━ APPROXIMATE CONTACT

▭ PROPERTY BOUNDARY

[1,000] PPM CONCENTRATION OF TOTAL CHC

LITHOLOGY

● SAND (Snd)

● CLAY/SILT (CS)

LITHOLOGY TEXTURE

▨ SAND (Snd)

▤ CLAY/SILT (CS)

SOIL CONCENTRATION

🟥 > 1,000 PPM

🟪 < 1,000 PPM

🟧 < 100 PPM

🟨 < 10 PPM

🟩 < 1 PPM

🟦 < 0.1 PPM

🟦 < 0.01 PPM

🟦 ND

Feet
0 50 100 200

Notes:

1. All locations and dimensions are approximate.
2. Snd - Sand
3. CS - Clay/Silt

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Houston, Texas 77002
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FIGURE 5.2.3

DISTRIBUTION OF CLAY/SILTS AND SANDS
16 FEET DEPTH

Former ExxonMobil, Jalk Fee Property
10607 Norwalk Boulevard,
Santa Fe Springs, CA

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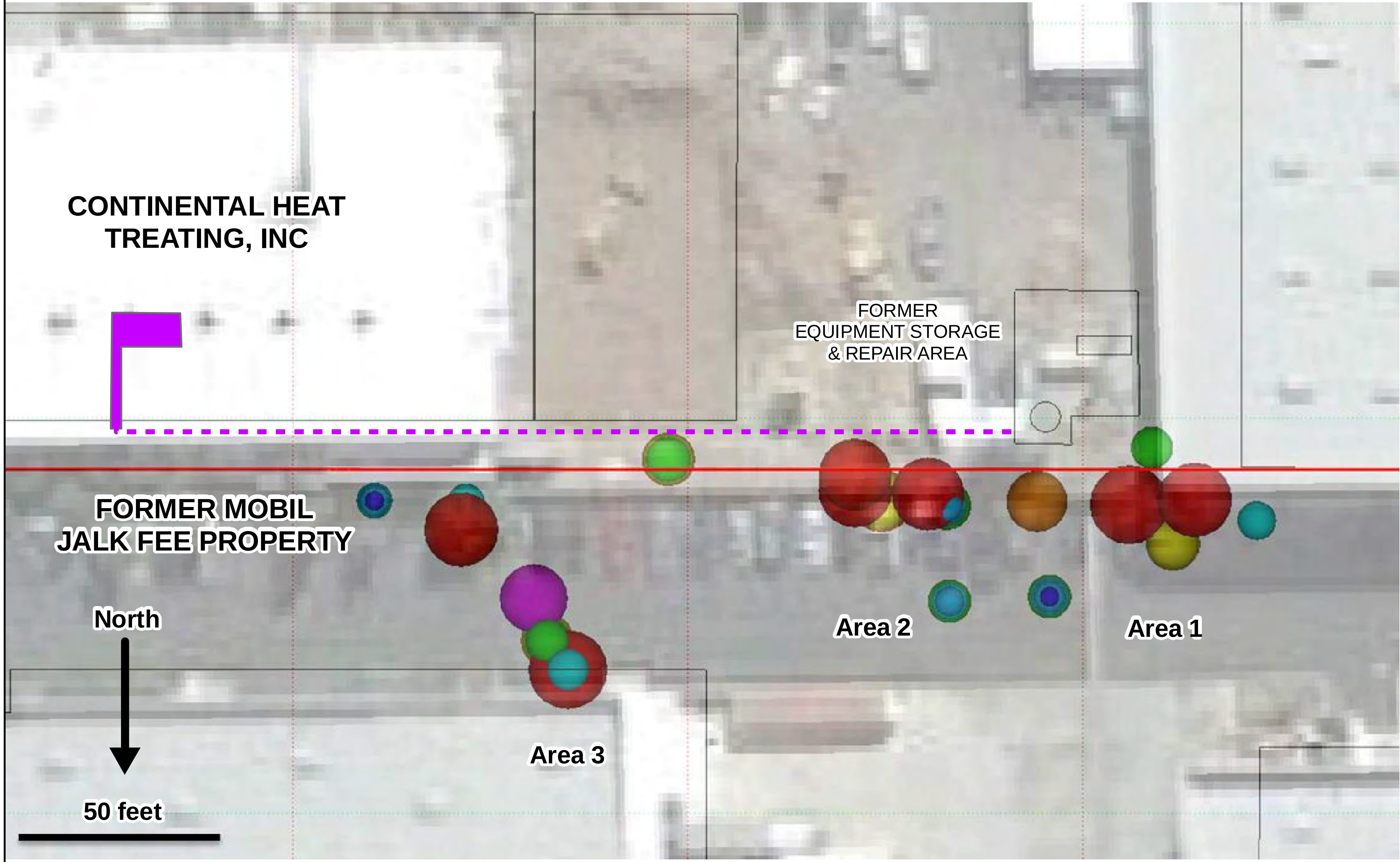
APPENDIX AB

JANUARY 2014 NEWFIELDS FIGURES 5.3.1-5.3.2



Legend

- ▬ ▬ PIPELINE (?) FROM DEGREASER
- ☐ PROPERTY BOUNDARY
- ■ APPROXIMATE LOCATION OF FORMER VAPOR DEGREASER

SOIL CONCENTRATION

- 🟥 >1,000 ppm
- 🟪 <1,000 ppm
- 🟧 <100 ppm
- 🟨 <10 ppm
- 🟩 <1 ppm
- ■ <100 ppb
- ■ <10 ppb
- 🟦 ND

Note:

All locations and dimensions are approximate.

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FIGURE 5.3.1

SOIL DETECTIONS IN THE VICINITY OF SUSPECTED RELEASE LOCATIONS ALONG THE PROPERTY BOUNDARY

Former ExxonMobil, Jalk Fee Property
10607 Norwalk Boulevard,
Santa Fe Springs, CA

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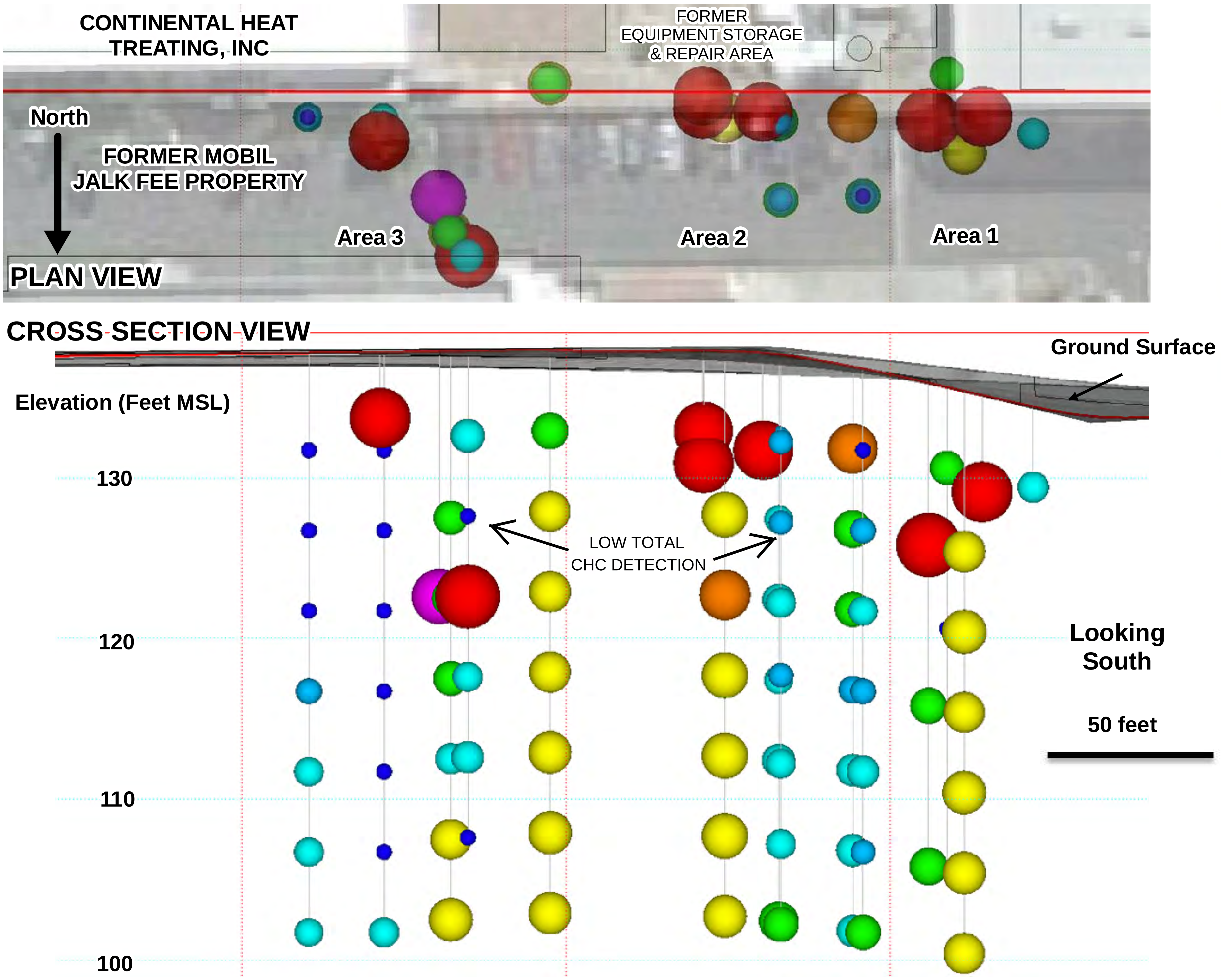

Legend

□ PROPERTY BOUNDARY

SOIL CONCENTRATION

- 🟥 >1,000 ppm
- 🟪 <1,000 ppm
- 🟧 <100 ppm
- 🟨 <10 ppm
- 🟩 <1 ppm
- 🟦 <100 ppb
- 🟦 <10 ppb
- 🟦 ND

Notes:

1. All locations and dimensions are approximate.
2. MSL - Mean sea level

NewFields

600 Jefferson St., Suite 1040
Houston, Texas 77002
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FIGURE 5.3.2
PLAN AND CROSS SECTIONAL VIEW
OF SOIL DETECTIONS IN THE VICINITY
OF SUSPECTED RELEASE LOCATIONS
ALONG THE PROPERTY BOUNDARY

Former ExxonMobil, Jalk Fee Property
10643 Norwalk Boulevard,
Santa Fe Springs, CA

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APPENDIX AC

CHC CALCULATIONS AND PREVIOUS CONSULTANTS’ SOIL DATA

TABLE 1
TOTAL CHLORINATED SOLVENT CONCENTRATION CALCULATION
FORMER EXXONMOBIL JALK FEE PROPERTY
10607 NORWALK BOULEVARD
SANTA FE SPRINGS, CALIFORNIA
Cardno ERI 1155

Sample Number	Depth (feet)	PCE (mg/kg)	TCE (mg/kg)	Cis-1,2-Dichloroethene (mg/kg)	**TOTAL CHC** (mg/kg)
Samples collected by various consultants.					
EX2-26(A)	6.0	0.68	0.035	NA	**0.715**
EX2-26	15.0	308	28.1	14.7	**350.8**
T9A-1A	4	2500	10	7.0	**2517**
GP-6	5	0.045	0.055	0.23	**0.33**
GP-6	10	ND	ND	0.021	**0.021**
GP-6	15	55000	2700	2100	**59800**

EXPLANATION:

mg/kg = milligrams per kilogram
CHC = chlorinated hydrocarbon concentration
NA = not analyzed
ND = not detected
PCE = tetrachloroethene or perchloroethene
TCE = trichloroethene

Table 1

RESULTS OF LABORATORY ANALYSIS OF SOIL SAMPLES

June 9 through June 22, 1998

Mobil Jalk Fee Properties

Boring Number	Sample Date	Depth (fbg)	TRPH (ppm)	sec-Butyl benzene (ppb)	tert-Butyl benzene (ppb)	Iso propyl benzene (ppb)	p-Iso propyl toluene (ppb)	Naphth alene (ppb)	n-Propyl benzene (ppb)	1,2,4-Trimethyl benzene (ppb)	1,3,5-Trimethyl benzene (ppb)	o-Xylenes (ppb)	m,p-Xylenes (ppb)	cis-1,2-Dichloro ethene (ppb)	trans-1,2-Dichloro ethene (ppb)	Toluene (ppb)	Ethyl benzene (ppb)	Benzene (ppb)	Methylene Chloride (ppb)	Vinyl Chloride (ppb)	PCE (ppb)	TCE (ppb)
EX1-1	6/9/98	5.5	ND	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	ND	ND	200	ND
EX1-2	6/9/98	5.5	ND	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	ND	ND	130	ND
EX1-3	6/9/98	5.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EX1-4	6/9/98	6.5	ND	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	ND	ND	100	ND
EX1-5	6/10/98	5.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EX1-6	6/10/98	5.5	ND	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	ND	ND	240	ND
EX1-7	6/10/98	11.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EX1-8	6/10/98	11.5	ND	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	ND	ND	150	ND
EX1-9	6/10/98	11.5	ND	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	ND	ND	54	ND
EX1-10	6/10/98	11.5	ND	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	ND	ND	170	ND
EX1-11	6/11/98	6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EX2-1	6/9/98	5.5	73	ND	ND	ND	ND	ND	ND	ND	ND	ND	10	ND	ND	8	ND	ND	ND	ND	15	ND
EX2-2	6/9/98	5.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EX2-3	6/9/98	5.5	ND	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	ND	ND	300	ND
EX2-4	6/9/98	7.0	120	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	ND	ND	ND	5.2
EX2-5	6/9/98	5.5	730	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	ND	ND	ND	ND
EX2-6	6/9/98	9.5	ND	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	ND	ND	ND	ND
EX2-7	6/9/98	6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EX2-8	6/9/98	6.0	ND	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	ND	ND	ND	ND
EX2-9	6/9/98	6.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EX2-10	6/9/98	15.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	7	ND	ND	ND	ND	ND	ND	ND	ND	ND
→ EX2-11	6/9/98	15.0	25000	8	ND	10	24	ND	ND	ND	ND	16	20	ND	12	13	13	23	ND	ND	ND	ND
EX2-12	6/10/98	15.0	ND	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	ND	ND	ND	ND
EX2-13	6/10/98	12.5	ND	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	ND	ND	ND	ND
EX2-14	6/10/98	7.0	ND	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	ND	ND	170	ND

Table 1

RESULTS OF LABORATORY ANALYSIS OF SOIL SAMPLES

June 9 through June 22, 1998

Mobil Jalk Fee Properties

Boring Number	Sample Date	Depth (fbg)	TRPH (ppm)	sec-Butyl benzene (ppb)	tert-Butyl benzene (ppb)	Isopropyl benzene (ppb)	p-Isopropyl toluene (ppb)	Naphthalene (ppb)	n-Propyl benzene (ppb)	1,2,4-Trimethyl benzene (ppb)	1,3,5-Trimethyl benzene (ppb)	o-Xylenes (ppb)	m,p-Xylenes (ppb)	cis-1,2-Dichloro ethene (ppb)	trans-1,2-Dichloro ethene (ppb)	Toluene (ppb)	Ethyl benzene (ppb)	Benzene (ppb)	Methylene Chloride (ppb)	Vinyl Chloride (ppb)	PCE (ppb)	TCE (ppb)
EX2-15	6/10/98	5.5	ND	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	ND	ND	430	17
EX2-16	6/10/98	5.5	ND	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	ND	ND	270	20
EX2-17	6/10/98	5.5	ND	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	ND	ND	350	23
EX2-18	6/10/98	11.5	ND	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	ND	ND	290	6.6
EX2-19	6/11/98	11.0	3600	--	--	--	--	--	--	--	--	--	--	--	59	--	--	--	ND	7.8	33000	10000
EX2-20	6/11/98	6.0	5900	--	--	--	--	--	--	--	--	--	--	--	26	--	--	--	ND	ND	300	270
EX2-21	6/11/98	6.0	ND	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	ND	ND	100	18
EX2-22	6/11/98	11.0	ND	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	ND	ND	44	11
EX2-23	6/11/98	6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EX2-23	6/11/98	6.5	20	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	ND	ND	6.2	10
EX2-24	6/11/98	6.5	ND	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	ND	ND	9.6	ND
EX2-25	6/11/98	6.5	1100	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	ND	ND	140	28
EX2-26	6/11/98	6.0	21	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	ND	ND	680	35
EX2-26	6/22/98	15.0	--	2300	ND	1100	ND	ND	1600	200	ND	ND	500	14700	ND	ND	ND	300	ND	ND	308000	28100
EX3-1	6/9/98	5.5	ND	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	ND	ND	ND	ND
EX3-2	6/9/98	6.0	ND	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	ND	ND	ND	ND
EX3-3	6/9/98	5.5	280	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	ND	ND	ND	ND
EX3-4	6/9/98	5.5	ND	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	ND	ND	ND	ND
EX3-5	6/9/98	6.0	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EX3-6	6/9/98	6.0	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EX3-7	6/9/98	6.0	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EX3-8	6/9/98	6.5	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EX3-9	6/9/98	6.5	85	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EX3-10	6/9/98	6.5	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EX3-11	6/9/98	7.0	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 1

RESULTS OF LABORATORY ANALYSIS OF SOIL SAMPLES

June 9 through June 22, 1998

Mobil Jalk Fee Properties

Boring Number	Sample Date	Depth (fbg)	TRPH (ppm)	sec-Butyl benzene (ppb)	tert-Butyl benzene (ppb)	Iso propyl benzene (ppb)	p-Iso propyl toluene (ppb)	Naphthalene (ppb)	n-Propyl benzene (ppb)	1,2,4-Trimethyl benzene (ppb)	1,3,5-Trimethyl benzene (ppb)	o-Xylenes (ppb)	m,p-Xylenes (ppb)	cis-1,2-Dichloro ethene (ppb)	trans-1,2-Dichloro ethene (ppb)	Toluene (ppb)	Ethyl benzene (ppb)	Benzene (ppb)	Methylene Chloride (ppb)	Vinyl Chloride (ppb)	PCE (ppb)	TCE (ppb)
EX3-12	6/9/98	7.5	130	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EX3-13	6/9/98	7.0	8000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EX3-14	6/10/98	10.0	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EX3-15	6/10/98	10.0	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EX3-16	6/10/98	10.0	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EX3-17	6/10/98	10.0	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EX3-18	6/10/98	10.0	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EX3-19	6/10/98	11.0	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EX3-20	6/10/98	12.0	200	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EX3-21	6/10/98	12.0	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EX3-22	6/10/98	7.0	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EX3-23	6/10/98	7.0	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EX3-24	6/10/98	6.5	5600	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EX3-25	6/10/98	11.5	21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EX3-26	6/10/98	11.5	650	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EX3-27	6/10/98	12.5	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EX3-28	6/10/98	6.5	950	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EX3-29	6/11/98	6.0	3600	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EX3-30	6/11/98	6.0	2200	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EX3-31	6/11/98	6.0	2300	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EX3-32	6/11/98	10.0	2400	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EX3-33	6/11/98	7.0	190	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EX3-34	6/11/98	14.0	4400	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EX3-35	6/11/98	14.0	19	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 1

RESULTS OF LABORATORY ANALYSIS OF SOIL SAMPLES

June 9 through June 22, 1998

Mobil Jalk Fee Properties

Boring Number	Sample Date	Depth (fbg)	TRPH (ppm)	sec-Butyl benzene (ppb)	tert-Butyl benzene (ppb)	Iso propyl benzene (ppb)	p-Iso propyl toluene (ppb)	Naphth alene (ppb)	n-Propyl benzene (ppb)	1,2,4-Trimethyl benzene (ppb)	1,3,5-Trimethyl benzene (ppb)	o-Xylenes (ppb)	m,p-Xylenes (ppb)	cis-1,2-Dichloro ethene (ppb)	trans-1,2-Dichloro ethene (ppb)	Toluene (ppb)	Ethyl benzene (ppb)	Benzene (ppb)	Methylene Chloride (ppb)	Vinyl Chloride (ppb)	PCE (ppb)	TCE (ppb)

Notes:
TRPH = total petroleum hydrocarbons with gasoline distinction
PCE = tetrachloroethene
TCE = trichloroethene
fbg = feet below grade
ppm = parts per million
ppb = parts per billion
ND = not detected; see official laboratory reports for detection limits
-- = not analyzed, measured, or collected

Table 1

Previous Soil Sample Analytical Results (Levine-Fricke, 1991a)
Mobil Exploration and Producing U.S., Jalk Fee Property

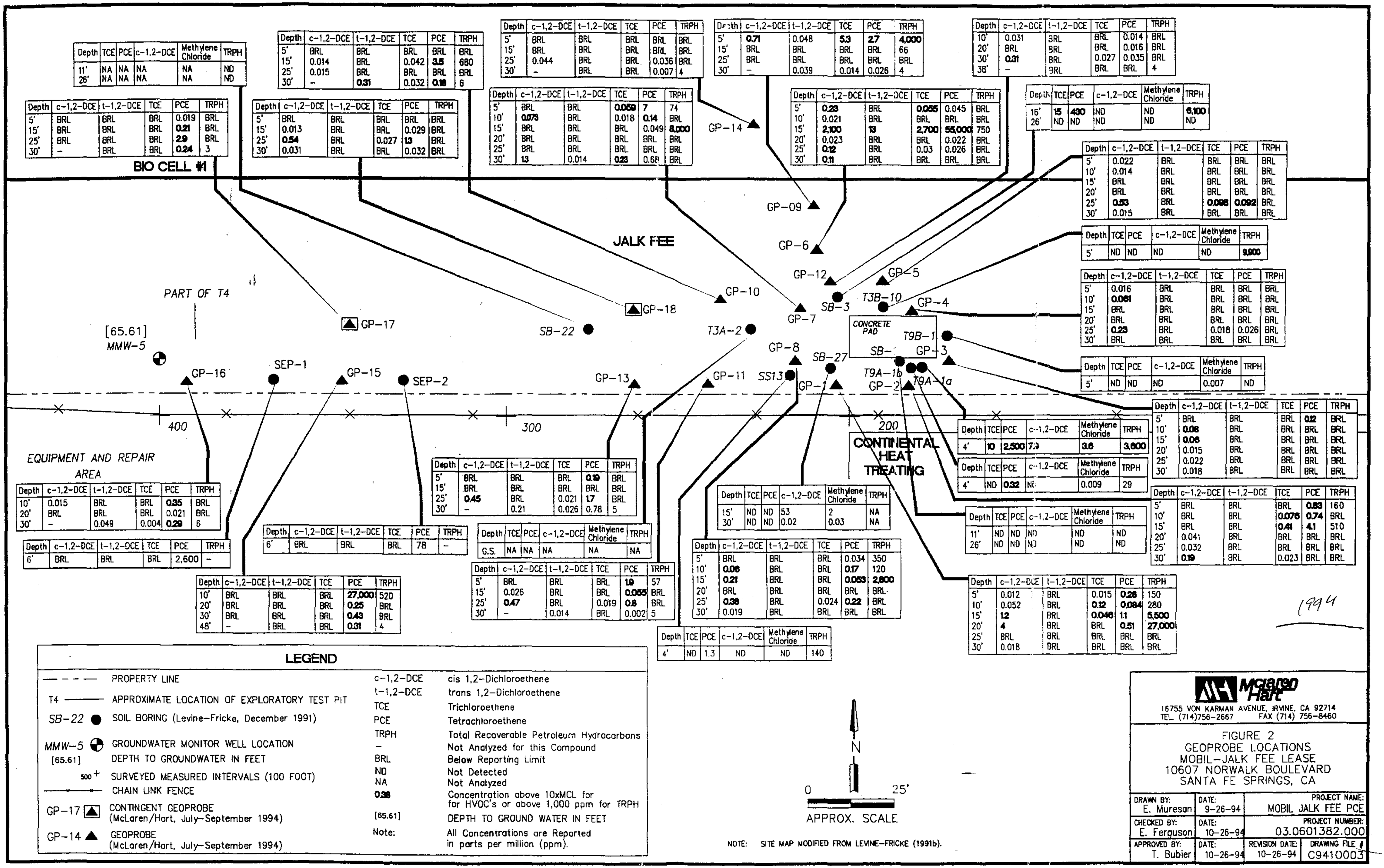
Volatile Organic Compounds (VOCs) and
Total Recoverable Petroleum Hydrocarbons (TRPH)

Page 1 of 1

Sample Location	Sample Depth (ft)	EPA Method 8260 (ppm)				EPA Method
		TCE	PCE	cis-1,2-DCE	Methylene Chlorinde	TRPH
T3A-2	Surface Grab Sample	NA	NA	[illegible]	[illegible]	[illegible]
T3B-10	5	ND	ND	[illegible]	[illegible]	[illegible]
T9A-1A	4	**10**	**2500**	[illegible]	[illegible]	[illegible]
T9A-1B	4	ND	**0.32**	[illegible]	[illegible]	[illegible]
T9B-1	5	ND	ND	[illegible]	[illegible]	[illegible]
SB-1	11	ND	ND	[illegible]	[illegible]	[illegible]
SB-1	26	ND	ND	[illegible]	[illegible]	[illegible]
SB-3	16	**15**	**430**	[illegible]	[illegible]	[illegible]
SB-3	26	ND	ND	[illegible]	[illegible]	[illegible]
SB-22	11	NA	NA	[illegible]	[illegible]	[illegible]
SB-22	26	NA	NA	NA	NA	ND
SB-27	15	ND	ND	**53**	**2***	NA
SB-27	30	ND	ND	0.02	0.03	NA
SS-13	4	ND	1.3	ND	ND	140

Historic chlorinated concentrations

TCE = Trichloroethene
PCE = Tetrachloroethene
cis-1,2-DCE = cis-1,2-Dichloroethene
ND = None Detected
NA = Not Analyzed
* = also identified in laboratory blank samples
Source: Table 2 and Table 3, Levine-Fricke 1991a



Depth	TCE	PCE	c-1,2-DCE	Methylene Chloride	TRPH
11'	NA	NA	NA	NA	ND
26'	NA	NA	NA	NA	ND

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
5'	BRL	BRL	BRL	BRL	BRL
15'	0.014	BRL	0.042	**3.5**	680
25'	0.015	BRL	BRL	BRL	BRL
30'	–	**0.31**	0.032	**0.18**	6

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
5'	BRL	BRL	BRL	0.019	BRL
15'	BRL	BRL	BRL	**0.21**	BRL
25'	BRL	BRL	BRL	**2.9**	BRL
30'	–	BRL	BRL	**0.24**	3

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
5'	BRL	BRL	BRL	BRL	BRL
15'	0.013	BRL	BRL	0.029	BRL
25'	**0.54**	BRL	0.027	**13**	BRL
30'	0.031	BRL	BRL	0.032	BRL

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
5'	BRL	BRL	BRL	BRL	BRL
15'	BRL	BRL	BRL	BRL	BRL
25'	0.044	BRL	BRL	0.036	BRL
30'	–	BRL	BRL	0.007	4

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
5'	BRL	BRL	**0.059**	**7**	74
10'	**0.073**	BRL	0.018	**0.14**	BRL
15'	BRL	BRL	BRL	0.049	**8,000**
20'	BRL	BRL	BRL	BRL	BRL
25'	BRL	BRL	BRL	BRL	BRL
30'	**13**	0.014	**0.23**	0.68	BRL

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
5'	**0.71**	0.048	**5.3**	**2.7**	**4,000**
15'	BRL	BRL	BRL	BRL	66
25'	BRL	BRL	BRL	BRL	BRL
30'	–	0.039	0.014	0.026	4

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
5'	**0.23**	BRL	**0.055**	0.045	BRL
10'	0.021	BRL	BRL	BRL	BRL
15'	**2,100**	**13**	**2,700**	**55,000**	750
20'	0.023	BRL	BRL	0.022	BRL
25'	**0.12**	BRL	0.03	0.026	BRL
30'	**0.11**	BRL	BRL	BRL	BRL

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
10'	0.031	BRL	BRL	0.014	BRL
20'	BRL	BRL	BRL	0.016	BRL
30'	**0.31**	BRL	0.027	0.035	BRL
38'	–	BRL	BRL	BRL	4

Depth	TCE	PCE	c-1,2-DCE	Methylene Chloride	TRPH
16'	**15**	**430**	ND	ND	**6,100**
26'	ND	ND	ND	ND	ND

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
5'	0.022	BRL	BRL	BRL	BRL
10'	0.014	BRL	BRL	BRL	BRL
15'	BRL	BRL	BRL	BRL	BRL
20'	BRL	BRL	BRL	BRL	BRL
25'	**0.53**	BRL	**0.098**	**0.092**	BRL
30'	0.015	BRL	BRL	BRL	BRL

Depth	TCE	PCE	c-1,2-DCE	Methylene Chloride	TRPH
5'	ND	ND	ND	ND	**9,900**

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
5'	0.016	BRL	BRL	BRL	BRL
10'	**0.061**	BRL	BRL	BRL	BRL
15'	BRL	BRL	BRL	BRL	BRL
20'	BRL	BRL	BRL	BRL	BRL
25'	**0.23**	BRL	0.018	0.026	BRL
30'	BRL	BRL	BRL	BRL	BRL

Depth	TCE	PCE	c-1,2-DCE	Methylene Chloride	TRPH
5'	ND	ND	ND	0.007	ND

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
5'	BRL	BRL	BRL	**0.12**	BRL
10'	**0.08**	BRL	BRL	BRL	BRL
15'	**0.08**	BRL	BRL	BRL	BRL
20'	0.015	BRL	BRL	BRL	BRL
25'	0.022	BRL	BRL	BRL	BRL
30'	0.018	BRL	BRL	BRL	BRL

Depth	TCE	PCE	c-1,2-DCE	Methylene Chloride	TRPH
4'	**10**	**2,500**	7.9	**3.6**	**3,600**

Depth	TCE	PCE	c-1,2-DCE	Methylene Chloride	TRPH
4'	ND	**0.32**	ND	0.009	29

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
5'	BRL	BRL	BRL	**0.83**	160
10'	BRL	BRL	**0.076**	**0.74**	BRL
15'	BRL	BRL	**0.41**	**4.1**	510
20'	0.041	BRL	BRL	BRL	BRL
25'	0.032	BRL	BRL	BRL	BRL
30'	**0.19**	BRL	0.023	BRL	BRL

Depth	TCE	PCE	c-1,2-DCE	Methylene Chloride	TRPH
11'	ND	ND	ND	ND	ND
26'	ND	ND	ND	ND	ND

Depth	TCE	PCE	c-1,2-DCE	Methylene Chloride	TRPH
15'	ND	ND	53	2	NA
30'	ND	ND	0.02	0.03	NA

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
5'	BRL	BRL	BRL	0.034	350
10'	**0.08**	BRL	BRL	**0.17**	120
15'	**0.21**	BRL	BRL	**0.053**	**2,800**
20'	BRL	BRL	BRL	BRL	BRL
25'	**0.38**	BRL	0.024	**0.22**	BRL
30'	0.019	BRL	BRL	BRL	BRL

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
5'	0.012	BRL	0.015	**0.28**	150
10'	0.052	BRL	**0.12**	**0.084**	280
15'	**1.2**	BRL	**0.048**	**1.1**	**5,500**
20'	**4**	BRL	BRL	**0.51**	**27,000**
25'	BRL	BRL	BRL	BRL	BRL
30'	0.018	BRL	BRL	BRL	BRL

Depth	TCE	PCE	c-1,2-DCE	Methylene Chloride	TRPH
4'	ND	1.3	ND	ND	140

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
5'	BRL	BRL	BRL	**0.19**	BRL
15'	BRL	BRL	BRL	BRL	BRL
25'	**0.45**	BRL	0.021	**1.7**	BRL
30'	–	0.21	0.026	0.78	5

Depth	TCE	PCE	c-1,2-DCE	Methylene Chloride	TRPH
G.S.	NA	NA	NA	NA	NA

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
5'	BRL	BRL	BRL	**1.9**	57
15'	0.026	BRL	BRL	**0.055**	BRL
25'	**0.47**	BRL	0.019	**0.8**	BRL
30'	–	0.014	BRL	0.002	5

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
10'	0.015	BRL	BRL	**0.35**	BRL
20'	BRL	BRL	BRL	0.021	BRL
30'	–	0.049	0.004	**0.29**	6

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
6'	BRL	BRL	BRL	2,600	–

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
6'	BRL	BRL	BRL	78	–

Depth	c-1,2-DCE	t-1,2-DCE	TCE	PCE	TRPH
10'	BRL	BRL	BRL	**27,000**	520
20'	BRL	BRL	BRL	**0.25**	BRL
30'	BRL	BRL	BRL	**0.43**	BRL
48'	–	BRL	BRL	**0.31**	4

1994

LEGEND

— — — —	PROPERTY LINE
T4 ———	APPROXIMATE LOCATION OF EXPLORATORY TEST PIT
SB-22 ●	SOIL BORING (Levine-Fricke, December 1991)
MMW-5 ⊕	GROUNDWATER MONITOR WELL LOCATION
[65.61]	DEPTH TO GROUNDWATER IN FEET
500 +	SURVEYED MEASURED INTERVALS (100 FOOT)
—×—×—	CHAIN LINK FENCE
GP-17 ▲	CONTINGENT GEOPROBE (McLaren/Hart, July-September 1994)
GP-14 ▲	GEOPROBE (McLaren/Hart, July-September 1994)

c-1,2-DCE	cis 1,2-Dichloroethene
t-1,2-DCE	trans 1,2-Dichloroethene
TCE	Trichloroethene
PCE	Tetrachloroethene
TRPH	Total Recoverable Petroleum Hydrocarbons
–	Not Analyzed for this Compound
BRL	Below Reporting Limit
ND	Not Detected
NA	Not Analyzed
0.38	Concentration above 10xMCL for for HVOC's or above 1,000 ppm for TRPH
[65.61]	DEPTH TO GROUND WATER IN FEET
Note:	All Concentrations are Reported in parts per million (ppm).

NOTE: SITE MAP MODIFIED FROM LEVINE-FRICKE (1991b).

McLaren Hart
16755 VON KARMAN AVENUE, IRVINE, CA 92714
TEL (714)756-2667 FAX (714) 756-8460

FIGURE 2
GEOPROBE LOCATIONS
MOBIL-JALK FEE LEASE
10607 NORWALK BOULEVARD
SANTA FE SPRINGS, CA

DRAWN BY: E. Muresan	DATE: 9-26-94	PROJECT NAME: MOBIL JALK FEE PCE	
CHECKED BY: E. Ferguson	DATE: 10-26-94	PROJECT NUMBER: 03.0601382.000	
APPROVED BY: T. Bubier	DATE: 10-26-94	REVISION DATE: 10-26-94	DRAWING FILE # C9410003

Table 2

Soil Sample Analytical Results
Mobil Exploration and Producing, U.S., Jalk Fee Property

Halogenated Volatile Organic Compounds (HVOCs) and Total Recoverable Petroleum Hydrocarbon (TRPH)

GeoProbe ID	Depth (ft)	EPA Method 8010 (ppm)				EPA Method 418.1 (ppm)
		cis-1,2-DCE	trans-1,2-DCE	TCE	PCE	TRPH
GP-1	5	0.012	BRL	0.015	**0.28**	150
	10	0.052	BRL	**0.12**	0.084	280
	15	**1.2**	BRL	0.046	1.1	**5500**
	20	**4**	BRL	BRL	**0.51**	**27000**
	25	BRL	BRL	BRL	BRL	BRL
	30	0.018	BRL	BRL	BRL	BRL
GP-2	5	BRL	BRL	BRL	**0.83**	160
	10	BRL	BRL	**0.076**	**0.74**	BRL
	15	BRL	BRL	**0.41**	**4.1**	510
	20	0.041	BRL	BRL	BRL	BRL
	25	0.032	BRL	BRL	BRL	BRL
	30	**0.19**	BRL	0.023	BRL	BRL
GP-3	5	BRL	BRL	BRL	**0.12**	BRL
	10	**0.08**	BRL	BRL	BRL	BRL
	15	**0.06**	BRL	BRL	BRL	BRL
	20	0.015	BRL	BRL	BRL	BRL
	25	0.022	BRL	BRL	BRL	BRL
	30	0.018	BRL	BRL	BRL	BRL
GP-4	5	0.016	BRL	BRL	BRL	BRL
	10	0.061	BRL	BRL	BRL	BRL
	15	BRL	BRL	BRL	BRL	BRL
	20	BRL	BRL	BRL	BRL	BRL
	25	**0.23**	BRL	0.018	0.026	BRL
	30	BRL	BRL	BRL	BRL	BRL

Table 2

Soil Sample Analytical Results
Mobil Exploration and Producing, U.S., Jalk Fee Property

Halogenated Volatile Organic Compounds (HVOCs) and Total Recoverable Petroleum Hydrocarbon (TRPH)

GeoProbe ID	Depth (ft)	EPA Method 8010 (ppm)				EPA Method 418.1 (ppm)
		cis-1,2-DCE	trans-1,2-DCE	TCE	PCE	TRPH
GP-5	5	0.022	BRL	BRL	BRL	BRL
	10	0.014	BRL	BRL	BRL	BRL
	15	BRL	BRL	BRL	BRL	BRL
	20	BRL	BRL	BRL	BRL	BRL
	25	0.53	BRL	**0.098**	**0.092**	BRL
	30	0.015	BRL	BRL	BRL	BRL
GP-6	5	**0.23**	BRL	**0.055**	0.045	BRL
	10	0.021	BRL	BRL	BRL	BRL
	15	**2100**	**13**	**2700**	**55000**	750
	20	0.023	BRL	BRL	0.022	BRL
	25	0.12	BRL	0.03	0.026	BRL
	30	0.11	BRL	BRL	BRL	BRL
GP-7	5	BRL	BRL	**0.059**	7	74
	10	**0.073**	BRL	0.018	**0.14**	BRL
	15	BRL	BRL	BRL	0.049	**8000**
	20	BRL	BRL	BRL	BRL	BRL
	25	BRL	BRL	BRL	BRL	BRL
	30	**1.3**	0.014	**0.23**	**0.68**	BRL
GP-8	5	BRL	BRL	BRL	0.034	350
	10	**0.06**	BRL	BRL	**0.17**	120
	15	**0.21**	BRL	BRL	**0.053**	**2800**
	20	BRL	BRL	BRL	BRL	BRL
	25	**0.38**	BRL	0.024	**0.22**	BRL
	30	0.019	BRL	BRL	BRL	BRL

Table 2

Soil Sample Analytical Results
Mobil Exploration and Producing, U.S., Jalk Fee Property

Halogenated Volatile Organic Compounds (HVOCs) and Total Recoverable Petroleum Hydrocarbon (TRPH)

GeoProbe ID	Depth (ft)	EPA Method 8010 (ppm)				EPA Method 418.1 (ppm)
		cis-1,2-DCE	trans-1,2-DCE	TCE	PCE	TRPH
GP-9	5	**0.71**	0.048	**5.3**	**2.7**	**4000**
	15	BRL	BRL	BRL	BRL	66
	25	BRL	BRL	BRL	BRL	BRL
	30	NA	0.039	0.014	0.026	4
GP-10	5	BRL	BRL	BRL	BRL	BRL
	15	0.014	BRL	0.042	**3.5**	680
	25	0.015	BRL	BRL	BRL	BRL
	30	NA	**0.31**	0.032	**0.18**	6
GP-11	5	BRL	BRL	BRL	**1.9**	57
	15	0.026	BRL	BRL	**0.055**	BRL
	25	**0.47**	BRL	0.019	**0.8**	BRL
	30	NA	0.014	BRL	0.002	5
GP-12	10	0.031	BRL	BRL	0.014	BRL
	20	BRL	BRL	BRL	0.016	BRL
	30	**0.31**	BRL	0.027	0.035	BRL
	38	NA	BRL	BRL	BRL	4
GP-13	5	BRL	BRL	BRL	**0.19**	BRL
	15	BRL	BRL	BRL	BRL	BRL
	25	**0.45**	BRL	0.021	**1.7**	BRL
	30	NA	**0.21**	0.026	**0.78**	5
GP-14	5	BRL	BRL	BRL	BRL	BRL
	15	BRL	BRL	BRL	BRL	BRL
	25	0.044	BRL	BRL	0.036	BRL
	30	NA	BRL	BRL	0.007	4

Table 2

Soil Sample Analytical Results
Mobil Exploration and Producing, U.S., Jalk Fee Property

Halogenated Volatile Organic Compounds (HVOCs) and Total Recoverable Petroleum Hydrocarbon (TRPH)

GeoProbe ID	Depth (ft)	EPA Method 8010 (ppm)				EPA Method 418.1 (ppm)
		cis-1,2-DCE	trans-1,2-DCE	TCE	PCE	TRPH
GP-15	10	BRL	BRL	BRL	**27000**	520
	20	BRL	BRL	BRL	**0.25**	BRL
	30	BRL	BRL	BRL	**0.43**	BRL
	48	NA	BRL	BRL	**0.31**	4
GP-16	10	0.015	BRL	BRL	**0.35**	BRL
	20	BRL	BRL	BRL	0.021	BRL
	30	NA	0.049	0.004	**0.29**	6
GP-17	5	BRL	BRL	BRL	0.019	BRL
	15	BRL	BRL	BRL	**0.21**	BRL
	25	BRL	BRL	BRL	**2.9**	BRL
	30	NA	BRL	BRL	**0.24**	3
GP-18	5	BRL	BRL	BRL	BRL	BRL
	15	0.013	BRL	BRL	0.029	BRL
	25	**0.54**	BRL	0.027	**1.3**	BRL
	30	0.031	BRL	BRL	0.032	BRL
SEP-1	6	BRL	BRL	BRL	**2600**	NA
SEP-2	6	BRL	BRL	BRL	**78**	NA

cis-1,2-DCE = cis-1,2 Dichloroethene
trans-1,2-DCE = trans-1,2 Dichloroethene
TCE = Trichloroethene
PCE = Tetrachloroethene
BRL = Below Reporting Limit
NA = Not Analyzed

TABLE 1
Hydrocarbon Results of TRC Confirmation Soil Samples
Jalk Fee Property / Santa Fe Springs, California
October and November 2000

SAMPLE NUMBER	DEPTH (fbg) [1]	HYDROCARBON RESULT (mg/kg)		
		C4-C12	C13-C22	C23-C40
EXCAVATION AREA M-1				
JF-M1-S37-EW-8	8.0	ND	ND	ND
JF-M1-S38-B-14	14	334	2,020	3,200
JF-M1-S39-SW-8	8.0	ND	ND	ND
JF-M1-S40-WW-8	8.0	ND	ND	ND
EXCAVATION AREA M-2				
JF-M2-S16-B-10	10	ND	ND	ND
EXCAVATION AREA M-3				
JF-M3-S29-B-16	*16*	*4,958*	*2,677*	*1,909*
JF-M3-S29B-B-19	19	5,510	4,630	3,796
JF-M3-S33-EW-10	10	ND	2.0	ND
JF-M3-S34-WW-14	14	ND	ND	ND
JF-M3-S35-NW-13	13	ND	ND	ND
JF-M3-S36-SW-13	13	ND	ND	ND
EXCAVATION AREA M-7				
JF-M7-S22-EW-8	8.0	ND	ND	ND
JF-M7-S23-SW-8	8.0	ND	ND	ND
JF-M7-S24-B-13	13	ND	ND	ND
JF-M7-S25-WW-8	8.0	ND	ND	ND
JF-M7-S26-NW-8	8.0	ND	ND	ND
EXCAVATION AREA M-8				
JF-M8-S27-B-13	13	ND	ND	ND
JF-M8-S28-WW-10	10	ND	ND	ND
JF-M8-S30-SW-10	10	ND	364	1,069
JF-M8-S31-EW-10	10	ND	32	265
JF-M8-S32-NW-10	10	52	732	984
EXCAVATION AREA M-9				
JF-M9-S17-WW-5	5.0	ND	76	649
JF-M9-S18-NW-5	5.0	ND	59	334
JF-M9-S19-B-7	*7.0*	*738*	*2,346*	*1,709*
JF-M9-S19B-B-16	*16*	*3,797*	*10,949*	*8,480*
JF-M9-S19C-B-24	24	658	1,219	697
JF-M9-S20-SW-5	5.0	ND	42	453
JF-M9-S21-EW-5	5.0	ND	103	326
EXCAVATION AREA SB-49				
JF-SB49-S1-SW-5	5.0	ND	ND	ND
JF-SB49-S2-NW-5	5.0	ND	ND	ND
JF-SB49-S3-B-6	6.0	ND	ND	ND
JF-SB49-S4-B-7	*7.0*	*2,172*	*2,796*	*1,685*
JF-SB49-S4B-B-13	13	ND	17	39
JF-SB49-S5-SW-5	*5.0*	*45*	*340*	*461*
JF-SB49-S5B-SW-10	10	803	1,401	812
JF-SB49-S6-NW-5	5.0	ND	ND	ND
JF-SB49-S7-B-6	*6.0*	*2.0*	*671*	*815*
JF-SB49-S8-SW-5	5.0	ND	2.0	19
JF-SB49-S9-NW-5	*5.0*	*ND*	*792*	*1,096*
JF-SB49-S10-B-7	*7.0*	*ND*	*464*	*1,391*
JF-SB49-S11-SW-5	5.0	ND	399	972
JF-SB49-S12-NW-5	*5.0*	*ND*	*82*	*230*
JF-SB49-S13-B-6	6.0	ND	1.0	12
JF-SB49-S14-SW-5	5.0	ND	1.0	14
JF-SB49-S15-NW-5	5.0	ND	ND	ND

[1] fbg - feet below grade.

Note: Results in blue font italics were excavated.

TABLE 2

VOC Results of TRC Confirmation Soil Samples
Jalk Fee Property / Santa Fe Springs, California
October and November 2000

		VOCs[2] (mg/kg)			
SAMPLE NUMBER	DEPTH (fbg)[1]	c-1,2-DCE[3]	PCE[4]	TCE[5]	Other VOCs[6]
EXCAVATION AREA M-1					
JF-M1-S37-EW-8	8.0	<0.001	<0.001	<0.001	0.00572
JF-M1-S38-B-14	14	<0.001	0.059	<0.001	6.214
JF-M1-S39-SW-8	8.0	<0.001	0.00099	<0.001	0.0076
JF-M1-S40-WW-8	8.0	<0.001	0.00065	<0.001	0.0091
EXCAVATION AREA M-2					
JF-M2-S16-B-10	10	<0.001	<0.001	<0.001	0.00638
EXCAVATION AREA M-3					
JF-M3-S29-B-16	***16***	***<0.001***	***<0.001***	***<0.001***	***145.56***
JF-M3-S33-EW-10	10	<0.001	<0.001	<0.001	0.03347
JF-M3-S34-WW-14	14	<0.001	<0.001	<0.001	0.01271
JF-M3-S35-NW-13	13	<0.001	0.27	<0.001	0.0155
JF-M3-S36-SW-13	13	<0.001	<0.001	<0.001	0.00447
EXCAVATION AREA M-7					
JF-M7-S22-EW-8	8.0	<0.001	0.0031	<0.001	0.0132
JF-M7-S23-SW-8	8.0	<0.001	0.046	<0.001	0.0233
JF-M7-S24-B-13	13	<0.001	0.0054	<0.001	0.08384
JF-M7-S25-WW-8	8.0	<0.001	0.0049	<0.001	0.032
JF-M7-S26-NW-8	8.0	<0.001	0.0041	<0.001	0.00499
EXCAVATION AREA M-8					
JF-M8-S27-B-13	13	<0.001	<0.001	<0.001	ND
JF-M8-S28-WW-10	10	<0.001	<0.001	<0.001	0.2
JF-M8-S30-SW-10	10	<0.001	<0.001	<0.001	0.0094
JF-M8-S31-EW-10	10	<0.001	<0.001	<0.001	0.00708
JF-M8-S32-NW-10	10	<0.001	<0.001	<0.001	0.1501
EXCAVATION AREA M-9					
JF-M9-S17-WW-5	5.0	<0.001	<0.001	<0.001	0.013
JF-M9-S18-NW-5	5.0	<0.001	<0.001	<0.001	0.011
JF-M9-S19-B-7	***7.0***	***<0.001***	***<0.001***	***<0.001***	***5.207***
JF-M9-S20-SW-5	5.0	<0.001	<0.001	<0.001	0.0162
JF-M9-S21-EW-5	5.0	<0.001	<0.001	<0.001	0.00848
EXCAVATION AREA SB-49					
JF-SB49-S1-SW-5	5.0	0.023	0.0073	<0.001	0.05177
JF-SB49-S2-NW-5	5.0	0.0012	0.0055	<0.001	0.0112
JF-SB49-S3-B-6	6.0	0.00061	0.0099	<0.001	0.0133
JF-SB49-S4-B-7	***7.0***	***8.8***	***31***	***5.9***	***104.2***
JF-SB49-S4B-B-13	13	0.02	1.1	0.0024	ND
JF-SB49-S5-SW-5	***5.0***	***1.4***	***61***	***0.71***	***0.73***
JF-SB49-S5B-SW-10	10	2.0	3.0	0.73	35.74
JF-SB49-S6-NW-5	5.0	0.025	0.4	0.0053	0.03535
JF-SB49-S7-B-6	***6.0***	***<1.0***	***1,600***	***<1.0***	***4.9***
JF-SB49-S7B-B-12	12	0.0065	9.8	0.0065	0.0152
JF-SB49-S8-SW-5	5.0	0.0014	3.2	0.0016	0.0153
JF-SB49-S9-NW-5	***5.0***	***0.033***	***250***	***0.089***	***0.53786***
JF-SB49-S9B-NW-6	6.0	<0.001	0.14	<0.001	0.0071
JF-SB49-S10-B-7	***7.0***	***0.0014***	***2,000***	***0.14***	***0.7609***
JF-SB49-S10B-B-8	8.0	<0.001	2.5	0.0089	0.0229
JF-SB49-S11-SW-5	5.0	<0.001	1,300	0.01	0.52733
JF-SB49-S12-NW-5	***5.0***	***0.00055***	***440***	***0.13***	***0.34907***
JF-SB49-S12B-NW-6	6.0	<0.001	1.7	<0.001	0.00883
JF-SB49-S13-B-6	6.0	<0.001	1.4	<0.001	0.17185
JF-SB49-S14-SW-5	5.0	<0.001	1.1	<0.001	0.23029
JF-SB49-S15-NW-5	5.0	<0.001	0.15	<0.001	0.0815

[1] fbg - feet below grade.

[2] VOCs - volatile organic compounds.

[3] c-1,2-DCE - cis-1,2-dichloroethene.

[4] PCE - tetrachloroethene.

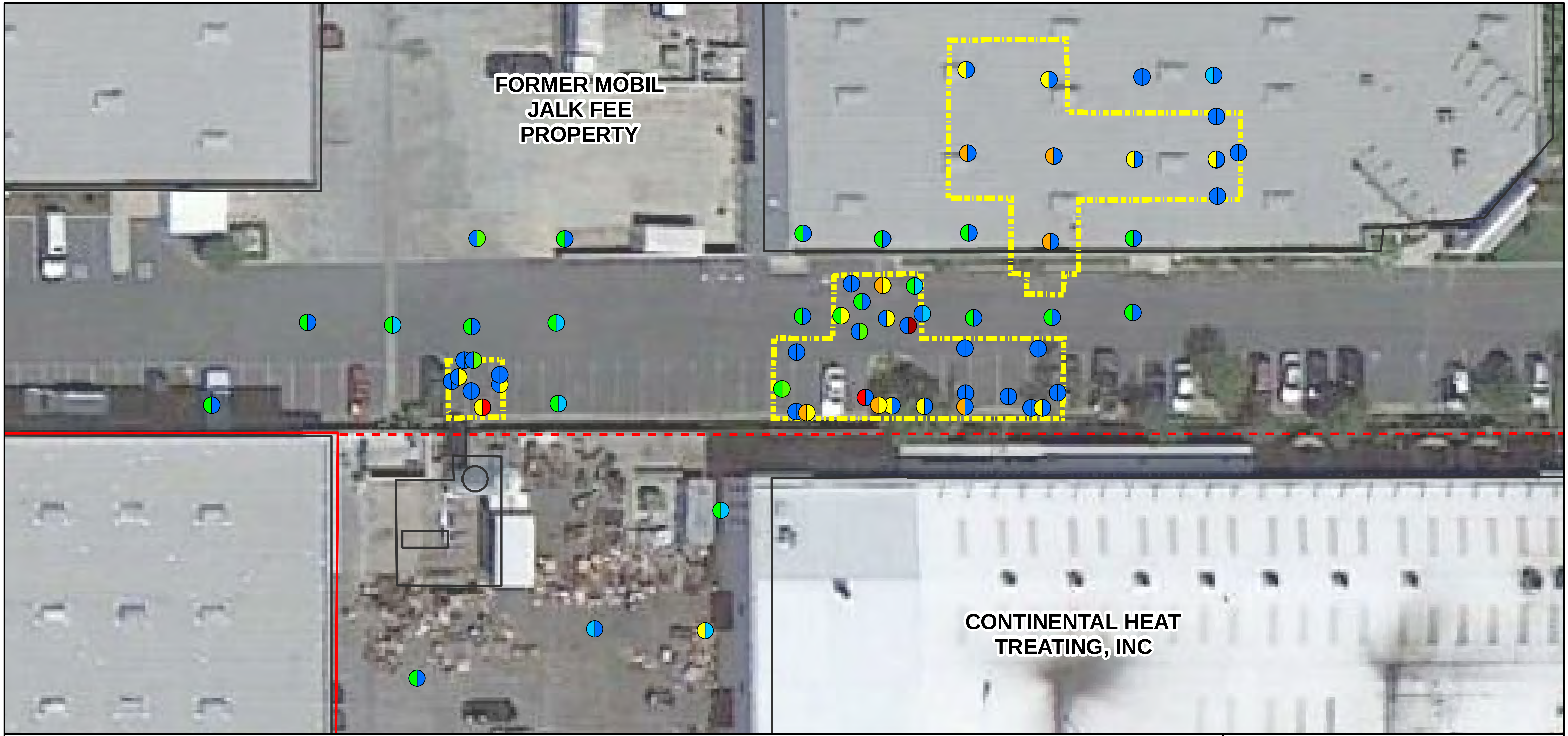
[5] TCE - trichloroethene.

[6] Total remaining VOCs including acetone and methylene chloride which are possible laboratory contaminants.

Note: Results in blue font italics were excavated.

APPENDIX AD

JANUARY 2014 NEWFIELDS FIGURE 4.6



Legend

MEASURED IN PPM		MEASURED IN PPM	
PCE		TRPH	
●	< 1.00	●	< 1.00
●	1.01 - 10.00	●	1.01 - 10.00
●	10.01 - 100.00	●	10.01 - 100.00
●	100.01 - 1,000.00	●	100.01 - 1,000.00
●	1,000.01 - 10,000.00	●	1,000.01 - 10,000.00
●	10,000.01 - 100,000.00	●	10,000.01 - 100,000.00
●	> 100,000.01		

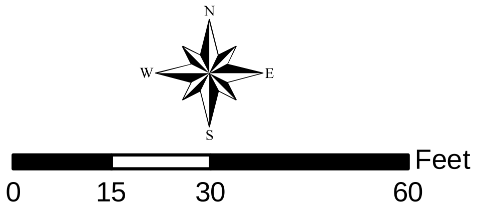
— BUILDING

▭ EXCAVATION AREA [1998]

▭ PROPERTY LINE

◐ TETRACHLOROETHENE (PCE)

TOTAL RECOVERABLE PETROLEUM (TRPH)



Notes:

1. All locations and dimensions are approximate.
2. Excavation area and excavation soil samples for 1998 was taken from the Alton Remedial Ecxavation/ Site Closure Repot, October 14, 1998.
3. Petroleum hydrocarbons measured as total recoverable Petroleum Hydrocarbons

NewFields

600 Jefferson St., Suite 1040
Houston, Texas 77002
(713) 357-5244

FIGURE 4.6

PCE - TPH
CONCENTRATIONS IN SOIL

Former ExxonMobil, Jalk Fee Property
10607 Norwalk Boulevard,
Santa Fe Springs, CA

1/6/2014 W:\Jalk Fee\1 - Site Investigation\GIS\mxd\Prelim figures\Section 4\4\4.6.mxd JR Checked by IR

EXHIBIT 4

ExxonMobil Global Services Company
22777 Springwoods Village Pkwy, Room S2 2B.282
Spring, Texas 77389
(832) 624-2039 Telephone

L. M. (Len) Racioppi
Project Development Manager
- Sediments/Superfund/NRD
Environmental Services Company

ExxonMobil

SENT VIA GEOTRACKER

February 9, 2017

Samuel Unger, P.E.
Executive Officer
California Regional Water Quality Control Board
Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, California 90013

Re: Cardno Report re Additional Evidence in Support of Request to Name Continental Heat Treating as Discharger

Dear Executive Officer Unger:

Enclosed please find a report prepared by ExxonMobil Oil Corporation's (ExxonMobil's) consultant Cardno entitled Additional Evidence in Support of Request to Name Continental Heat Treating as Discharger dated February 8, 2017. This report provides the additional evidence and data ExxonMobil presented to the Regional Board during our meeting on December 14, 2016. In addition, this report responds to issues the Regional Board raised in its July 22, 2016 response to ExxonMobil's Request to Name Continental Heat Treating as Discharger dated March 25, 2015, submitted by Cardno.

The new and compelling data in this report supports ExxonMobil's position that Continental Heat Treating ("CHT") is the sole discharger of the chlorinated solvents found in soil at the Jalk Fee property, CHT's property, and the surrounding area. Based on the evidence previously presented to the Regional Board and the evidence included in this Report, we believe the Regional Board will be convinced that CHT should be named as the only responsible party at the Jalk Fee property and that ExxonMobil should be relieved of the Regional Board's Water Code section 13267 Order dated August 24, 2010 and all requirements issued under that Order.

Further, as we discussed during the December 14, 2016 meeting, we remain willing to provide a presentation of this information to your counsel if that would be of assistance in your evaluation of this new evidence. Additionally, as you know, we filed a petition for review with the State Water Resources Control Board on August 19, 2016, regarding the Regional Board's decision not to name CHT as the sole discharger for the Jalk Fee property.

In light of the evidence presented in this report, ExxonMobil renews its request for an extension of the deadlines for the three deliverables currently required by the Regional Board per its correspondence dated November 18, 2016 for the Jalk Fee property until after the Regional Board has reviewed and evaluated the additional evidence provided in the attached report.

Please don't hesitate to contact me if you have any questions at 908.403.3140 or via email.

Regards,

Len M. Racioppi
Project Development Manager

Cc:

Paula Rasmussen, LA-RWQCB (via email w/o enclosure)
Su Han, LA-RWQCB (via email w/o enclosure)
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February 8, 2017

Cardno 08115504.R23

Mr. Samuel Unger
California Regional Water Quality Control Board
Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, California 90013

SUBJECT **Additional Evidence in Support of Request to Name Continental Heat Treating as Discharger**
Former ExxonMobil Jalk Fee Property
10607 Norwalk Boulevard
Santa Fe Springs, California
CRWQCB-LAR Case No. 0203; Site I.D. No. 1848000

Mr. Unger:

At the request of ExxonMobil Environmental Services Company (EMES), on behalf of ExxonMobil US Production Company (ExxonMobil), Cardno has prepared this report of *Additional Evidence in Support of Request to Name Continental Heat Treating as Discharger* (Report) for the above-referenced site. In Cardno ERI's *Request to Name Continental Heat Treating as Discharger* dated March 25, 2015 (March 2015 Report), evidence was presented to the California Regional Water Quality Control Board - Los Angeles Region (CRWQCB-LAR) that demonstrated:

1. ExxonMobil never used nor stored chlorinated solvents at the Jalk Fee property (Site).
2. Continental Heat Treating (CHT) used and stored extensive quantities of chlorinated solvents in its degreasing operations from approximately 1969 to 1995.

3. CHT had poor operational and waste management practices which resulted in spills of chlorinated solvents and other chemicals to the ground surface.
4. CHT received various agency citations and notices of violation (NOVs) for their releases of chlorinated solvents, waste oils, and other chemicals to the ground (Cardno ERI, 2015).

In addition, an updated site conceptual model (SCM) was presented that demonstrated the preferential pathways which allowed the chlorinated solvents released from the CHT facility to migrate to their current location on the Jalk Fee property (including the fact that the CHT property was paved during most of its history, while the Jalk Fee property was unpaved during CHT's operational period of PCE use and storage).

Based on the evidence provided, ExxonMobil requested that the CRWQCB-LAR identify CHT as the sole discharger and responsible party for the chlorinated solvents observed in soil on the Jalk Fee property.

In a letter dated July 22, 2016 (Letter), the CRWQCB-LAR responded to Cardno's March 2015 Report requesting the CRWQCB-LAR name CHT as discharger by making several assertions about a possible source of PCE on the Jalk Fee property and what the CRWQCB-LAR felt were data inconsistencies with ExxonMobil's SCM, and declined to name CHT as the sole discharger (Appendix A). While ExxonMobil did not agree with the CRWQCB-LAR's conclusions, after considering the Letter, ExxonMobil developed additional evidence that further supports its SCM and its claim that CHT is the sole discharger of chlorinated solvents.

On December 14, 2016, EMES representatives met with the CRWQCB-LAR to present the additional evidence. As requested by the CRWQCB-LAR, this Report summarizes the additional evidence EMES presented in the December 14, 2016 meeting, including a forensic study of hydrocarbons in soil found at the property boundary, responds to the CRWQCB-LAR's Letter, and provides new and compelling support for ExxonMobil's position that CHT was the sole discharger of chlorinated solvents and therefore should be named as the only responsible party.

USE AND STORAGE OF CHLORINATED SOLVENTS

As outlined in Cardno's March 2015 Report, no evidence has been identified by the CRWQCB-LAR, CHT, or ExxonMobil that ExxonMobil or Hathaway Oil ever used or stored PCE on the Jalk Fee property, or that chlorinated solvents have been identified as a contaminant of concern generated from oil production activities. Further, Cardno reviewed the State Water Resources Control Board's (SWRCB) GeoTracker database and was unable to identify any other cases of oil production sites with chlorinated solvent issues. On the other hand, it is well documented that CHT used, stored, and released significant quantities of PCE in its degreasing operations for approximately 26 years in close proximity to the boundary between the two properties. Additional documents supporting the facts were gathered by ExxonMobil after submittal of the March 2015 Report and the documents are discussed further in the following sections. Thus, CHT is sole source and responsible party for the chlorinated solvents in soil at Jalk Fee and the surrounding area.

In its Letter, the CRWQCB-LAR provided two arguments to support its contention that chlorinated solvents may have been used on the Jalk Fee property:

1. A United States Environmental Protection Agency (USEPA) publication which states that waste solvents were used in oil field operations (USEPA, 2002).
2. The concentration of PCE at 10 feet bgs in soil boring B22, which was purportedly located within the footprint of a former trucking operations area at the site.

USEPA Publication

The CRWQCB-LAR's Letter stated that the USEPA's *Exemption of Oil and Gas Exploration and Production Wastes from Federal Hazardous Waste Regulations,* dated October 2002, "lists waste generated during oil exploration activities, among them waste solvents" (USEPA, 2002). However, "solvent" is a general term for one substance which can dissolve another substance, and is not limited to chlorinated chemicals. There is no reference or information presented in the USEPA publication for the use of chlorinated solvents in oil and gas exploration and production. The USEPA's reference to waste solvents used in oil field operations likely refers to petroleum-based solvents, such as diesel, xylenes, or mid-distillates, as these chemicals are readily available in oil production activities. This is consistent with the information previously provided by ExxonMobil to the CRWQCB-LAR that petroleum-based solvents are what were typically used at oil production sites, and which is substantiated by Cardno's review of the SWRCB's GeoTracker database that did not identify chlorinated solvents at other production sites (Cardno ERI, 2015).

The USEPA's publication is consistent with ExxonMobil's contention that there is no evidence that chlorinated solvents were used at the Jalk Fee property, and that the use of chlorinated solvents is inconsistent with oil production practices.

Former Trucking Operations

Also in its Letter, the CRWQCB-LAR stated, "PCE was detected at a concentration of 5,460 µg/kg (5.4 mg/kg) in a sandy soil sample collected at 10 feet bgs from soil boring B22. Boring B22 is located within the 'approximate location of former trucking operations area' at the Site." The CRWQCB-LAR also stated, "This boring is located approximately 140 feet north of the property boundary with the CHT site. This data indicates an on-site release or discharge at the [Jalk Fee] Site."

ExxonMobil retained an aerial photo interpreter to analyze historical aerial photos of the Jalk Fee property to investigate the existence of a former trucking operations area which had been identified on several figures presented in previous reports for the Site. The interpreter determined that various large trucks were parked in the northcentral portion of the site in the early 1980s, that no storage tanks were identified in the area of the truck parking, that no buildings of a size required for the repair of trucks were present, and that the location of the former truck operations area in the aerial photos did not match the location identified on the site plans in previous consultant reports. Therefore, the location where trucks were parked at the site was not proximal to boring B22. Refer to Plate 1 and Appendix B for the aerial photo interpreter's report.

Additionally, ExxonMobil conducted a soil vapor survey in the same area where the trucks had been parked in the 1983 aerial photos (Plate 1). This survey was conducted in 1995 (at the end of the oil production activities at the property) and consisted of the collection of soil gas samples from nine locations at depths of 5 to 10 feet bgs. The results indicated that chlorinated solvents were not detected in 16 of the 18 soil gas samples, and that PCE was only measured in two samples at low concentrations of 1 and 3 ppb (Plate 1 and Appendix C) (McLaren Hart, 1996).

Therefore, based upon review of historical aerial photos, which confirmed that whatever trucks were present at the property were not located in the vicinity of B22, and the soil vapor survey conducted in 1995, the "trucking operations" were not a source of PCE and the PCE detected in soil boring B22 could not be associated with a release from the area of the alleged trucking operation.

GEOLOGIC INTERPRETATIONS AND SITE CONCEPTUAL MODEL INTERPRETATIONS

In its Letter, the CRWQCB-LAR selected a few isolated soil concentrations from the hundreds of samples which have been collected at the Site, and a few isolated boring logs from the dozens which have been advanced at the Site, to conclude that ExxonMobil's SCM did not fully explain how PCE released by CHT at the property boundary would have migrated onto and across the Jalk Fee property.

PCE Distribution

The CRWQCB-LAR stated that "ExxonMobil's rationale cannot explain that PCE was detected in a soil sample collected at 10 feet below ground surface (bgs) at a concentration of 5,460 µg/kg in soil boring B22 at the Site. This boring is located approximately 140 feet north of the property boundary with the CHT site. This data indicates an on-site release or discharge at the Site."

As discussed in previous sections and in the March 2015 Report, ExxonMobil has already provided evidence that PCE was not used or stored on the Jalk Fee property, and that the area of the alleged trucking operations was not a source of PCE (Cardno, 2015).

The presence of the PCE in B22 at 10 feet bgs can be explained by ExxonMobil's current SCM through the migration of PCE from releases by CHT on the CHT property near the boundary with the Jalk Fee property (Cardno, 2015). The PCE would have migrated north- and northeastward through the soil along the previously-identified low permeable layer, which dips from the CHT property to the Jalk Fee property.

Additionally, a soil vapor partition analysis was performed using the soil vapor concentration measured in soil vapor well SVP2, which is located in close proximity to soil boring B22. Using the vapor concentration from the sample collected at 5 feet bgs in September 2014, and soil input parameters from accepted industry standards and regulatory guidance documents, the data was input into a soil vapor partitioning model developed by the ASTM (E 1943-98) (Cardno ERI, 2014). The results indicated that using the site-specific soil vapor concentration, a range of likely site soil characteristics (θw, θv, foc, ρs), and the range of PCE chemical-specific parameters (Koc, H) found in the literature, PCE soil concentrations from 0.3 to 11.5 mg/kg could result from the soil vapor concentration measured in SVP2, which is consistent with the 5.4 mg/kg concentration measured in B22 (Appendix D). Therefore, through a combination of the migration of PCE near the CHT property boundary along the low permeable soil layer and soil vapor partitioning, the concentration of PCE measured in B22 is consistent with ExxonMobil's SCM and does not require the presence of an unknown and unidentified potential release in the area of B22.

Similarly, the soil concentration in SVP7 at 5 feet bgs, which the CRWQCB-LAR identified as another data point that indicated a release had occurred away from the property boundary, can be explained through lateral migration of PCE from the CHT property and soil vapor partitioning, because the soil concentrations the model predicts from the SVP7 soil vapor sample (1.3 to 19.5 mg/kg) are of the same order of magnitude as the measured soil sample concentration (1.12 mg/kg) (Appendix D) (Cardno ERI, 2014). Again, the concentration of PCE measured in SVP7 at 5 feet bgs is consistent with ExxonMobil's SCM and does not require the presence of an unknown and unidentified potential release in the area of SVP7.

The CRWQCB-LAR also stated in its Letter that the vertical distribution of PCE in soil boring B11, with PCE measured at 5.36 and 11 mg/kg, at 10 and 15 feet bgs, respectively, and a concentration of 0.937 mg/kg at 35 feet bgs, was inconsistent with ExxonMobil's SCM. However, the distribution of PCE in B11 is completely consistent with the SCM. The highest concentrations in B11 are present at 15 feet bgs on top of the low permeable silt layer. The concentrations then decrease with depth. The silt is not completely competent or impervious to the migration of COCs, therefore it is reasonable to expect that lower concentrations would be observed within and below the silt layer. Additionally, the PCE concentrations at 20 to 35 feet bgs are all relatively low (less than 1 mg/kg) and generally within one order of magnitude of each other, and it is reasonable that there would be minor variations in concentrations based on variations in the surrounding lithology affecting the amount of PCE that is adsorbed to the soil as it migrates laterally and vertically.

Geologic Interpretations

As part of its Letter, the CRWQCB-LAR generated a cross section using only two data points (SVP1 and CHT's MW2), and drew the cross section to show a silty layer dipping from the southern part of the Jalk Fee site to the northern part of the CHT property, which the CRWQCB-LAR alleged could serve as a pathway for contaminants to migrate from Jalk Fee to CHT. The CRWQCB-LAR's cross section contradicts the geologic model presented by ExxonMobil in the March 2015 Report, which demonstrated that a north- and northeastward dipping silt layer extended from the CHT property onto the Jalk Fee property.

The geologic depiction by the CRWQCB-LAR is deficient in several aspects:

1. It incorrectly identifies the upper five to 10 feet of soil as sand, while the bore logs for SVP1 and MW2 both identify this interval as a sandy silt.
2. The CRWQCB-LAR's cross section does not appear to have been produced or reviewed by a Professional Geologist (PG), thus is not appropriate to use in making geologic or technical interpretations.
3. The CRWQCB-LAR's cross section used only two boring locations that have varying amounts of sand and silt throughout their columns. This makes it difficult to determine an overall trend, and multiple interpretations between only two points can be generated.
4. The CRWQCB-LAR's cross section does not follow professional standards and industry best practice to integrate all available data points when generating a geologic interpretation. The Jalk Fee and CHT sites have had dozens of soil borings drilled that provide a substantial amount of lithologic information on the two properties.

A Cardno PG reviewed the lithology for the same two locations used by the CRWQCB-LAR (SVP1 and MW2), as well as surrounding borings, and came to the opposite conclusion as the CRWQCB-LAR. The Cardno PG concluded that a silt layer, which is first encountered between approximately 15 and 20 feet bgs, dips to the north from the CHT property to the Jalk Fee property in the area of SVP1 and MW2. This northward dip affirms the SCM presented in the March 2015 Report that the low permeability silt layer, immediately beneath the near surface sandy silt/silty sand layer, dips to the north and northeast and provides a preferential pathway for contaminants to migrate from CHT's property to Jalk Fee (Plate 2).

As the CRWQCB-LAR's cross section only used two data points when dozens of others were available, and failed to evaluate and take into account the surrounding area-wide lithology, the CRWQCB-LAR's cross section showing a south-ward dipping silt layer between these two borings is not a reasonable interpretation. ExxonMobil has already demonstrated through several previously presented figures, which evaluated all of the lithologic data collected near the property boundary at the two sites, that an area wide low permeable silt layer dips to the north and northeast (Appendix E) (Cardno ERI, 2015).

Therefore, the CRWQCB-LAR's cross section should not be used to invalidate the more robust geological interpretation presented on behalf of ExxonMobil which demonstrates the subsurface transport pathway to the north away from the property boundary area.

ADDITIONAL FILE REVIEWS

Cardno's March 2015 Report presented conclusive documentation of CHT's poor waste management and operational practices, including agency inspection reports and NOVs for the release of various chemicals to the ground (Cardno, 2015).

In October 2016, Cardno conducted a file review with the South Coast Air Quality Management District (SCAQMD), as the SCAQMD's files were not reviewed during previous investigations. The SCAQMD documents provide additional evidence for the use and storage of PCE at the CHT property and along the property boundary with Jalk Fee, including:

- In 1969, CHT permitted two degreasers for its operations.
- CHT had a 575-gallon outdoor aboveground storage tank (AST) for PCE located off the northwest corner of CHT's building, which was located along the property boundary with Jalk Fee (Plate 1).
- In 1982, CHT reported that the AST was "used till empty and refilled" and "26 refills per yr", indicating that CHT used approximately 14,950 gallons of PCE per year.
- In 1982, CHT was storing "12 – 55 gal drums from 3 months operation - return for reclaim for 2 degreasers", and a 1982 memorandum states, "He said there are 12 – 55 gal drums waiting for vendor to pickup."

- In 1982, it was reported that “1,540 gallons of ‘waste oil’ was trucked away by Lakeland Oil Company; and wash water was pumped out seven times and contained 101 gallons of oil.”

These records from the SCAQMD provide further documentation of the substantial use of PCE by CHT for over 25 years, that new and waste PCE was stored by CHT near the property boundary with Jalk Fee, and that waste oil generated from its heat treating operations was also stored near the property boundary with Jalk Fee. The documents obtained from the SCAQMD file are contained in Appendix F.

Additionally, the SCAQMD had no records which indicated that PCE was used or stored at the Jalk Fee property, which further supports ExxonMobil’s previously documented file reviews.

USE OF AND RELEASES OF QUENCH OIL BY CHT

Quenching is an integral part of heat treating operations, as heated parts are dipped in a quenching fluid to prevent crystallization, distortion, and microcracking of the metal. This quenching fluid is commonly an oil.

CHT’s 1969 Degreaser Application to the Los Angeles County Air Pollution Control District states, “Many steel parts to be heat treated have a thin oil film on the part and it is desirable to remove this oil film by the use of a degreaser. Some heat treated parts are oil quenched and to clean the parts for shipment the parts are cleaned in the degreaser”. CHT’s 1982 Electrostatic Precipitator Application to the SCAQMD states that “the quench oil is L-100 Pale Neutral made by Far-Best Corporation. Continental Heat Treating records show that in 1977, 1,650 gallons were purchased” (Appendix G).

Additionally, CHT’s Hazardous Materials Contingency Plan in the Los Angeles County Fire Department records identifies that CHT stored 500 gallons of quench oil in a tank and disposed of 300 gallons of waste quench oil in drums (Appendix G).

The agency documents presented in Cardno’s March 2015 Report, which are partially summarized below, provide further evidence for CHT’s use, storage, and release of quench (mineral) oil and waste oil onto the CHT property (Appendix G).

- A County of Los Angeles survey report dated May 19, 1989, identifies that CHT conducted parts wiping, and stored excess rags containing oil and solvent in covered cans.

- A County of Los Angeles Department of Health Services Official Notice of Violation dated March 16, 1984 issued for the CHT property states: "*you are hereby directed to remove oil from ground in rear storage area*". (Emphasis added)
- A County of Los Angeles Department of Health Services Notice of Violation and Order to Comply dated May 19, 1989 to CHT states:
    - ♦ *"Discontinue the disposal of hazardous waste to an unauthorized point(s)…any waste oil onto the ground"*. (Emphasis added)
    - ♦ "Store all hazardous waste in compatible containers which are closed and in good condition…keep lids and bungs on, don't overfill".
    - ♦ 3) *"Remove and legally dispose of oily surface in rear asphalted yard…discharge of oil waste both onto asphalt top and onto soil (SW corner or rear yard)".* (Emphasis added)
    - ♦ 4) "Unlabeled barrels that Mr. Bastian indicated contained either PERC or waste oil".
    - ♦ 5) *"Facility has a continuing problem with mineral oil disg [sic] out on the asphalted area".* (Emphasis added)
- A City of Santa Fe Springs Fire Department Inspection Report & Notice of Violation dated May 25, 2006, states: "Continental Heat Treating violated City Ordinance…by having oil in the 3rd stage of their clarifier. *Oil must be removed from the clarifier and maintained such that oil is kept out of the sewer system"*. (Emphasis added)
- A City of Santa Fe Springs Fire Department Inspection Report & Notice of Violation dated May 9, 2007, states: "Continental Heat Treating violated City Code…by failing to maintain pretreatment equipment in good working order. The third stage of the clarifier had oil in it. *Continental Heat Treating must maintain the clarifier to prevent oil from entering the sewer system"*. (Emphasis added)

These records show that CHT used significant quantities of quench (mineral) oil in its operations, that the degreasing fluid (PCE) becomes commingled with the quench oil during heat treating operations, that waste oil is generated from the operations, that CHT stored the quench oil and the waste oil in its yard to the west of the building, and that the waste oil, undoubtedly mixed with PCE, was released multiple times onto the ground at CHT's facility due to poor handling practices.

These surface spills of oil and PCE would passively migrate onto the unpaved Jalk Fee property, where the highest concentrations of PCE in shallow soil have been identified in subsequent assessments, directly to the north of the CHT equipment storage and repair area.

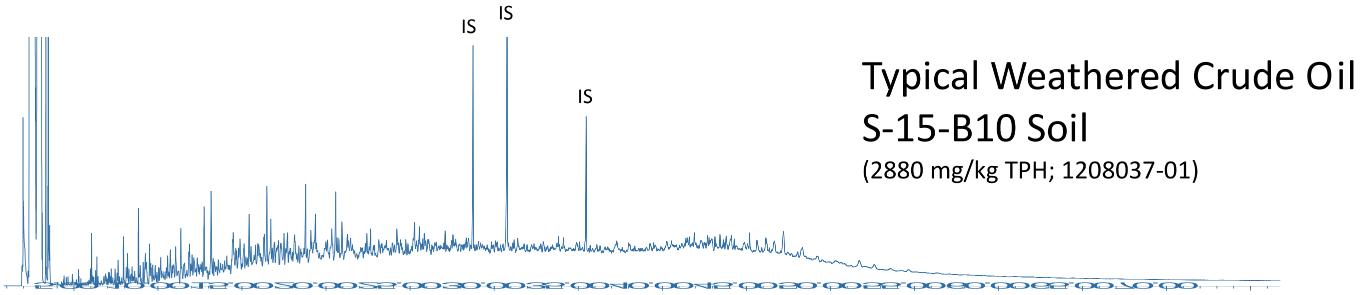
FORENSIC ASSESSMENT

In October 2016, an investigation of the forensic signature of PCE and hydrocarbons in the soil at the Jalk Fee property was performed to determine the nature and likely source of these contaminants, Soil samples were collected along the southern boundary of the property, adjacent to the CHT property, in the area where the highest concentrations of PCE in shallow soil have been identified.

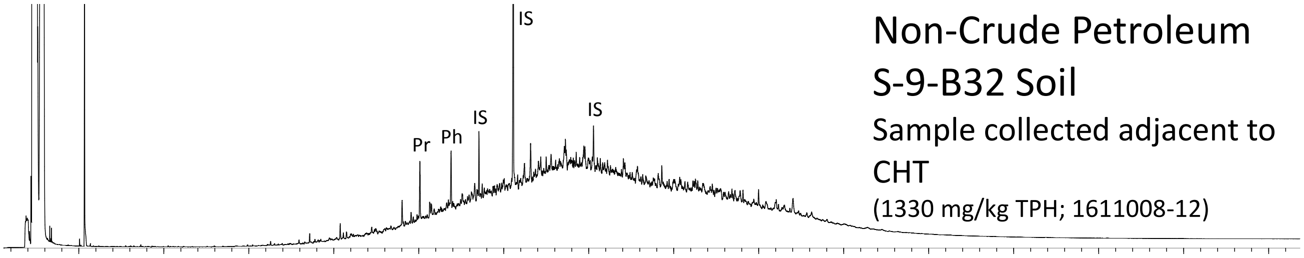
Comparisons were made to forensic markers that would be unique to heat treating and degreasing activities. The presence of these markers, co-located with the PCE in soil, would provide conclusive evidence that the PCE observed in soil was released by CHT. The study involved the advancement of various soil borings within and surrounding the former SB49 excavation and the collection of soil samples by Cardno (Plate 3). Refer to Appendix H for a report detailing the methodology for the sample collection and handling.

The soil samples were then submitted to Newfields Environmental Forensics Practice (Newfields), where they were analyzed by Alpha Analytical using several USEPA and forensic-specific analytical methods and the resulting data was evaluated and interpreted. A detailed discussion of the forensic evaluation of the soil samples and the laboratory analytical data is found in the Newfields' Report in Appendix I, and is briefly summarized below.

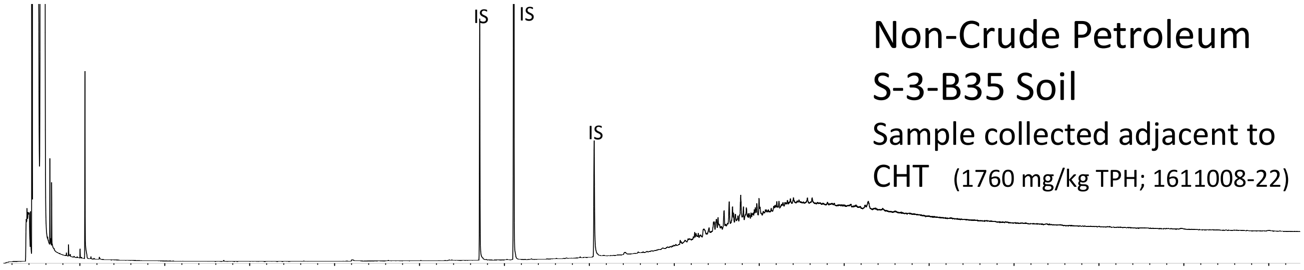
PCE was measured in all ten of the soil samples, at concentrations ranging from 0.003 to 1,100 mg/kg, and hydrocarbons were measured in eight of the ten soil samples collected in the investigation at concentrations ranging from 117 to 1,760 mg/kg. The hydrocarbon signatures from the 2016 investigation were compared to the signature of soil samples with weathered crude oil collected at the Site in 2012, and a weathered diesel fuel. The 2016 soil sample hydrocarbon signatures were clearly distinct from the weathered crude oil and diesel samples, as shown in the figures below. Further analysis of the fingerprints indicated that it would have been impossible for the signature of the hydrocarbons in soil along the property boundary to have resulted from the weathering and degradation of crude oil or diesel fuel, which are the expected COCs at an oil field. Therefore, the hydrocarbons measured in soil during the October 2016 assessment were not associated with historic oil field operations.



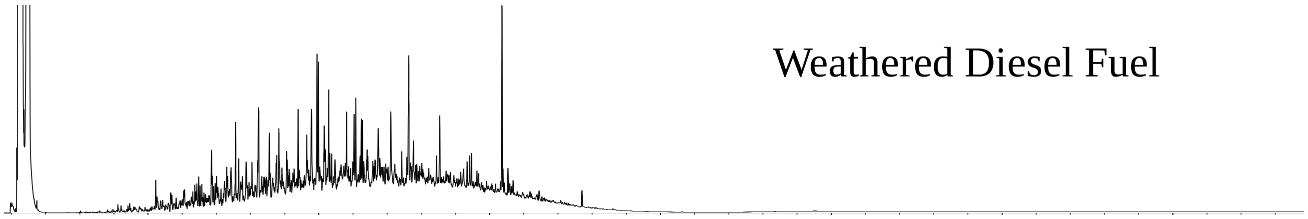
Typical Weathered Crude Oil
S-15-B10 Soil
(2880 mg/kg TPH; 1208037-01)



Non-Crude Petroleum
S-9-B32 Soil
Sample collected adjacent to CHT
(1330 mg/kg TPH; 1611008-12)

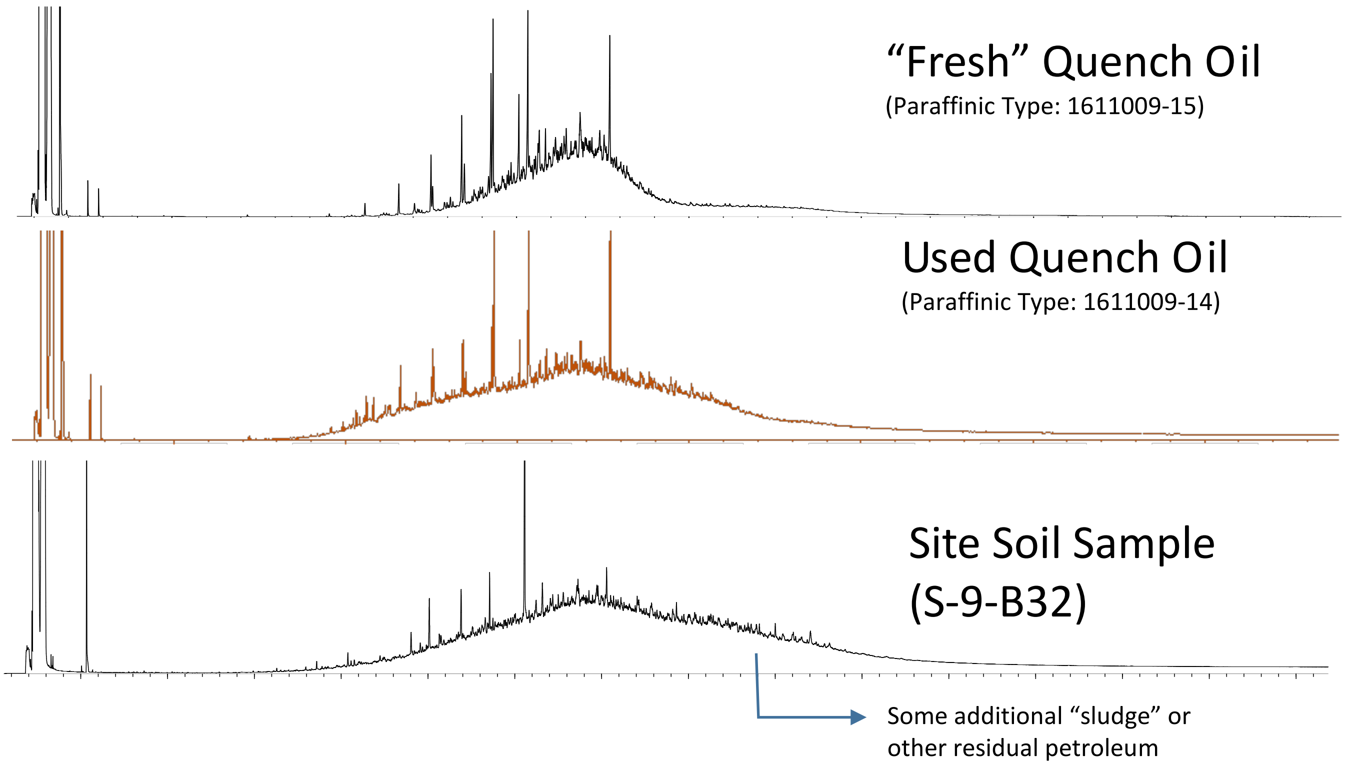


Non-Crude Petroleum
S-3-B35 Soil
Sample collected adjacent to CHT (1760 mg/kg TPH; 1611008-22)



Weathered Diesel Fuel

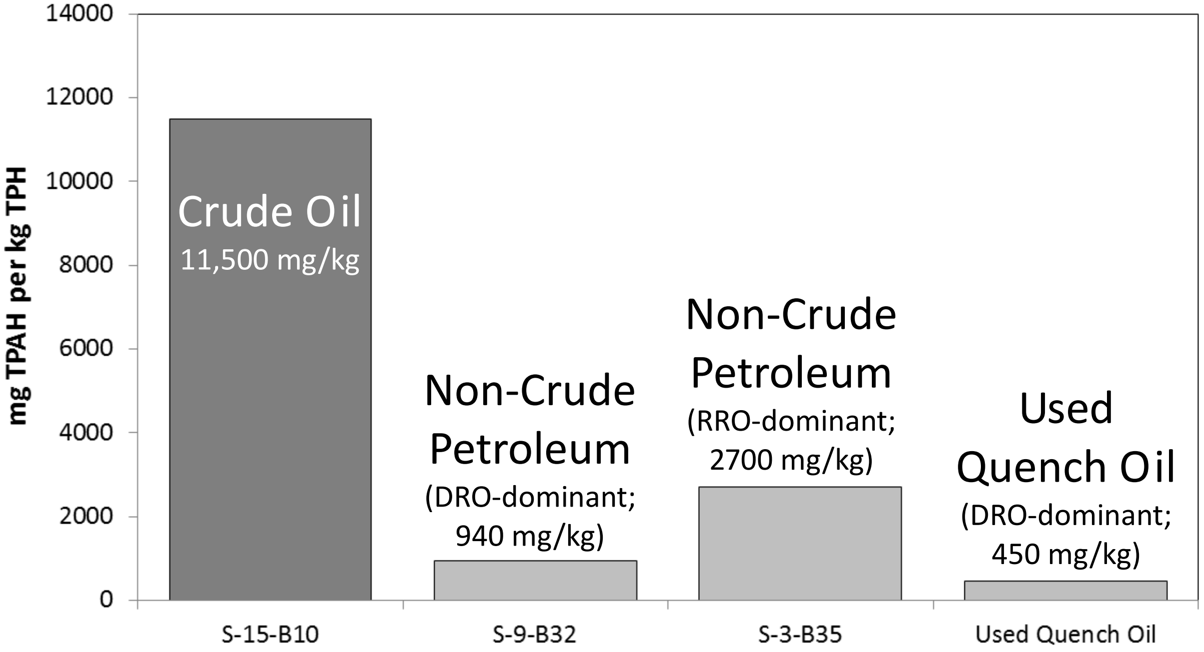
Because the 2016 soil samples collected near the property boundary clearly did not contain petroleum that might be attributed to historic oil field operations (e.g. crude oil or diesel fuel), and because documents obtained from file reviews of the neighboring CHT facility indicated the use of quench (mineral) oils and disposal of waste oil "*onto the ground and asphalt top at rear yard*", the hydrocarbon signatures observed in the 2016 soil samples were compared to the signature of oils and wastes used or generated by the heat treating of metal. By comparing the fingerprints of the hydrocarbons found in soil in the 2016 assessment with various reference samples of new and used quench oil and waste oils generated from typical heat treating operations (no samples were available from CHT), Newfields concluded that the hydrocarbons found in soil during the 2016 assessment at the Jalk Fee property along the boundary with CHT appear highly consistent with used quench oil that contains some residual sludge/waste oil generated from repeated heat treating.



Comparison of fresh and used quench oil samples to soil sample S-9-B32, collected near the Jalk Fee property boundary with CHT, as shown in the preceding figures indicate that:

- All the samples contained a similar unresolved complex mixture (UCM) with a maximum at C_{22}.
- All the samples contained aliphatic hydrocarbons consistent with a paraffinic quench oil. The used quench oil contained both n-alkanes and isoprenoids, whereas sample S-9-B32 only contained isoprenoids, a phenomenon attributed to loss of the n-alkanes from biodegradation in the soil.
- The broad UCM in sample S-9-B32 was consistent with the broadening of the UCM between the fresh and used quench oil, which is attributed to the formation of sludge and the deterioration of the quench oil during its normal usage in heat treatment operations.

As a second line of evidence, Newfields analyzed the soil samples for PAHs and petroleum biomarkers. Quench oils are de-aromatized during the refining process, therefore are chemically distinct from crude oil and other hydrocarbon products which would be used at oil production sites. The results of the analysis indicated a low aromatic (PAH) content in the 2016 soil samples, comparable to a used quench oil, as shown in the graph below, further demonstrating that the hydrocarbons in soil are not crude oil, and are consistent with used quench oils containing varying amounts of sludge or waste oil.



Comparison of the TPH-normalized concentrations of total PAHs (TPAH) in representative soil samples from the Site containing severely weathered crude oil (S-15-B10) and non-crude petroleum enriched in DRO- and RRO- components (S-9-B32 and S-3-B35), as well as a used quench oil.

The forensic study demonstrates that the hydrocarbons observed in the 2016 soil samples collected along the property boundary are not associated with crude oil or diesel fuel, but are consistent with used quench oils containing some heavier sludge and waste oil. These used oils and wastes were exclusively part of CHT's heat treating business activities, are co-located with PCE concentrations as high as 1,100 mg/kg, and are located directly adjacent to CHT's property boundary, where CHT stored and released PCE, quench oil and waste oil.

SUMMARY AND CONCLUSIONS

In a letter dated July 22, 2016, the CRWQCB-LAR responded to ExxonMobil's 2015 request to name CHT sole discharger by making several assertions about a possible source of PCE on the Jalk Fee property and identified several isolated data points that the CRWQCB-LAR claimed were inconsistent with ExxonMobil's SCM, which had explained how releases of PCE from CHT's operations migrated onto and across the Jalk Fee site.

As presented to the CRWQCB-LAR during a meeting in December 2016, and as detailed above, ExxonMobil has developed additional evidence to support its contention that PCE identified in soil on the Jalk Fee site was the sole result of CHT's 26 years of poor operational and waste management practices in using and releasing quench oil and PCE during its heat treating and degreasing operations.

The CRWQCB-LAR acknowledged that that CHT is the primary source of chlorinated solvents on the CHT and Jalk Fee properties in its letter dated June 23, 2010. Further, as detailed in Cardno's March 2015 Report and this report:

- There is no evidence for a primary source or release of PCE on the Jalk Fee property:
    - There is no evidence of PCE use or storage at the Jalk Fee property by ExxonMobil or Hathaway Oil.
    - The USEPA did not identify the use of chlorinated solvents during oil production.
    - A soil gas survey conducted in the 'former trucking operations' area demonstrated there was no release of PCE in this area.
    - Other California regulatory agencies and GeoTracker do not identify chlorinated solvent contamination at other oil field properties.
- The surface of the CHT property was paved during most of its operation, and the surface of the Jalk Fee property was unpaved soil until the property was redeveloped in 2003, allowing surface spills and precipitation to passively migrate laterally onto the Jalk Fee property and downward.
- CHT had several primary sources of chlorinated solvents including multiple degreasers within its building, an outdoor PCE storage tank, waste storage, and the northwestern area of the site where equipment storage and repairs were likely conducted.
- CHT used and stored significant quantities of chlorinated solvents for degreasing operations from approximately 1969 through 1995, including approximately 14,950 gallons per year in 1982.
- Inadequate operational, housekeeping, and waste management practices by CHT resulted in numerous releases/spills of chlorinated solvents and other chemicals, which were identified during agency inspections, and which resulted in various NOVs.

- Pathways for surface and subsurface chlorinated solvents to migrate from the CHT property to the Jalk Fee property have been identified, and the extensive lithological data collected explains the vertical and lateral distribution of PCE found in soil on the Jalk Fee property.
- Quench oils are used in heat treating operations and are not used in oil field operations.
- As identified in various agency records and NOVs, CHT used, stored, and released quench oils and waste oil generated from its heat treating process onto the ground on its property, which would have migrated northward onto the unpaved Jalk Fee property.
- The forensic study demonstrates that the hydrocarbon fingerprints identified in the soil along the property boundary, which were co-located with the highest PCE soil concentrations, could not have been from oil field activities, as they are inconsistent with weathered crude oil or diesel fuel.
- The forensic study demonstrates that the hydrocarbon fingerprints identified in the soil along the property boundary, which were co-located with the highest PCE soil concentrations, are consistent with used quench oil and waste oil generated from heat treating operations.
- Only CHT used, stored and released quench oil and waste oil in its operations, and the quench and waste oils are co-located with the highest PCE concentrations in soil, providing direct evidence of releases of PCE and quench oil by CHT, and migration from CHT’s operations.

Based on the substantial evidence provided, ExxonMobil believes it has demonstrated that CHT is the sole source of the chlorinated solvents observed in soil beneath the CHT, Jalk Fee, and 10711 Norwalk Blvd properties.

Therefore, ExxonMobil, again respectfully requests that the CRWQCB-LAR identify CHT as the sole discharger and responsible party for the chlorinated solvents identified in soil and soil vapor on the CHT, Jalk Fee and 10711 Norwalk Boulevard properties; rescind its Order dated August 24, 2010 and subsequent amendments requiring ExxonMobil to assess and monitor the extent of chlorinated solvents; and formally remove ExxonMobil as the named discharger and responsible party for the chlorinated solvents.

LIMITATIONS

For documents cited that were not generated by Cardno, the data taken from those documents is used "as is" and is assumed to be accurate. Cardno does not guarantee the accuracy of this data and makes no warranties for the referenced work performed nor the inferences or conclusions stated in these documents.

This document and the work performed have been undertaken in good faith, with due diligence and with the expertise, experience, capability and specialized knowledge necessary to perform the work in a good and workmanlike manner and within all accepted standards pertaining to providers of environmental services in California at the time of investigation. No soil engineering or geotechnical references are implied or should be inferred. The evaluation of the geologic conditions at the site for this investigation is made from a limited number of data points. Subsurface conditions may vary away from these data points.

For questions concerning this report, please contact Mr. James Anderson at 805 644 4157, extension 181805.

Sincerely,

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PROFESSIONAL GEOLOGIST
ANDREW B. NELSON
exp. 9/30/17
NO 8360
STATE OF CALIFORNIA

Enclosures:

References

Acronym List

Plate 1	1983 Aerial Photo with Trucking Area Soil Gas Sampling Wells and Soil Boring B22
Plate 2	Industry Standard Interpretation Cross Section SVP1-MW2
Plate 3	Forensic Study Soil Boring Locations

Appendix A	Regulatory Correspondence
Appendix B	Aerodata Photo Interpretation Report
Appendix C	Soil Vapor Table and Figure from McLaren Hart Report
Appendix D	Soil Vapor Partition Model and Calculations
Appendix E	Newfields Figures
Appendix F	SCAQMD File Documents
Appendix G	Quench Oil File Documents
Appendix H	Cardno's *Report of Soil Borings In Support of Forensic Investigation*, dated February 8, 2017
Appendix I	Newfields' *Forensic Signature of Hydrocarbons in Soil at the Former Jalk Fee Facility*, dated February 7, 2017

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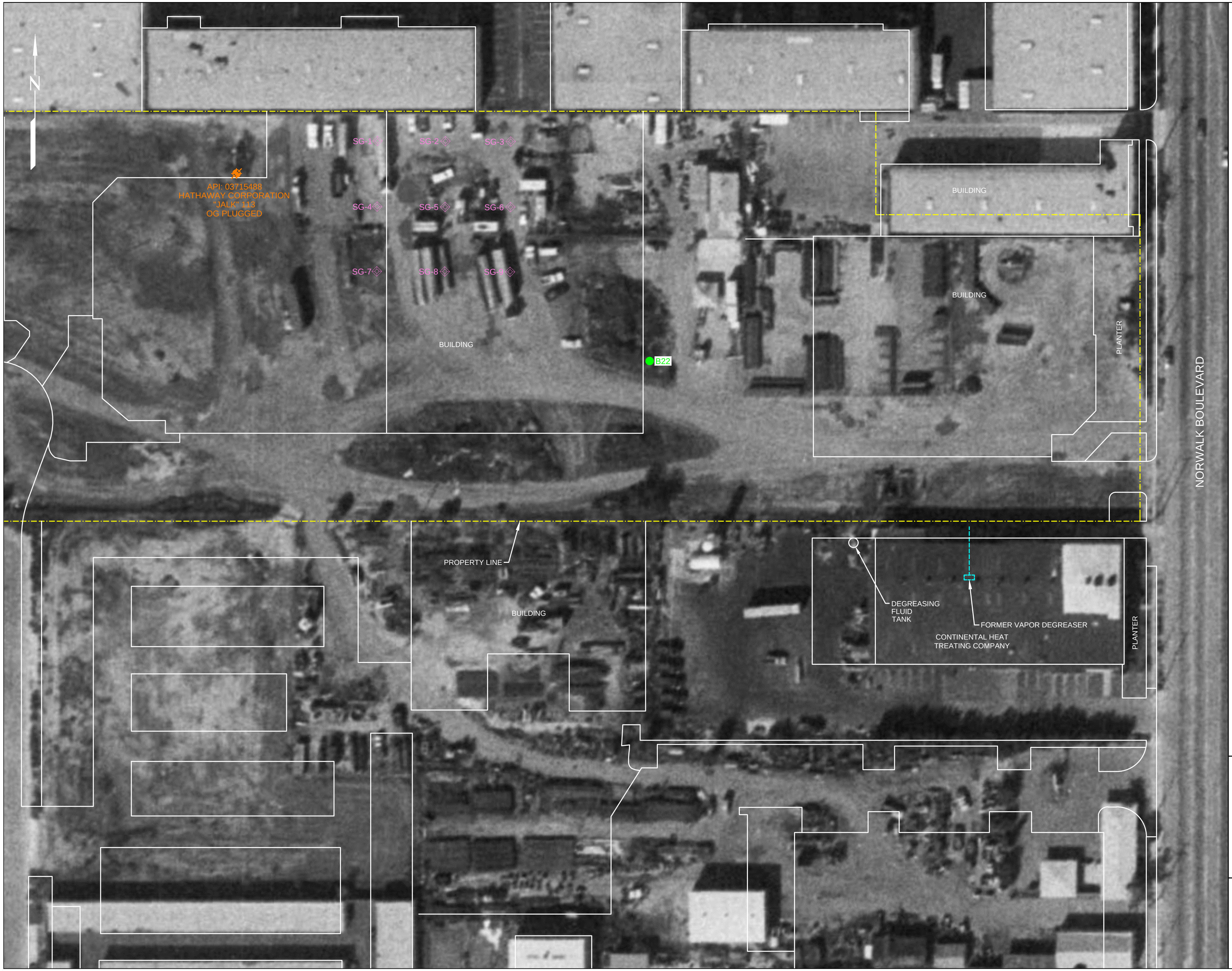
McLaren Hart. February 2, 1996. *Draft Additional Soil Sampling at Mobil Jalk Fee Property*, 10607 Norwalk Boulevard, Santa Fe Springs, California.

United States Environmental Protection Agency (USEPA). October 2002. *Exemption of Oil and Gas Exploration and Production Wastes from Federal Hazardous Waste Regulations.*

ACRONYM LIST

µg/L	Micrograms per liter
µs	Microsiemens
1,2-DCA	1,2-dichloroethane
acfm	Actual cubic feet per minute
AS	Air sparge
bgs	Below ground surface
BTEX	Benzene, toluene, ethylbenzene, and total xylenes
CEQA	California Environmental Quality Act
cfm	Cubic feet per minute
COC	Chain of Custody
CPT	Cone Penetration (Penetrometer) Test
DIPE	Di-isopropyl ether
DO	Dissolved oxygen
DOT	Department of Transportation
DPE	Dual-phase extraction
DTW	Depth to water
EDB	1,2-dibromoethane
EPA	Environmental Protection Agency
ESL	Environmental screening level
ETBE	Ethyl tertiary butyl ether
FID	Flame-ionization detector
fpm	Feet per minute
GAC	Granular activated carbon
gpd	Gallons per day
gpm	Gallons per minute
GWPTS	Groundwater pump and treat system
HVOC	Halogenated volatile organic compound
J	Estimated value between MDL and PQL (RL)
LEL	Lower explosive limit
LPC	Liquid-phase carbon
LRP	Liquid-ring pump
LUFT	Leaking underground fuel tank
LUST	Leaking underground storage tank
MCL	Maximum contaminant level
MDL	Method detection limit
mg/kg	Milligrams per kilogram
mg/L	Milligrams per liter
mg/m^3	Milligrams per cubic meter
MPE	Multi-phase extraction
MRL	Method reporting limit
msl	Mean sea level
MTBE	Methyl tertiary butyl ether
MTCA	Model Toxics Control Act
NAI	Natural attenuation indicators
NAPL	Non-aqueous phase liquid
NEPA	National Environmental Policy Act
NGVD	National Geodetic Vertical Datum
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and Maintenance
ORP	Oxidation-reduction potential
OSHA	Occupational Safety and Health Administration
OVA	Organic vapor analyzer
P&ID	Process & Instrumentation Diagram
PAH	Polycyclic aromatic hydrocarbon
PCB	Polychlorinated biphenyl
PCE	Tetrachloroethene or perchloroethylene
PID	Photo-ionization detector
PLC	Programmable logic control
POTW	Publicly owned treatment works
ppmv	Parts per million by volume
PQL	Practical quantitation limit
psi	Pounds per square inch
PVC	Polyvinyl chloride
QA/QC	Quality assurance/quality control
RBSL	Risk-based screening levels
RCRA	Resource Conservation and Recovery Act
RL	Reporting limit
scfm	Standard cubic feet per minute
SSTL	Site-specific target level
STLC	Soluble threshold limit concentration
SVE	Soil vapor extraction
SVOC	Semivolatile organic compound
TAME	Tertiary amyl methyl ether
TBA	Tertiary butyl alcohol
TCE	Trichloroethene
TOC	Top of well casing elevation; datum is msl
TOG	Total oil and grease
TPHd	Total petroleum hydrocarbons as diesel
TPHg	Total petroleum hydrocarbons as gasoline
TPHmo	Total petroleum hydrocarbons as motor oil
TPHs	Total petroleum hydrocarbons as stoddard solvent
TRPH	Total recoverable petroleum hydrocarbons
UCL	Upper confidence level
USCS	Unified Soil Classification System
USGS	United States Geologic Survey
UST	Underground storage tank
VCP	Voluntary Cleanup Program
VOC	Volatile organic compound
VPC	Vapor-phase carbon



EXPLANATION

●	B22	Soil Boring
◇	SG-9	Multi-depth soil vapor well
✻	JALK 113	Plugged and abandoned oil well

SOURCE:
Modified from a map
provided by
GOOGLE EARTH

APPROXIMATE SCALE

0 80 160
FEET

FN 08115504 R23.P1

1983 AERIAL PHOTO WITH TRUCKING AREA SOIL GAS SAMPLING WELLS AND SOIL BORING B22

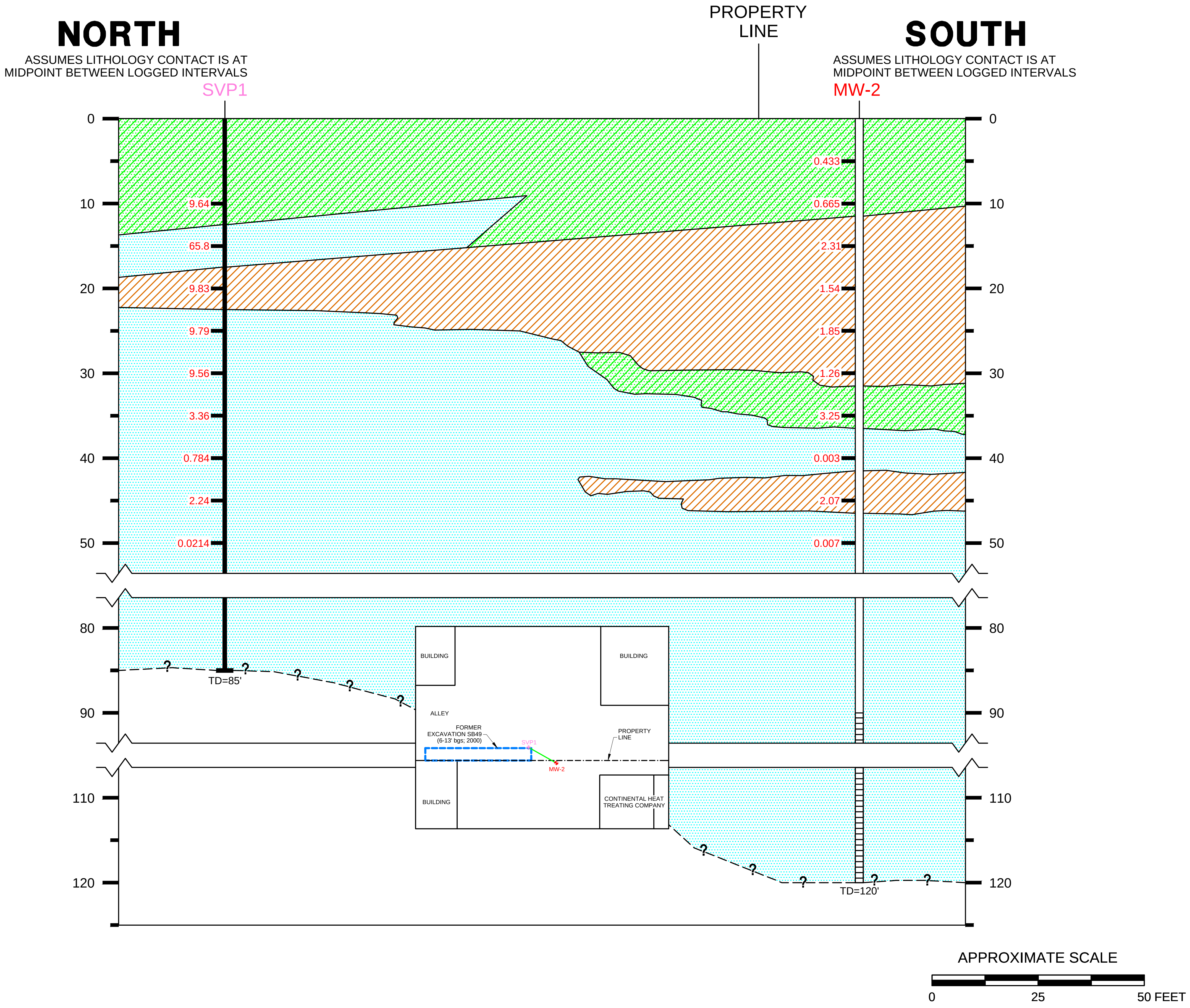
FORMER EXXONMOBIL JALK FEE PROPERTY
10607 Norwalk Boulevard
Santa Fe Springs, California

Cardno®
Shaping the Future

PROJECT NO.
1155

PLATE
1

DATE: 02/01/17



EXPLANATION

▨	ML	Silt
▨	SM/ML	Silty sand/sandy silt
▨	SP/SW	Sand - poorly graded/well graded/ sand with silt
▨		Non-native fill
▬		Soil sample location
		PCE concentration in milligrams per kilogram
—?—?—		Approximate limits of known geology

FN 08115504 R23.P2

INDUSTRY STANDARD INTERPRETATION CROSS-SECTION SVP1 - MW2

FORMER EXXONMOBIL JALK FEE PROPERTY
10607 Norwalk Boulevard
Santa Fe Springs, California

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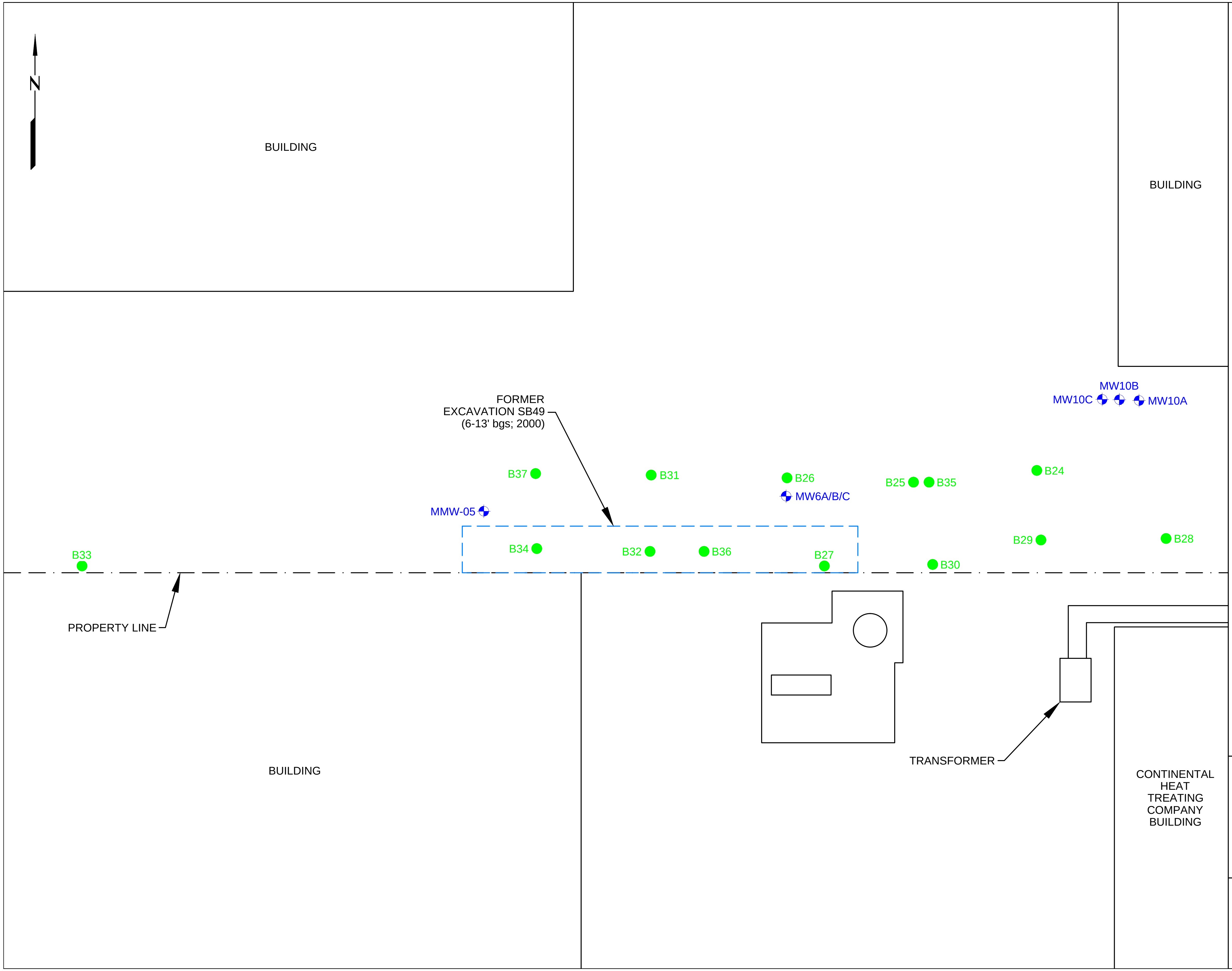
PROJECT NO.
1155

PLATE
2

DATE: 12/12/16



EXPLANATION

⊕	MW10A	Groundwater monitoring well
●	B33	Soil Boring

SOURCE:
Modified from a map
provided by
GOOGLE EARTH

APPROXIMATE SCALE

0 25 50
FEET

FN 08115504 R23.P3

FORENSIC STUDY SOIL BORING LOCATIONS

FORMER EXXONMOBIL JALK FEE PROPERTY
10607 Norwalk Boulevard
Santa Fe Springs, California

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PROJECT NO.
1155

PLATE
3

DATE: 01/24/17

APPENDIX A

REGULATORY CORRESPONDENCE

CALIFORNIA
Water Boards

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

Los Angeles Regional Water Quality Control Board

July 22, 2016

Ms. Marla Madden
ExxonMobil Environmental Services Co.
18685 Main Street, Suite 101, PMB 601
Huntington Beach, CA 92648

RETURN MAIL
RETURN RECEIPT REQUESTED
CLAIM NO. 7015 0640 0006 6057 5019

SUBJECT: RESPONSE TO "REQUEST TO NAME CONTINENTAL HEAT TREATING AS DISCHARGER", PURSUANT TO CALIFORNIA WATER CODE SECTION 13267 ORDER DATED AUGUST 24, 2010

SITE: FORMER EXXONMOBIL JALK FEE PROPERTY, 10607 NORWALK BOULEVARD, SANTA FE SPRINGS, CA (SCP NO. 0203, SITE ID NO. 1848000)

Dear Ms. Madden:

The Los Angeles Regional Water Quality Control Board (Regional Board) reviewed the March 25, 2015, *Request to Name Continental Heat Treating as Discharger* (Report), prepared and submitted by Cardno ERI on your behalf, for the referenced site. In the Report, ExxonMobil Environmental Services Company (ExxonMobil) requests the Regional Board to rescind the California Water Code (CWC) section 13267 order dated August 24, 2010 (Order) issued to ExxonMobil, based on its conclusions that the Continental Heat Treating (CHT) site is a source of the chlorinated solvents in soil and groundwater at and near the Former ExxonMobil Jalk Fee Property (Site). The Regional Board agrees that the CHT site is a source of chlorinated solvents and issued a CWC section 13267 order dated May 5, 2010 to CHT to investigate and delineate the extent of contamination in soil, soil-gas, and groundwater from releases at the CHT facility. The Regional Board, however, disagrees with ExxonMobil's conclusion that CHT is the sole source of chlorinated solvents because soil, soil vapor, and groundwater data collected at the Site indicates on-site discharges. Below are ExxonMobil's comments (italicized) provided in the Report, followed by the Regional Board's detailed responses:

1. *The evidence presented by EMES is consistent with the same conclusions the CRWQCB-LAR has already reached, as demonstrated by the CRWQCB-LAR's letter dated June 23, 2010 to CHT (Appendix A). The CRWQCB-LAR stated that significant quantities of PCE were stored and used by CHT, that primary sources of PCE contamination (degreaser, storage area, etc.) have been identified at the CHT property, that releases of chlorinated solvents at CHT have impacted the subsurface, that the pipe trench leading from the degreaser to the north end of the building may have created a potential preferential pathway for the migration of PCE, and that no primary sources of PCE contamination have been identified on the Jalk Fee property.*

The CHT site is located to the south and adjacent to the Site (Figure 1, enclosed), and under oversight by the Regional Board, as a separate case. The Regional Board issued CHT a CWC section 13267 order dated May 5, 2010 to investigate soil, soil gas, and groundwater contamination as a result of their own releases. On May 19, 2010, CHT provided comments to the May 5, 2010 order, indicating that the Regional Board cited numerous erroneous allegations.

On June 23, 2010, the Regional Board provided responses to CHT's May 19, 2010 letter and presented the sources of information for the citations made, and stated that no primary source(s) of tetrachloroethene (PCE) contamination have been identified at the Site. However, investigations conducted at the Site in 2011 encountered PCE in soil and groundwater at concentrations up to 6,600 micrograms per kilogram (μg/kg), and 1,800 micrograms per liter (μg/L), respectively. Based on these analytical results, the Regional Board determined that volatile organic compounds (VOCs) detected in soil have threatened groundwater quality, and required ExxonMobil to further investigate soil matrix, soil vapor, and groundwater at the Site.

2. *From the 1920s until its redevelopment in 2003, the Jalk Fee property had a dirt surface and was unpaved, as can be observed in the historical aerial photos, which would allow rainwater and spills/releases from the adjacent paved CHT property to run off onto and infiltrate into the upper vadose zone of the Jalk Fee property (see Plate 1 and Appendix B for the historical aerial photos).*

   ExxonMobil's rationale cannot explain that PCE was detected in a soil sample collected at 10 feet below ground surface (bgs) at a concentration of 5,460 μg/kg in soil boring B22 at the Site. This boring is located approximately 140 feet north of the property boundary with the CHT site. This data indicates an on-site release or discharge at the Site.

3. *ExxonMobil has had internal discussions with its personnel who managed oil field operations at various locations, who confirmed that chlorinated solvents were not standard chemicals used in its oil field production operations. This is reinforced by the CRWQCB-LAR's letter dated June 23, 2010 to CHT, which stated that the "Jalk Fee property was used for oil production operations and no primary sources(s) of PCE contamination have been identified [on the property]" (Appendix A). Additionally, file reviews conducted with the City of Santa Fe Springs and the County of Los Angeles did not identify agency records or NOVs, indicating that chlorinated solvents were stored, used, or released onto the Jalk Fee property (Appendix C).*

   Please see Regional Board's response to Item No. 1 regarding the Regional Board letter dated June 23, 2010 that stated that the "Jalk Fee property was used for oil production operations and no primary sources(s) of PCE contamination have been identified [on the property]".

   Appendix C is incomplete, and does not provide all the documents to support ExxonMobil's file review process.

4. *In 2014, Cardno ERI conducted a review of the State Water Resources Control Board's online GeoTracker information database of various oil field sites across the State of California that had current or closed environmental cases, and was unable to identify any*

oil field site that had chlorinated solvents as a contaminant of concern. Additionally, Cardno ERI spoke with representatives of the County of Santa Barbara Environmental Health Services and the California Regional Water Quality Control Board - Central Valley Region, which are agencies that have extensive oil field operations and clean-up projects in their areas of responsibility, and the representatives from both agencies were not aware of any oil field sites within their jurisdictions that had chlorinated solvent contamination.

Data collected at the Site indicates on-site discharge or release of chlorinated solvents at the Site (See Regional Board's responses to Items No. 1, 2, and 9).

5. *Levine-Fricke's report dated December 6, 1991 claims that a tenant of Mobil who rented the Jalk Fee property may have used chlorinated solvents on the eastern portion of the property (Levine-Fricke, 1991). The report does not cite any source evidence for this statement, and ExxonMobil is unaware of any information that supports this claim. Furthermore, ExxonMobil has conducted extensive reviews of its lease files and has no record that any company or person rented the property during its period of operation or ownership, other than Hathaway.*

   As stated previously, Hathaway was an oil production company, and oil field operators did not use solvents as standard chemicals. Thus, there is no evidence that ExxonMobil, a tenant, or the subsequent property owners and their tenants ever used chlorinated solvents on the property. Therefore, there is no primary source of chlorinated solvents from historical operations on the Jalk Fee property, and the chlorinated solvents in soil must be from an off-site source.

   A figure on the May 13, 1997, "Work Plan for Site Characterization Activities and Proposed Environmental Fate Modeling and Health Risk Assessment", displays an area at the Site identified as "approximate location of former trucking operations area" (Figure 2, enclosed). PCE was detected at a concentration of 5,460 μg/kg in a sandy soil sample collected at 10 feet bgs from soil boring B22. Boring B22 is located within the "approximate location of former trucking operations area" at the Site.

   In addition, the October 2002, "Exemption of Oil and Gas Exploration and Production Wastes from Federal Hazardous Waste Regulations", published by the United States Environmental Protection Agency (USEPA), lists waste generated during oil exploration activities, among them waste solvents.

6. *History of CHT Property*

   The building that is currently present at the CHT property was constructed in 1969, at which time the majority of the property would also have been paved for parking, as is apparent in aerial photographs of the site (Appendix B). Based on information provided by CHT, since commencing operations at the site, the CHT business has cleaned metal parts and processed them with heat. This process requires the cleaning of the metal parts to remove cutting oil and debris, which was performed by placing the metal parts in a solvent-based vapor degreaser. Thus, CHT conducted degreasing operations and used chlorinated solvents from approximately 1969 to 1995, as supported by the following documentation [Appendix D through Appendix N].

Regional Board staff has reviewed the information included in Appendices D through N. In summary, the appendices indicated the following:

- CHT used PCE in its degreasing operations.
- Discharges of PCE from degreasing operations at the CHT site impacted soil at CHT. PCE was detected in soil samples collected at approximately 10 feet below ground surface (bgs) in the immediate vicinity of a degreaser, at a concentration of 7,514 µg/kg.
- CHT stored waste solvents in drums at their site and drums were transported to an off-site facility.

This information does not demonstrate that chlorinated solvent contamination at the Site soley originates from CHT. The Regional Board acknowledges that on-site discharges or releases of chlorinated solvents occurred at the CHT site as a result of their operations. The Regional Board issued a California Water Code section 13267 order dated May 5, 2010 to CHT to investigate the extent of impacted soil, soil gas, and groundwater.

7. *As shown in these building records, CHT performed vapor degreasing at the property from approximately 1969 through 1995, which necessitated the storage of hundreds of gallons of chlorinated solvents at any time on the property and the generation of significant quantities of waste solvent, such as 2,200 gallons per year in the 1989 record. Over this 26-year operational period, the records show that CHT had one degreaser in the eastern portion on the building (Detrex #19); a second degreaser in the central portion of the building (Item #81), which is the location that is the most consistent with depictions in the reports submitted by CHT to the CRWQCB-LAR; a third degreaser along the western end of the building; and possibly a fourth degreaser at an unidentified location along the northern edge of the building.*

   This information supports the presence of on-site source(s) of chlorinated solvents at the CHT facility/site that impacted soil, soil vapor, and groundwater beneath the CHT site. This information does not support the claim that there is no source of PCE contamination identified on the Site.

8. *In addition to the degreasing operations inside the building and the storage of waste PCE in the southwestern area of the property, it also appears that CHT utilized the northwestern portion of the property as an equipment storage and repair area based on review of the historical aerial photos and several reports (Appendices B and 0). Given that storage and repair of equipment occurred in this area of the site, it is likely that the cleaning of parts also occurred here, which is directly adjacent to the area of the Jalk Fee property where the highest PCE concentrations have been observed (Plate 1).*

   In addition to the equipment storage and repair area located in the northwestern portion of CHT's property, a trucking operations area was located at the Site. (See Regional Board response to Item No. 5).

9. *Regulatory oversight and inspections started to become more common in the late 1970s and early 1980s. These regulatory inspections demonstrate CHT's practices resulted in numerous documented releases and spills to the ground throughout at the property. The various inspections, investigation reports and violations are summarized below and documented in*

Appendices G, I, N and P through AC.

Regional Board staff has reviewed the information included in the referenced appendices. In summary, the appendices indicated the following:

- Wastewater was discharged from the cooling tower located on the northeast section of the CHT property to Norwalk Boulevard.
- Soil impacted with oil was encountered at the CHT property.
- Oil was encountered in a clarifier.
- Degreaser fires were reported.
- Soil in the immediate vicinity of the degreaser (inside the CHT building) is impacted with PCE at a concentration of 7,514 μg/kg.

This information does not change the Regional Board's conclusion that on-site sources of chlorinated solvents are located at the Site. The conclusion is based on soil data from B-11 and B-22 obtained from the Site, the "approximate location of former trucking operations area" at the Site, and the 2002 USEPA publication referenced in our response to Item No. 5.

10. *First, the 1968 blueprints ..... Therefore, these trenches would provide a preferential pathway directly from the degreasers to the northern edge of the CHT building and the southern boundary of the Jalk Fee property, allowing the migration of chlorinated solvent vapors (Appendix D). The CRWQCB-LAR reached much the same conclusion in its letter dated June 23, 2010 (Appendix A).*

    Soil, soil vapor, and groundwater data collected at the CHT site indicates the presence of at least one on-site source beneath the existing building.

    Likewise, data collected at the Site indicates the presence of at least two on-site sources, one at the southern side close to the property boundary with CHT, and another one at the central portion of the Site.

11. *Second, extensive assessment has been conducted in the southeastern portion of the Jalk Fee property and the northwestern portion of the CHT property, which has allowed for a thorough understanding of the near surface vadose zone lithology between the two properties. Two cross-sections were generated for the area to the west of the CHT building and surrounding Jalk Fee well MW6, where the maximum PCE concentrations have been detected on the Jalk Fee property (Appendix Z, Figures 5.1.1 and 5.1.2). In addition, plan view figures of the distribution of low (clay/silt) and high permeability soils (sand) at 6, 10 and 16 feet bgs of the CHT and Jalk Fee property boundary area show that a laterally continuous, shallow, low permeability silt/clay layer is present under much of the CHT property (Appendix AA, Figures 5.2.1, 5.2.2 and 5.2.3). This silt/clay layer starts to dip along the northern part of the CHT property and continues to dip northward onto the Jalk Fee property to a depth of 15 to 16 feet bgs. Soil above the silt/clay layer on the northern CHT property and on the Jalk Fee property is generally characterized as sand. It should be remembered that the Jalk Fee property was unpaved and essentially an open field until 2003. Therefore, chlorinated solvents released by CHT along the northern portion of the CHT property or directly released onto the Jalk Fee property would infiltrate downward through the higher*

permeability surface sand until reaching the low permeability unit and then would migrate along the northward dipping contact between the high and low permeability units onto the Jalk Fee property.

ExxonMobil's explanation of the migration of chlorinated solvents from the CHT site to the Site is not adequately supported. For example, in a cross section generated by Regional Board staff, including SVP-1 (southern part of the Site) and MW-2 (northern CHT), a silty layer dips from the southern part of the Site to the northern part of the CHT property. This silty layer would serve as a pathway for contaminants to migrate from the Site to CHT (Figure 3, enclosed).

The Report (Figure 5.1.2, enclosed) assumed that a silty layer on B14, extends laterally for approximately 55 feet towards MW6 (distance between B14 and MW6, both on CHT). Then, the silty layer would continue laterally from MW6 towards B11 (Site). This silty layer would serve as a migration pathway for VOCs to migrate from CHT (B14 and MW6) to the Site (B11). The silty layer that serves as a migration pathway extends vertically on B11 from approximately 24 to 39 feet bgs.

However, ExxonMobil's model cannot explain the vertical distribution of PCE on B11. PCE was detected in soil samples collected at 10 and 15 feet bgs at concentration of 5,360 micrograms per kilogram (μg/kg) and 11,000 μg/kg, respectively. However, in a soil sample collected at 35 feet bgs, PCE was detected at 937μg/kg (Figure 4, enclosed).

12. *Specifically, chlorinated solvents were measured in soil at concentrations from south to north of 2,517 mg/kg at 4 feet bgs at location T9A-1A (a trench excavation sample located 10 feet north of the property boundary), 350.8 mg/kg at 15 feet bgs at location EX2-26 (an excavation verification sample collected 30 feet north from the property line), and 59,800 mg/kg at 15 feet bgs at location GP-6 (a geophone sample located 45 feet north of the property boundary) (Appendix AC). These samples all occurred in sand, and the two samples collected at a depth of 15 feet bgs are located at the contact between the sand and clay/silt units. Specifically, sample EX2-26 is located along a sand-clay/silt basal contact, and the GP-6 sample from 15 feet bgs is located at a sand-clay/silt lateral contact. The relationship between the stratigraphic contacts and the distribution of elevated chlorinated solvent concentrations suggests that the solvent-containing soil in this area is derived from a lateral transport mechanism. This is further supported by the soil samples collected in the vicinity of location GP-6, which are significantly lower in total chlorinated solvent concentrations. Specifically, the two samples collected from location GP-6 at shallower depths (5 and 10 feet bgs) had total chlorinated solvent concentrations of 0.33 mg/kg and 0.021 mg/kg, respectively, and the soil sample collected above sample EX2-26 at 6 feet bgs [sample EX2-26(A)] had a total chlorinated solvent concentration of 0.715 mg/kg (Appendix AC). This distribution pattern indicates that surface releases of chlorinated solvents were not occurring in these areas, as surface releases would have resulted in similar to higher concentrations of chlorinated solvents with residual saturation in the shallower soil sample.*

Not all existing data collected to date supports ExxonMobil's explanation on the lateral migration of chlorinated solvents from the CHT site to the Site. For example, the soil type for boring SB-1, located at approximately 5 feet of T9A-1A was described as silt from ground surface to approximately 25 feet bgs. The soil type for soil boring SB-3, located at approximately 15 feet of GP-6 was described as silt from ground surface to approximately 39 feet bgs. The soil type description of SB-1 and SB-3 does not support ExxonMobil's assumption of the presence of a sand-silt contact at approximately 15 feet bgs, that serves as a pathway for VOCs to migrate from CHT to the Site.

13. *Furthermore, the presence of the elevated shallow detections abutting the CHT-ExxonMobil property line supports that chlorinated solvent release(s) occurred in the vicinity of the property line and transport occurred to the north onto the Jalk Fee property. This transport was likely facilitated by runoff from the CHT property (including roof runoff from the CHT building), which caused the movement of chlorinated solvents away from the property line onto the Jalk Fee property.*

    Soil data indicate that there are silty/clay layers dipping from the Site to the CHT site (see Regional Board responses to Items No. 11 and 12). Therefore, roof runoff from the CHT building would not facilitate all contaminant migration from the CHT site to the Site.

14. *Elevated concentrations of total petroleum hydrocarbons and chlorinated hydrocarbons, however, are generally not co-located across the majority of the Jalk Fee (Appendix AD, Figure 4.6). For example, the TPH concentrations in the northern excavation areas do not contain chlorinated solvents, whereas several of the near surface soil samples collected in the vicinity of the property line contain both elevated TPH and chlorinated solvents. Although the soil samples in the vicinity of the property line contain both chlorinated solvents and TPH, the respective concentrations are generally both low, or with either PCE or TPH significantly higher in concentration than the other constituent. These results reinforce the site conceptual model in which chlorinated solvents from CHT released along the northern portion of the CHT property or directly onto the Jalk Fee property infiltrated downward through the higher permeability surface sand, until reaching the low permeability unit, and then migrated along the northward dipping contact between the high and low permeability units onto the Jalk Fee property.*

    The existing soil and analytical data do not support ExxonMobil's site conceptual model. (See Regional Board responses to Items No. 11 and 12.) For example, PCE was detected at a concentration of 5,460 µg/kg (B22 at 10 feet bgs), and a concentration of 1,120 µg/kg (SVP7 at 5 feet bgs). B22 and SVP7 are located northwest of the excavation area, at approximately 140 and 90 feet north of the property boundary, respectively. These PCE concentrations at shallow depths indicate the presence of on-site release or discharge at the Site and cannot be explained with ExxonMobil's site conceptual model.

15. *Based on the evidence provided, it has been demonstrated that CHT is the source of the chlorinated solvents observed in soil beneath the CHT, Jalk Fee and 10711 Norwalk Blvd properties. Therefore, EMES, on behalf of ExxonMobil, requests that the CRWQCB-LAR identify CHT as the discharger and responsible party for the chlorinated solvents identified on the CHT, Jalk Fee and 10711 Norwalk Boulevard properties; rescind its Order dated August 24, 2010 requiring ExxonMobil to assess and monitor the extent of chlorinated solvents; and formally remove ExxonMobil as the named discharger and responsible party for the chlorinated solvent.*

> The Regional Board acknowledges that CHT is a source of chlorinated solvents found at the CHT site, and contaminant plumes in groundwater found at both properties (CHT, and the Site) may have commingled. However, data collected and submitted to date (including, but not limited to, the contaminant fate and transport, and configuration of the plumes in soil matrix, soil vapor, and groundwater) have not indicated that the sources of chlorinated solvents in soil and groundwater found beneath the Site and suspected beneath the 10711 Norwalk Boulevard property properties, solely originated at or from the CHT site. To the contrary, the data demonstrates that there is an on-site discharge/release of chlorinated solvents that is independent of the chlorinated solvents on the CHT site.

In summary, based on existing soil matrix and soil vapor data collected at the Site and in the immediate vicinity including the northern portion of the CHT property, the Regional Board continues to hold that ExxonMobil has discharged, discharges, or is suspected of having discharged waste that could affect the quality of waters of the state. Therefore, the Regional Board is not rescinding its Order dated August 24, 2010, and the December 21, 2011 amendment to the Order, requiring ExxonMobil Environmental Services to adequately define the vertical and lateral extent of VOCs in soil matrix, soil vapor, and groundwater, originating from or encountered at the Site. Pursuant to the Order, you are required to continue soil matrix, soil gas and groundwater investigations to define the vertical and lateral extent of contamination originating from the Site.

If you have any questions, please contact Mr. Luis Changkuon, Project Manager, at (213) 576-6667 or luis.changkuon@waterboards.ca.gov.

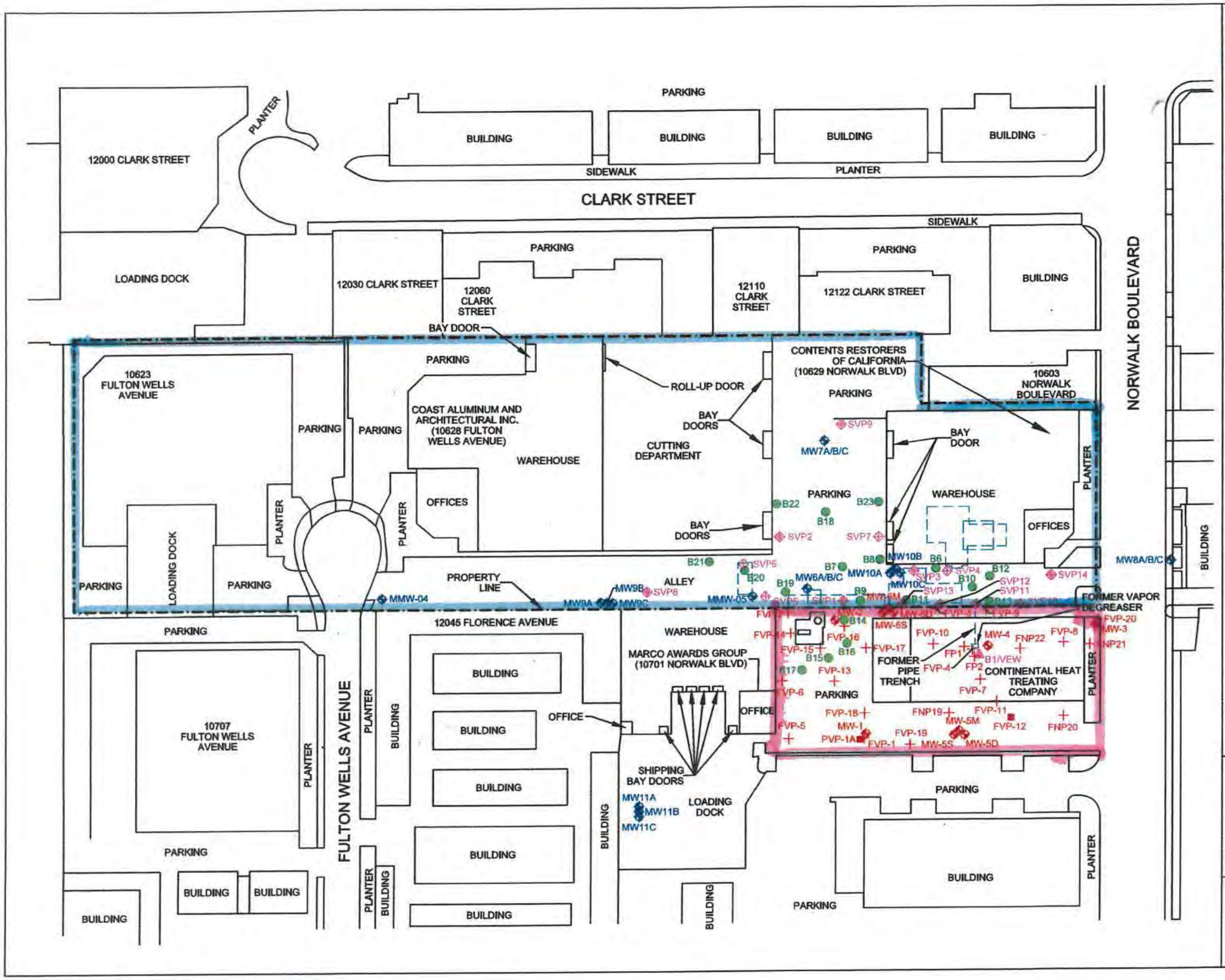
Sincerely,

Samuel Unger

Samuel Unger, P.E.
Executive Officer

Enclosures: Figure 1: Site Map
Figure 2: Map of the Former Jalk Fee site
Figure 3: Cross section SVP1 – MW2
Figure 5.1.2
Figure 4: Soil concentrations on cross section 5.1.2

cc: Mr. James Anderson, Cardno ERI
Mr. John Maple
Ms. Michelle F. Smith
Mr. Thomas Clark, Coast Aluminum and Architectural, Inc.
Mr. William Macnider, CSI Electric Contractors
Mr. James Stull, Continental Heat Treating
Mr. Michael Francis, Demetriou, Del Guercio, Springer & Francis, LLP
Ms. Ashley Arthur/Mr. Howard Schwimmer, Rexford Industrial Realty, LP
Mr. Jeremy Jungreis, Rutan & Tucker, LLP
Mr. Rick Fero, Fero Environmental Engineering, Inc.
Mr. Wayne Praskins, United States Environmental Protection Agency
Mr. Gene Lucero, Omega Chemical Site Potentially Responsible Parties Organized Group



EXPLANATION

◈	MW11C	Groundwater monitoring well
◈	MW8A/B/C	Nested groundwater monitoring well
◈	MW-6S	Continental Heat Treating groundwater monitoring well
+	FVP-20	Continental Heat Treating soil vapor sampling probes
▲	B1/VEW	Soil vapor extraction well
⊕	SVP7	Soil vapor sampling well
◈	SVP14	Deep multi-depth soil vapor well
◈	SVP13	Shallow multi-depth soil vapor well
■	PVP-1A	Continental Heat Treating soil sample location
●	B23	Soil boring

N

SOURCE:
Modified from a map provided by GOOGLE EARTH

APPROXIMATE SCALE

0 120 240
FEET

FN11550006

GENERALIZED SITE PLAN

FORMER EXXONMOBIL JALK FEE PROPERTY
10607 Norwalk Boulevard
Santa Fe Springs, California

Cardno ERI
Shaping the Future

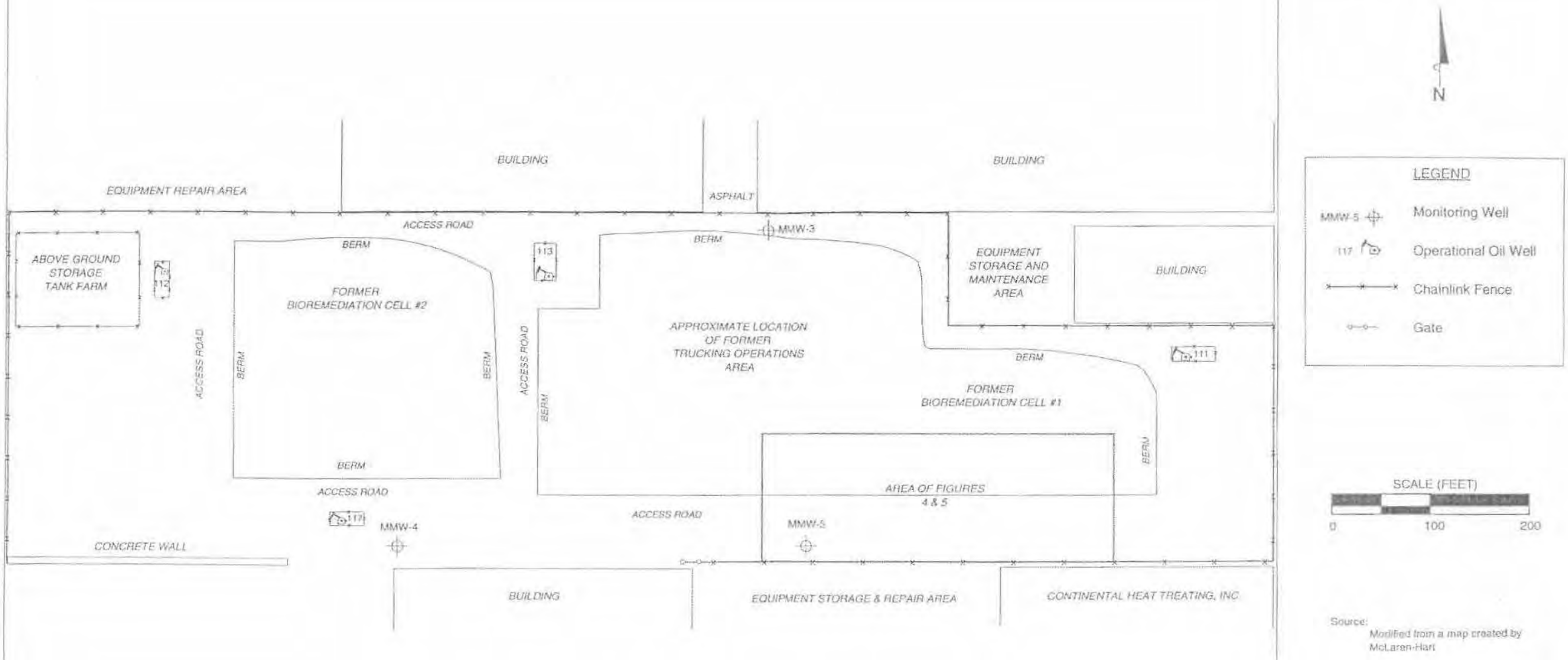
PROJECT NO.
1155

PLATE
1

DATE: 03/24/15

🟦 Jalk Fee site

🟥 Continental Heat Treating site



Source:
Modified from a map created by McLaren-Hart

SITE PLAN

Mobil Jalk Fee Property
10607 Norwalk Boulevard
Santa Fe Springs, California

ALTON GEOSCIENCE
Irvine, California

FIGURE 2

23-0134 SITE 3/13/97 jrw

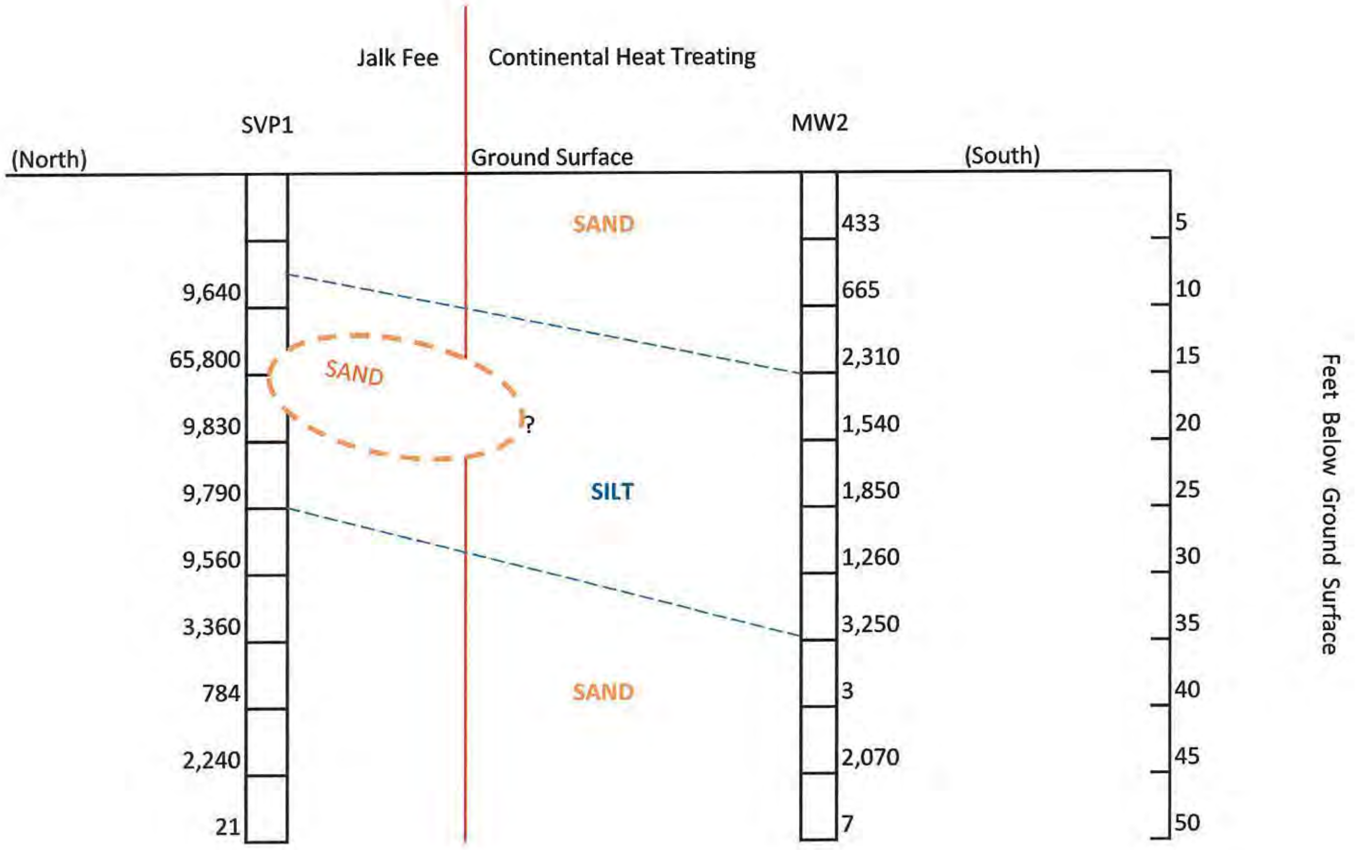


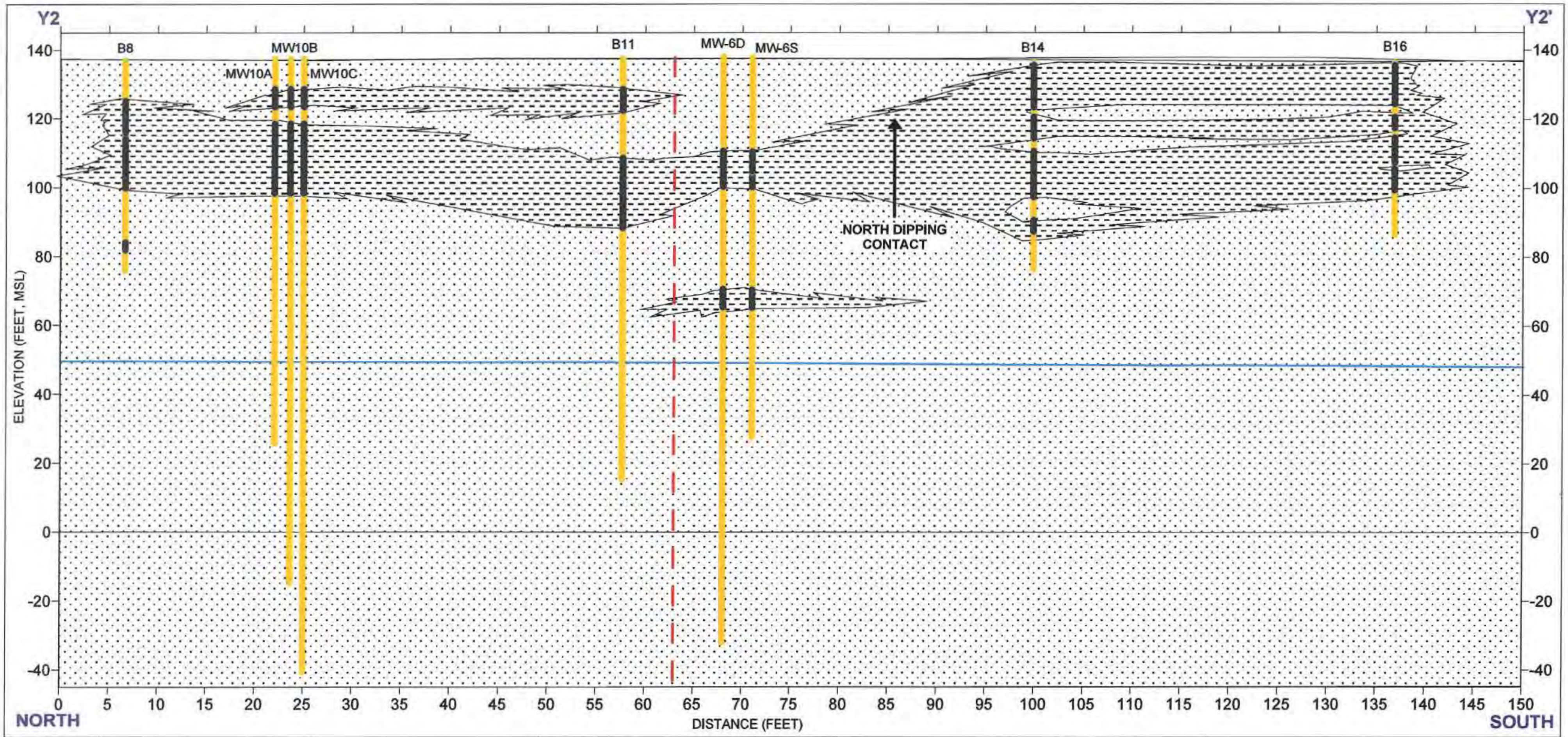
FIGURE 3

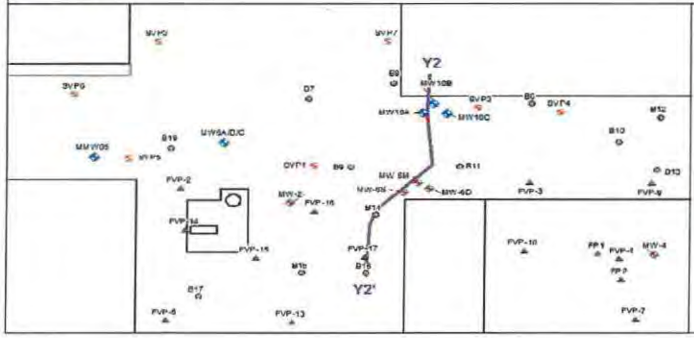
Cross Section
SVP1 - MW2
Former Jalk Fee Property
10607 Norwalk Boulevard
Santa Fe Springs, CA

Note: Approximate horizontal distance between SVP1 and MW2 is 30 Feet

LEGEND

9,460	Tetrachloroethe concentration in soil (micrograms per kilogram)
────	Property Boundary
SVP1	Located at Jalk Fee
MW2	Loctaed at Continental Heat Treating
- - - -	Inferred contact





Legend

▮	SAND LAYER
▮	SILT LAYER
—	GROUNDWATER ELEVATION
– –	PROPERTY BOUNDARY
⁘	SAND
▤	SILT

Notes:
1. All locations and dimensions are approximate.
2. Well diameters are not drawn to scale.
3. MSL - Mean Sea Level.
4. Groundwater elevations were take in November 2012.
5. MW-6S and MW-6D share the same location and are separated to show detail.
6. MW10A, MW10B, and MW10C share the same location and are separated to show detail.

NewFields

600 Jefferson St., Suite 1040
Houston, Texas 77002
(713) 357-5244

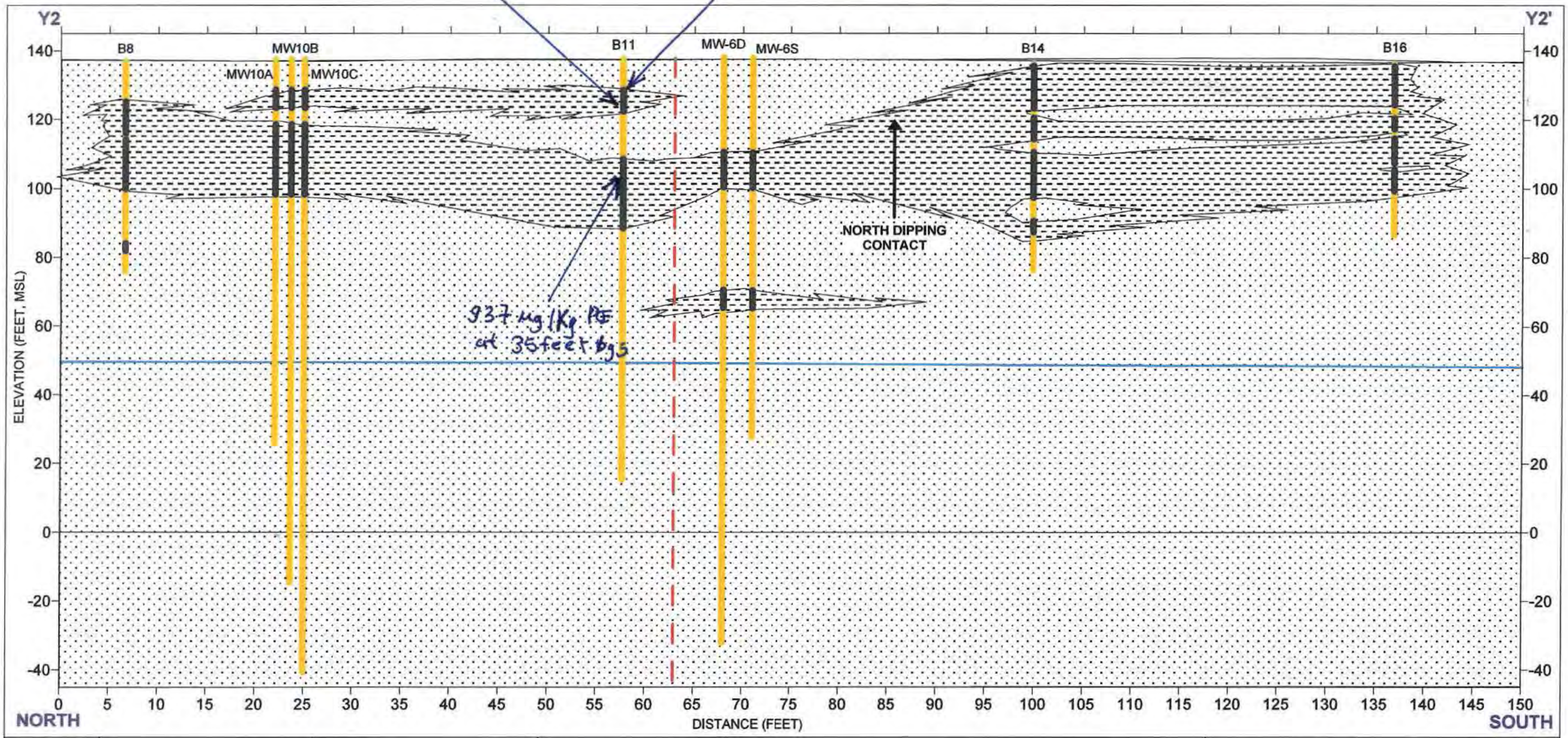
FIGURE 5.1.2
Y2 - Y2'
CROSS SECTION
(NORTH - SOUTH)

Former ExxonMobil, Jalk Fee Property
10607 Norwalk Boulevard,
Santa Fe Springs, CA

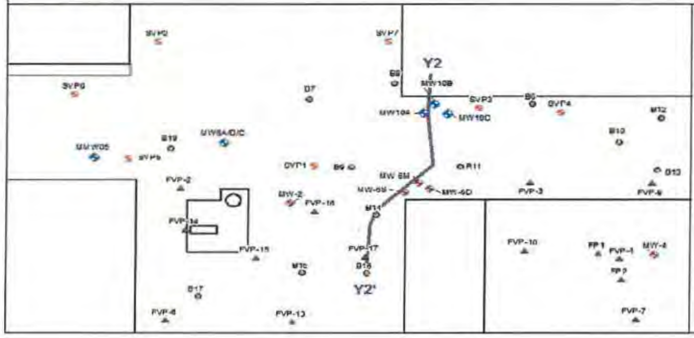
FIGURE 4

11,000 μg/Kg PCE
at 15 feet bgs

5,360 ug/Kg PCE
at 5 feet bgs



937 μg/Kg PCE
at 35 feet bgs



Legend

🟨	SAND LAYER
▮	SILT LAYER
—	GROUNDWATER ELEVATION
- -	PROPERTY BOUNDARY
⠿	SAND
▤	SILT

Notes:
1. All locations and dimensions are approximate.
2. Well diameters are not drawn to scale.
3. MSL - Mean Sea Level.
4. Groundwater elevations were take in November 2012.
5. MW-6S and MW-6D share the same location and are separated to show detail.
6. MW10A, MW10B, and MW10C share the same location and are separated to show detail.

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FIGURE 5.1.2
Y2 - Y2'
CROSS SECTION
(NORTH - SOUTH)

Former ExxonMobil, Jalk Fee Property
10607 Norwalk Boulevard,
Santa Fe Springs, CA

APPENDIX B

AERODATA PHOTO INTERPRETATION REPORT

Production and Interpretation of Aerial Photographs Covering
the Jalk Fee Site
in Santa Fe Springs, California

Randall Grip

Aero-Data Corporation LLC

February 2, 2017

Introduction

Aero-Data Corporation was engaged to review two historical aerial photographic dates of photography, 2/19/1983 and 4/14/1983, covering the location of a former oil field ("Site") in Santa Fe Springs, California. Specifically, we were asked to review activities on the property and produce imagery for viewing and analysis.

Statement of Qualifications

My name is Randall W. Grip. I have a Bachelor of Science Degree in Geography from Louisiana State University. I am vice-president of Aero-Data Corporation. Aero-Data specializes in aerial mapping and environmental studies using aerial photography and historical maps. Over the past 20 years, I have provided expert photo-interpretation and photogrammetry services for environmental assessment purposes. During this work, I have participated in studies and obtained and interpreted aerial photographs of sites throughout the United States as well as in other foreign nations. Attachment B is my current resume.

My expertise is in review and analysis of readily available aerial photography. The processes I use include research and acquisition of stereoscopic photography, high resolution photogrammetric scanning, geo-registration of stereo images, and rectified image production.

Information Considered in Forming Opinions

My opinions are based upon aerial photography of the Site as well as my experience and training.

Aerial photography was acquired of the Site from publicly available sources. The two dates reviewed are 2/19/1983 from Continental Aerial Photo and 4/14/1983 from the UC Santa Barbara Library.

Production of Geo-Registered Images and Maps

I have produced digital stereoplotter based geo-registered imagery both dates of aerial photography obtained for this expert report. The imagery is included in Attachment A.

Interpretations by Date of Photos

This report is primarily focused on two areas: an area near the center of the property and an area to the south of the property boundary which contains a vertical and horizontal tank.

2/19/1983

Four small (less than 20'x7') storage sheds are visible in the center of the property boundary. Three access pathways to this area from the south are visible. Light vehicles (trucks and cars) are visible throughout the focus area. A parked 18-wheeler and a grader are visible west and northwest of the sheds. Six parked trailers are visible south and southwest of the westernmost sheds. There is no indication of vertical or horizontal storage tanks near the sheds or trailers.

A horizontal and vertical tank are visible approximately 14 feet south of the property line. The horizontal tank measures approximately 8 feet wide and 20 feet long. The vertical tank is approximately 7.5 feet in diameter and is 36 feet from base to top.

4/14/1983

The conditions on the Site are relatively unchanged from the previous date of imagery taken two months earlier.

The four small storage sheds remain visible in the center of the property boundary. Three access pathways to this area from the south remain visible. Light vehicles (trucks and cars) are visible throughout the focus area. A parked 18-wheeler is visible northwest of the sheds. The grader is no longer visible. Six parked trailers are visible south and southwest of the westernmost sheds. There is no indication of vertical or horizontal storage tanks near the sheds or trailers.

A horizontal and vertical tank are visible 14 feet south of the property line. The horizontal tank measures approximately 8 feet wide and 20 feet long. The vertical tank is approximately 7.5 feet in diameter and is 36 feet from base to top.

Methods and Materials

Aerial research and acquisition

The historical aerial photography study of the Site began with research for available photo coverage from publicly available vendors. The photo coverage was then obtained in the form of frames consisting of vertical stereoscopic photography in a 9”x9” format.

Setting up the stereomodels

Two or more raster images for each stereo date of photography were then imported into a digital stereoplotter capable of providing stereoscopic viewing of the images at magnification levels ranging from 1x to 128x. The digital stereoplotter also allows precise mapping of significant environmental features, which are interpreted, in the 3-D imagery.

Ground control (UTM Zone 11N NAD83 Meters) for the initial stereo model, was derived from the georeferenced imagery and USGS quad maps of the area. Distant mapped features, hundreds of feet off the Site but which were also visible in the aerial photography, were measured (coordinates derived) from the georeferenced imagery and used as ground control points.

The coordinates of each selected visible ground control point were then entered in a control point file in the digital stereoplotter. The floating dot (measuring point) of the stereoplotter was carefully positioned by the operator with the hand controller, one point at a time, onto each of the visible control points and the coordinates of that point (from the ground control point file) were assigned to the image. When sufficient control points had been visited, accepted and the model checked for residual errors, the stereo model was then confirmed to be level, scaled and locked into the coordinate system. Thus, accurate measurements of heights and distances could now be made within the stereo model area by using the digital stereoplotter.

Other stereo models for the dates of photography were then setup using ground control points derived from the initial stereo model. Thus, the stereo models for all dates accurately register one to another allowing the photo interpreter to detect and map changed areas.

Rectified Image Production

Next, using the stereomodels and digital stereoplotter, a rectified image was produced for each date of photography. A rectified image is a two-dimensional raster image produced from one or more frames of vertical aerial photography such that most of the distortion caused by tip and tilt in the mapping camera has been removed, and the resulting raster image is accurately registered to a chosen coordinate system.

Photointerpretation

Photointerpretation of the Site was conducted primarily on the digital stereoplotter using the same digital stereo models used to produce the rectified images. The digital stereoplotter allows me to view the Site in 3-D on a stereo computer monitor or large computer projection screen, normally at magnification factors ranging from 8X to 32X while identifying and mapping the outlines of features.

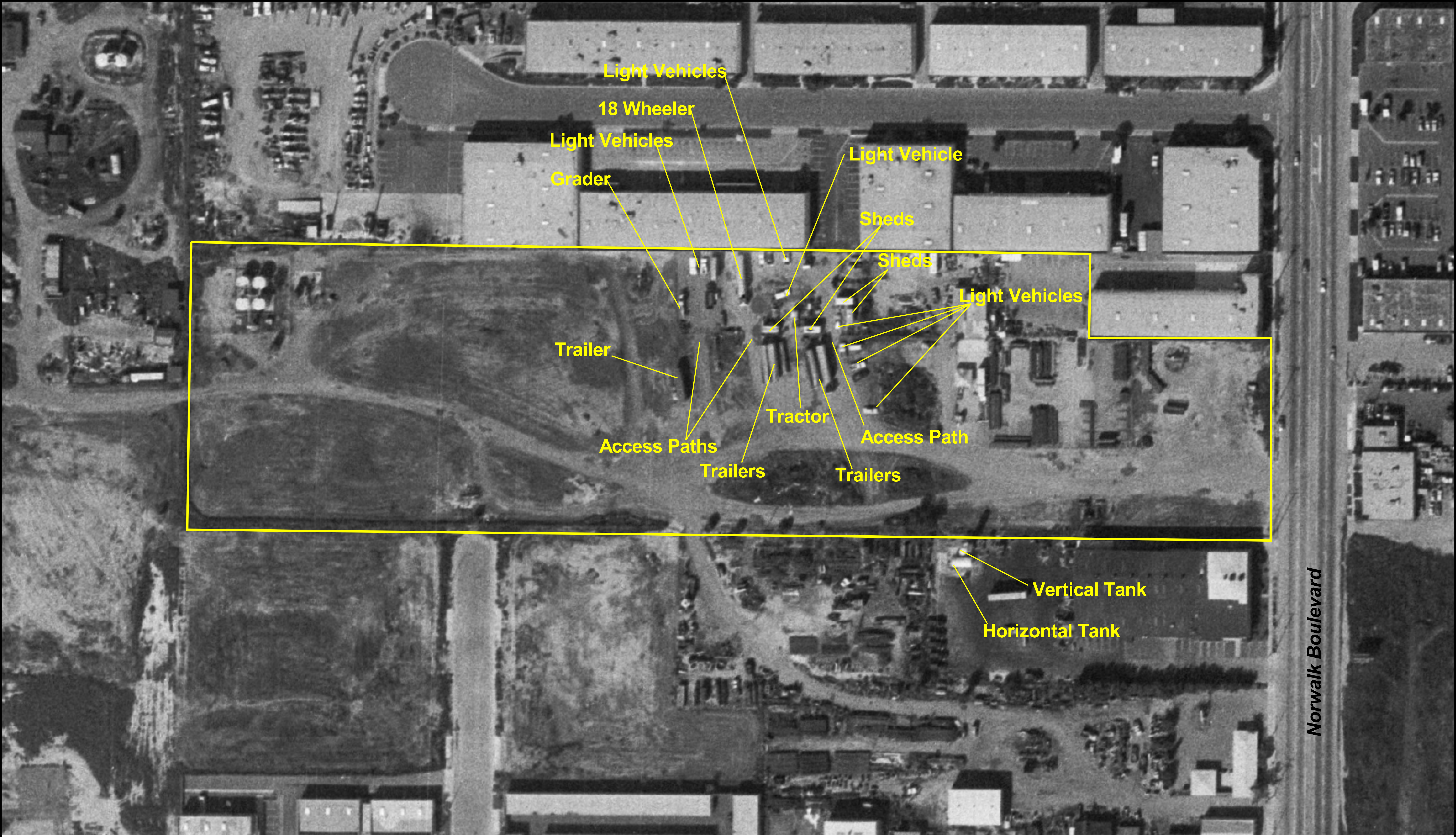
The interpretation done with the digital stereoplotter captured all features in their true position. Stereo models for different dates were viewed and rapidly toggled back and forth on the stereo display to facilitate the detection of changes that occurred to the Site over time. The digital stereoplotter (soft copy) when used in this manner is an extremely powerful photointerpretation tool.

Geographic Information System (GIS)
The rectified images were next imported into the geographic information system (GIS).

The interpreted images located in the interpretations section of this report contain specific information and opinions which must be viewed by the reader to fully understand this report. These opinions supplement the textual opinions identified in my report. The mapped images (Attachment A) constitute the primary source of information in this report. They were prepared so that they may be displayed using computer generated prints or a computer projection system. The GIS provides a wide range of capabilities such as zooming, turning themes (layers) on and off and measuring distances. The interpreted images and maps will be used as exhibits at trial in my testimony. There may be additional demonstrative exhibits used at trial as well.

I reserve the right to revise and supplement this report.

Attachment A



2/19/1983
Jalk Fee

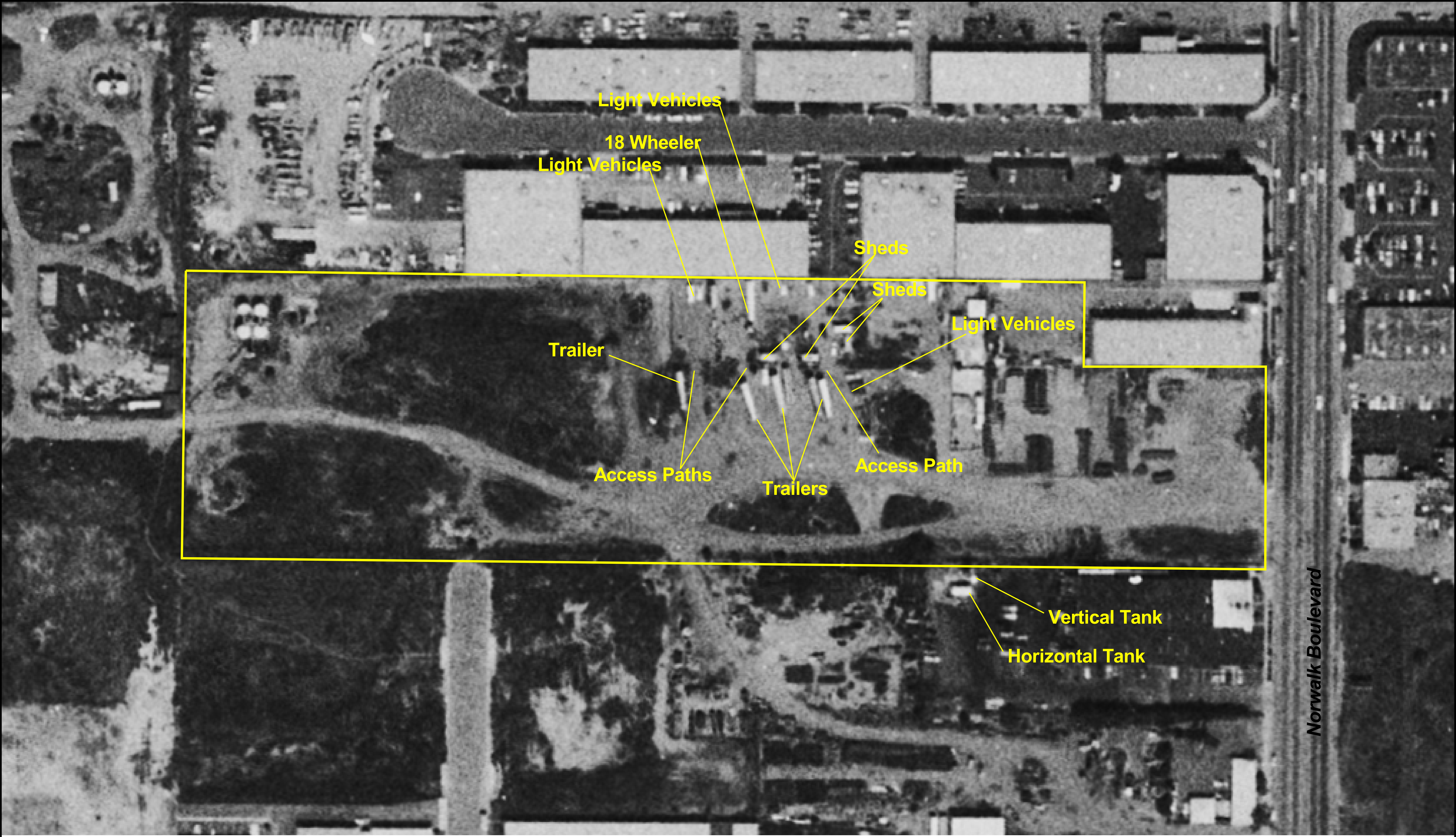
Photo Source: Continental

🟨 Approximate Property Boundary

N
W E
S

100 0 100 Feet

AERO-DATA CORP.
ENVIRONMENTAL
REMOTE SENSING CONSULTING SERVICES
AERIAL PHOTO ACQUISITION
INTERPRETATION and MAPPING



4/14/1983
Jalk Fee
Photo Source: UCSB

☐ Approximate Property Boundary

N
W E
S

100 0 100 Feet

AERO-DATA CORP.
ENVIRONMENTAL
REMOTE SENSING CONSULTING SERVICES
AERIAL PHOTO ACQUISITION
INTERPRETATION and MAPPING

Attachment B

Randall Wayne Grip, Vice-President, Aero-Data Corporation

Education: Louisiana State University, BS in Geography (1996); Mapping Sciences emphasis.

Mr. Grip's course work included graduate level courses in photo interpretation, GIS mapping, GPS surveying and remote sensing with an emphasis in environmental applications.

Professional Experience:

September 2003 to Present — Aero-Data Corporation, Baton Rouge, LA,
Vice-President

As company vice-president, Mr. Grip has directed all aspects of projects including photographic printing, photo interpretation, photogrammetry, and image research and acquisition. He has experience in digital image production and geographic information systems using Digital Photogrammetric Workstations and ESRI GIS. Mr. Grip has been involved in approximately two hundred mapping projects while at Aero-Data. During this time he has been trained and supervised by Wayne M. Grip, Aero-Data's co-founder and principal owner.

Aero-Data specializes in aerial photography and mapping, environmental photointerpretation, and geographic information systems. The company was founded in 1983. It has completed over fifty oil field studies since its founding. Aero-Data has a complete photo laboratory and two airplanes as well as aerial mapping cameras, GPS surveying and navigation receivers, and digital stereoplotter/photointerpretation work stations.

Aero-Data's projects number over 700 sites in 32 different states, to date. They include historical aerial photography-based hazardous waste site investigations; oil field investigations; environmental audits; accident site investigations; annual site documentation using aerial photography and video; contour mapping of plant sites; stockpile volume determinations; geographic information systems; and coastal zone erosion studies.

Aero-Data's client list includes many of the major corporations and law firms in the United States as well as government agencies such as the U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, U.S. Soil Conservation Service, U.S. Department of Justice, the Louisiana Department of Transportation and Development, the Louisiana Department of Natural Resources, and the Louisiana Department of Environmental Quality.

July 1995 to September 2003 — Aero-Data Corporation, Baton Rouge, LA,
Project Manager III

August 1990 to July 1995 — Aero-Data Corporation, Baton Rouge, LA,
Photolab Specialist

While obtaining his university degree, Mr. Grip worked as a photo lab specialist and aerial camera operator for Aero-Data Corporation.

APPENDIX C

SOIL VAPOR TABLE AND FIGURE FROM MCLAREN HART REPORT

Table 6

Soil Gas Survey Analytical Results for Former Trucking Operations Area (Task 3)

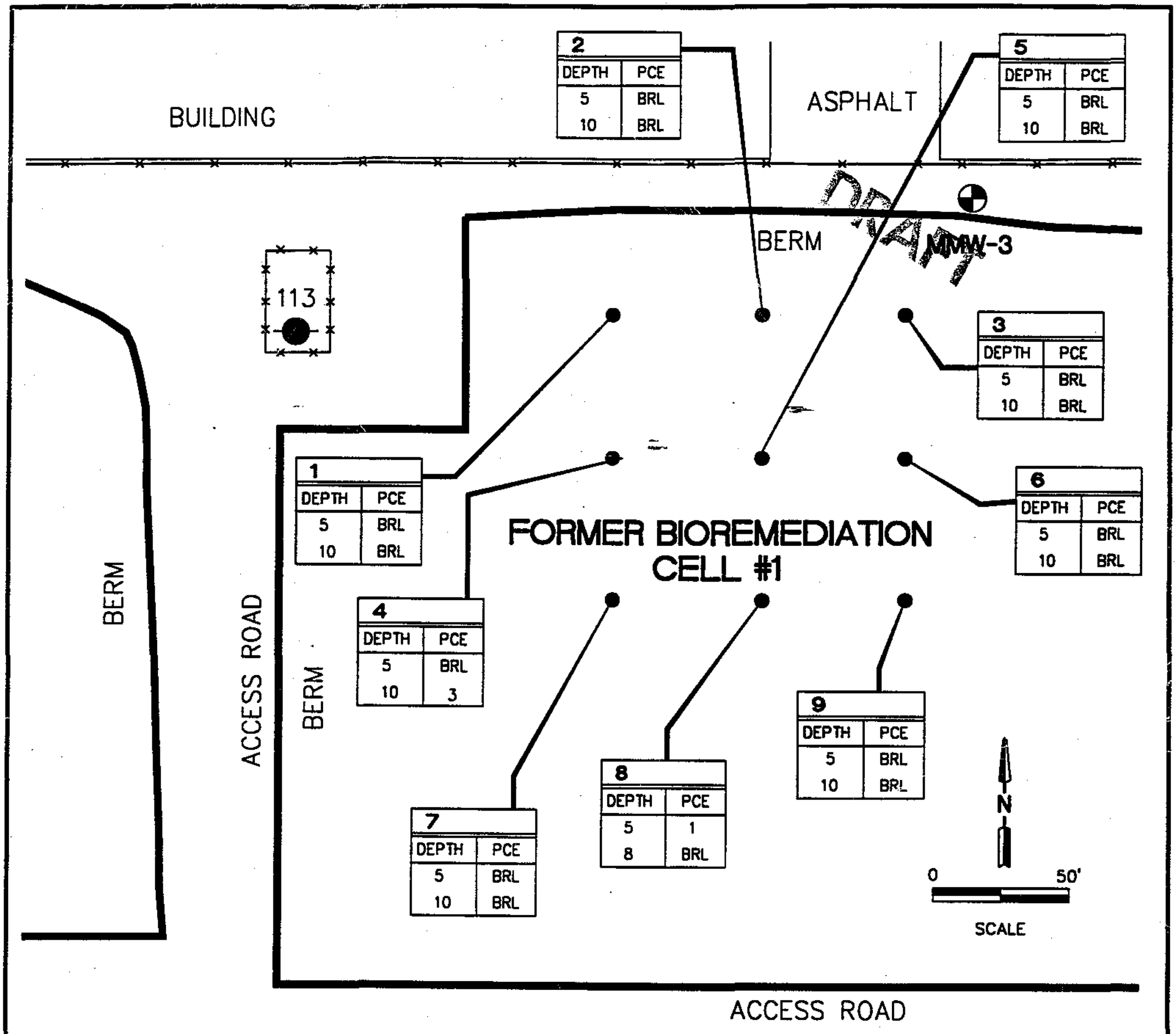
Mobil Jalk Fee Property, Santa Fe Springs, California

Soil Boring Identification	Depth (feet)	Date Sampled	EPA Method 8010 (ppb)				
			cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Trichloroethene	Tetrachloroethene	Other Halogenated Volatile Organic Compounds
SG-1	5	1/2/96	BRL	BRL	BRL	BRL	BRL
SG-1	10	1/2/96	BRL	BRL	BRL	BRL	BRL
SG-2	5	1/2/96	BRL	BRL	BRL	BRL	BRL
SG-2	10	1/2/96	BRL	BRL	BRL	BRL	BRL
SG-3	5	1/2/96	BRL	BRL	BRL	BRL	BRL
SG-3	10	1/2/96	BRL	BRL	BRL	BRL	BRL
SG-4	5	1/2/96	BRL	BRL	BRL	BRL	BRL
SG-4	10	1/2/96	BRL	BRL	BRL	3	BRL
SG-5	5	1/2/96	BRL	BRL	BRL	BRL	BRL
SG-5	10	1/2/96	BRL	BRL	BRL	BRL	BRL
SG-6	5	1/2/96	BRL	BRL	BRL	BRL	BRL
SG-6	10	1/2/96	BRL	BRL	BRL	BRL	BRL
SG-7	5	1/2/96	BRL	BRL	BRL	BRL	BRL
SG-7	10	1/2/96	BRL	BRL	BRL	BRL	BRL
SG-8	5	1/2/96	BRL	BRL	BRL	1	BRL
SG-8	8	1/2/96	BRL	BRL	BRL	BRL	BRL
SG-9	5	1/2/96	BRL	BRL	BRL	BRL	BRL
SG-9	10	1/2/96	BRL	BRL	BRL	BRL	BRL

BRL - Below Reporting Limit

[1] - Cleanup criteria equals the maximum contaminant level (MCL) times 10

Created by: M. Williams
Reviewed by: E. Ferguson



LEGEND

NOTES:	SITE MAP MODIFIED FROM LEVINE-FRICKE (1991c).
●-113	OPERATIONAL OIL WELL
—×—	CHAIN LINK FENCE
●	SOIL GAS SAMPLE LOCATION
(ppb)	CONCENTRATIONS IN PARTS PER BILLION

McLaren Hart
16755 VON KARMAN AVENUE, IRVINE, CA 92714
TEL. (714)756-2667 FAX (714) 756-8460

FIGURE 15
SOIL GAS SURVEY RESULTS
FORMER TRUCKING OPERATING AREA
MOBIL-JALK FEE PROPERTY
10307 NORWALK BLVD.
SANTA FE SPRINGS, CALIFORNIA

DRAWN BY: E. Mureson	DATE: 10-5-94	PROJECT NAME: MOBIL	
CHECKED BY: E. Ferguson	DATE: 02/01/96	PROJECT NUMBER: 03.001382.000	
APPROVED BY: T. Bubier	DATE: 02/01/96	REVISION DATE: 01/31/96 vlb	DRAWING FILE # 15

APPENDIX D

SOIL VAPOR PARTITION MODEL AND CALCULATIONS

Jalk Fee - Soil Vapor Partitioning Model for Soil Boring B22 and Soil Vapor well SVP2

$$C_{soil} = C_{v(eq)}[\theta_w + k_d\rho_s + H\theta_v]/H\rho_s \qquad \text{(ASTM E 1943-98)}$$

Term definition and units		Value		
Csoil = total soil concentration of PCE in g PCE/g soil		1.40883E-06	gPCE/gsoil	
Cv(eq) = concentration of PCE in soil vapor in g/cm3 (SVP2)	1500000 ug/m3	0.0000015	g/cm3	site data
θw = volumetric content of pore water in cm3 water/cm3 soil		0.12		ASTM E 1943-98
kd = PCE soil/water partition coefficient in cm3/g; kd = Koc X foc		0.4745	cm3/g	Koc*foc
Koc = PCE organic carbon/water partition coefficient in cm3/g		94.9	cm3/g	ORNL Risk Assessment Information System
ρs - soil bulk density in g soil/cm3 soil		1.5	g/cm3	prof. judgement
H = PCE unitless Henry's Law constant		0.724		ORNL Risk Assessment Information System
θv = volumetric content of vapor in cm3 vapor/cm3 soil		0.26		ASTM E 1943-98
foc = fraction organic carbon (unitless)		0.005		prof. judgement

Predicted Adsorbed-Phase PCE Concentration: **1.4 mg/kg of PCE in soil**

<u>Sensitivity Analysis (varying only one parameter at a time in the Csoil equation):</u>

	Minimum Parameter Value	Minimum Predicted PCE Value (mg/kg)	Maximum Parameter Value	Maximum Predicted PCE Value (mg/kg)	
θw = volumetric content of pore water in cm3 water/cm3 soil	0.05	1.3	0.5	1.9	Typical porosity range for sand to silt
Koc = PCE organic carbon/water partition coefficient in cm3/g	50	0.9	152	2.0	Max is CA SWRCB Default value
foc = fraction organic carbon (unitless)	0.002	0.8	0.02	4.4	Min is NJDEP Default Value
θv = volumetric content of vapor in cm3 vapor/cm3 soil	0.05	1.2	0.5	1.6	Inverse of volumetric content of pore water
H = PCE unitless Henry's Law constant	0.463	2.1	0.724	1.4	USEPA online tool for Site Assessment - Henry's Law Calculator
ρs - soil bulk density in g soil/cm3 soil	1.4	1.4	1.75	1.3	Literature values for sand to silt

<u>Sensitivity Analysis (varying all parameters in the Csoil equation):</u>

Predicted Range of Adsorbed-Phase PCE Concentrations:

Using all Minimum Parameter Values: 0.3 mg/kg of PCE in soil

Using all Maximum Parameter Values: 11.5 mg/kg of PCE in soil

Jalk Fee - Soil Vapor Partitioning Model for Soil Vapor well SVP7

$$C_{soil} = C_{v(eq)}[\theta_w + k_d\rho_s + H\theta_v]/H\rho_s \qquad \text{(ASTM E 1943-98)}$$

Term definition and units		Value		
Csoil = total soil concentration of PCE in g PCE/g soil		3.75687E-06	gPCE/gsoil	
Cv(eq) = concentration of PCE in soil vapor in g/cm3 (SVP7)	4000000 ug/m3	0.000004	g/cm3	site data
θw = volumetric content of pore water in cm3 water/cm3 soil		0.12		ASTM E 1943-98
kd = PCE soil/water partition coefficient in cm3/g; kd = Koc X foc		0.4745	cm3/g	Koc*foc
Koc = PCE organic carbon/water partition coefficient in cm3/g		94.9	cm3/g	ORNL Risk Assessment Information System
ρs - soil bulk density in g soil/cm3 soil		1.5	g/cm3	prof. judgement
H = PCE unitless Henry's Law constant		0.724		ORNL Risk Assessment Information System
θv = volumetric content of vapor in cm3 vapor/cm3 soil		0.26		ASTM E 1943-98
foc = fraction organic carbon (unitless)		0.005		prof. judgement

Predicted Adsorbed-Phase PCE Concentration: **3.8** **mg/kg of PCE in soil**

<u>Sensitivity Analysis (varying only one parameter at a time in the Csoil equation):</u>

	Minimum Parameter Value	Minimum Predicted PCE Value (mg/kg)	Maximum Parameter Value	Maximum Predicted PCE Value (mg/kg)	
θw = volumetric content of pore water in cm3 water/cm3 soil	0.05	3.5	0.5	5.2	Typical porosity range for sand to silt
Koc = PCE organic carbon/water partition coefficient in cm3/g	50	2.5	152	5.3	Max is CA SWRCB Default value
foc = fraction organic carbon (unitless)	0.002	2.2	0.02	11.6	Min is NJDEP Default Value
θv = volumetric content of vapor in cm3 vapor/cm3 soil	0.05	3.2	0.5	4.4	Inverse of volumetric content of pore water
H = PCE unitless Henry's Law constant	0.463	5.5	0.724	3.8	USEPA online tool for Site Assessment - Henry's Law Calculator
ρs - soil bulk density in g soil/cm3 soil	1.4	3.8	1.75	3.6	Literature values for sand to silt

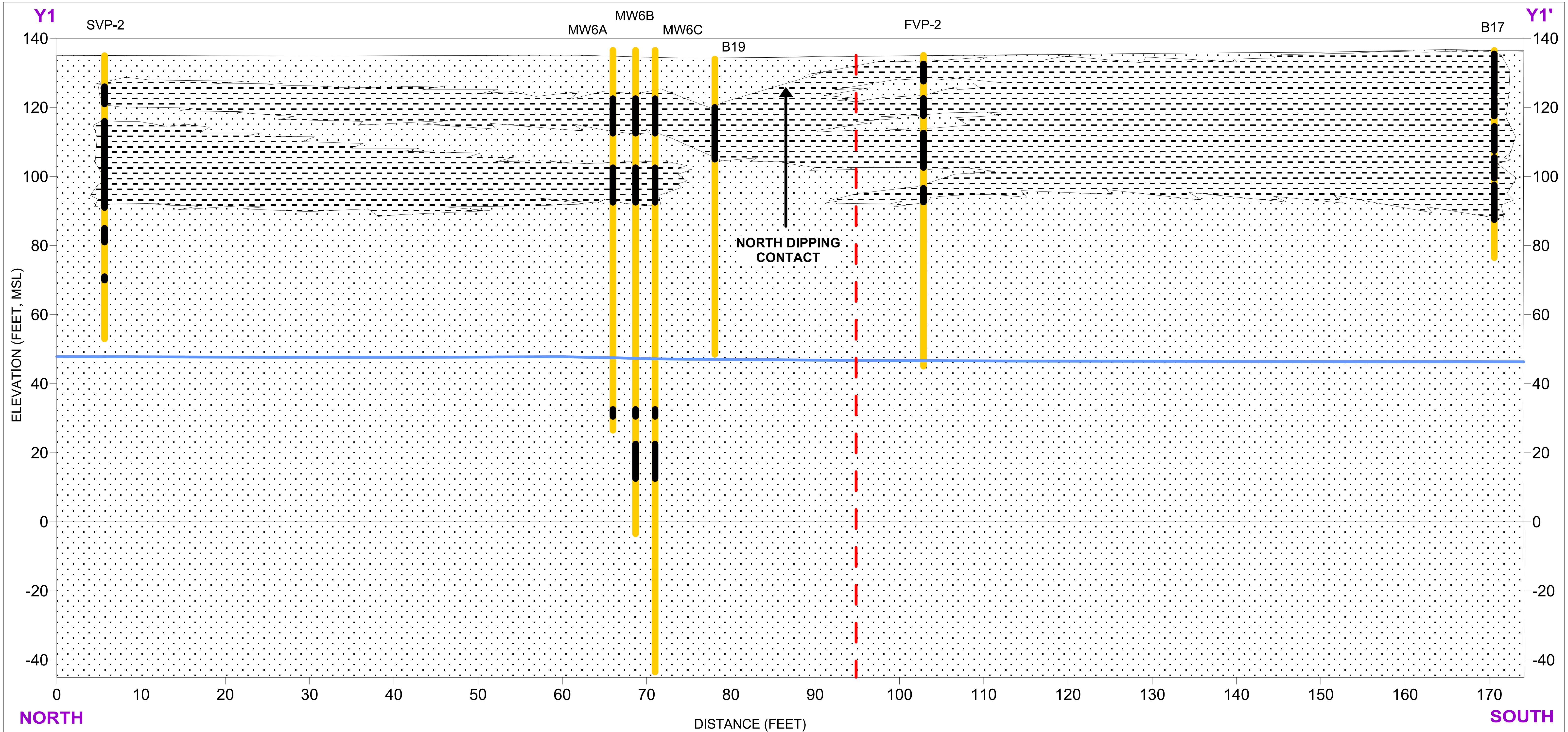
<u>Sensitivity Analysis (varying all parameters in the Csoil equation):</u>

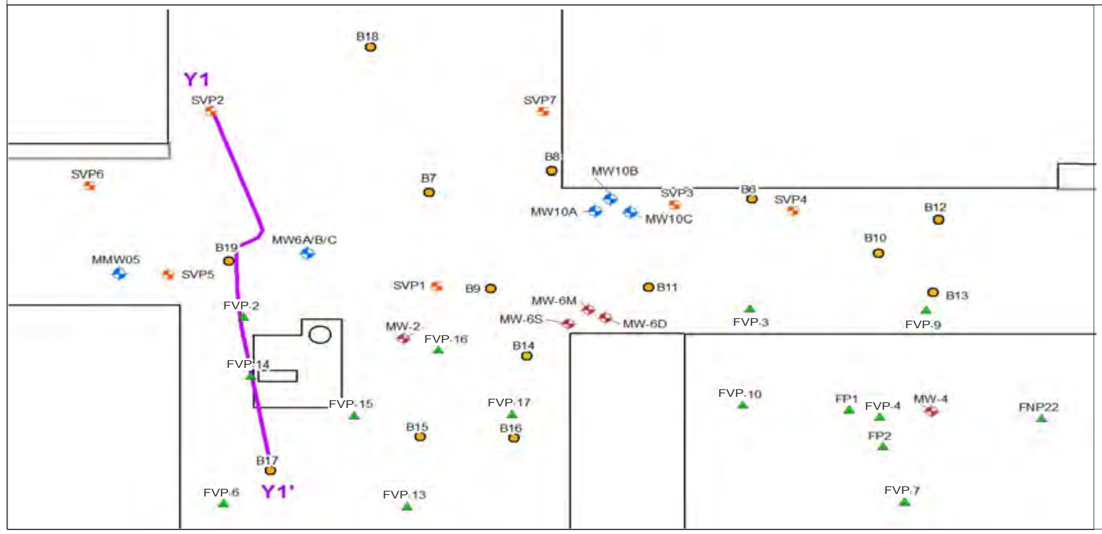
Predicted Range of Adsorbed-Phase PCE Concentrations:

Using all Minimum Parameter Values:	**1.3**	**mg/kg of PCE in soil**
Using all Maximum Parameter Values:	**19.5**	**mg/kg of PCE in soil**

APPENDIX E

NEWFIELDS FIGURES





Legend

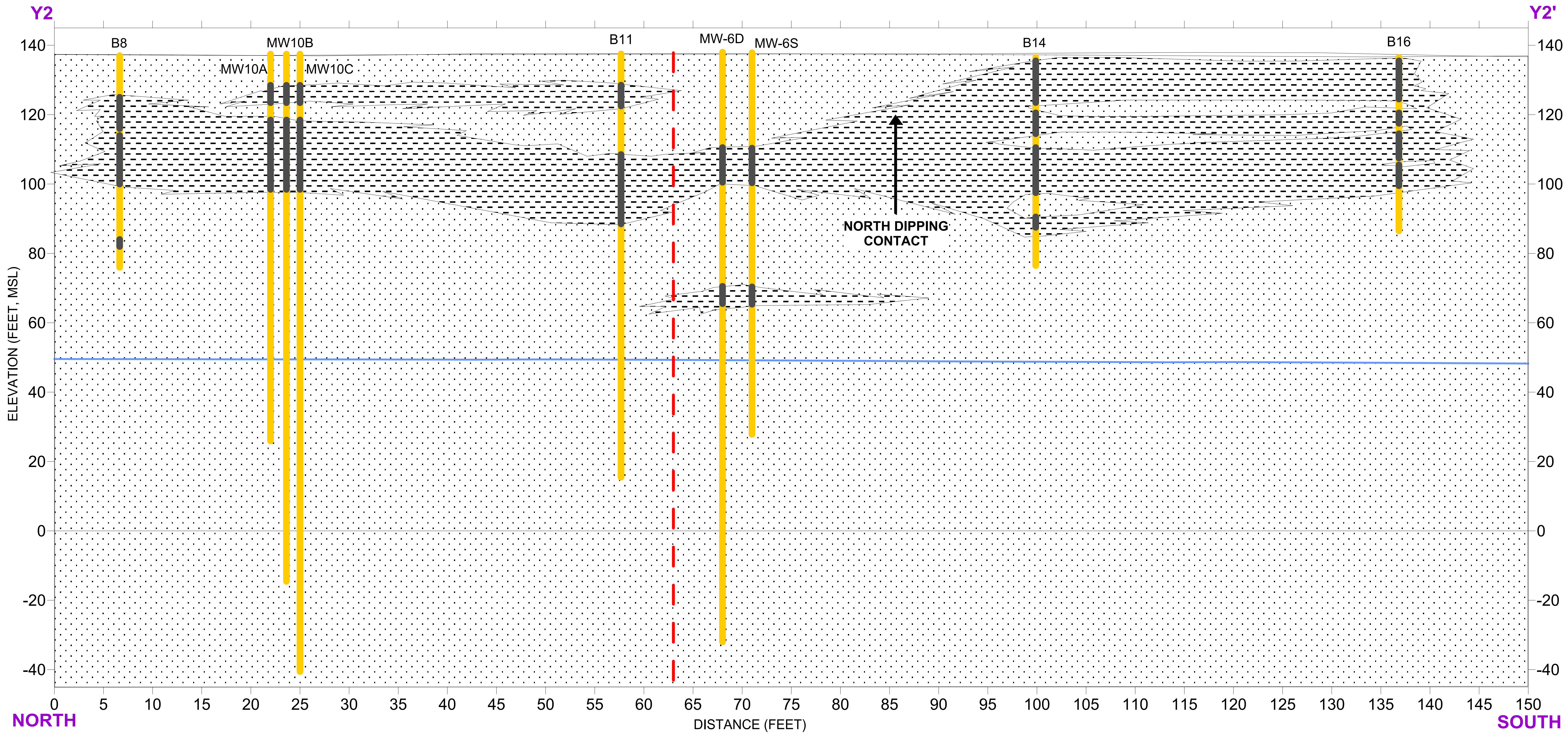
- ▮ SAND LAYER
- ▮ SILT LAYER
- ― GROUNDWATER ELEVATION
- – – PROPERTY BOUNDARY
- ⠿ SAND
- ▤ SILT

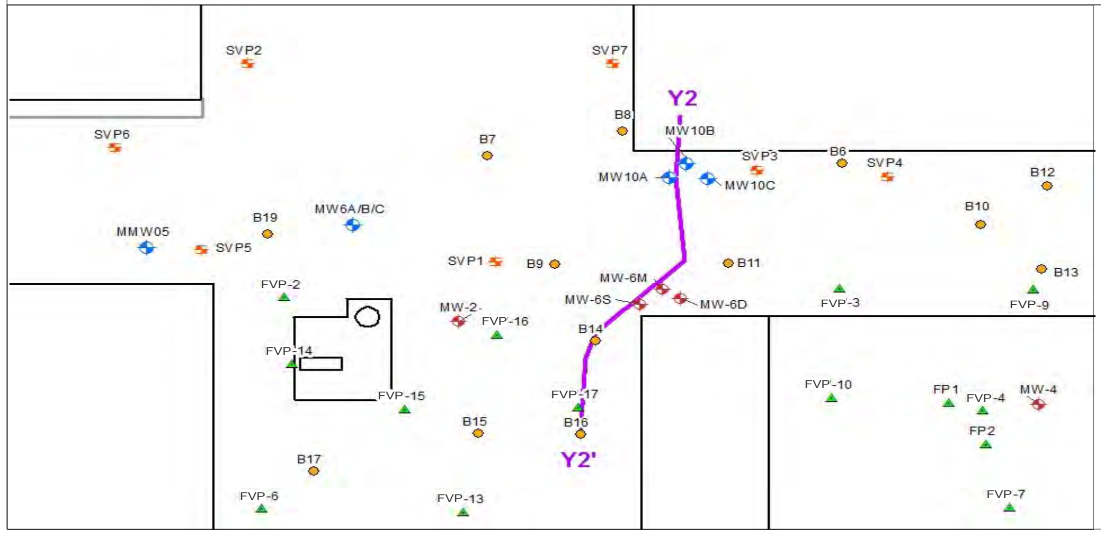
Notes:
1. All locations and dimensions are approximate.
2. Well diameters are not drawn to scale.
3. MSL - Mean Sea Level.
4. Groundwater elevations were take in November 2012.
5. MW6A, MW6B, and MW6C share the same location and are separated to show detail.

NewFields
600 Jefferson St., Suite 1040
Houston, Texas 77002
(713) 357-5244

FIGURE 5.1.1
Y1 - Y1'
CROSS SECTION
(NORTH - SOUTH)

Former ExxonMobil, Jalk Fee Property
10607 Norwalk Boulevard,
Santa Fe Springs, CA





Legend

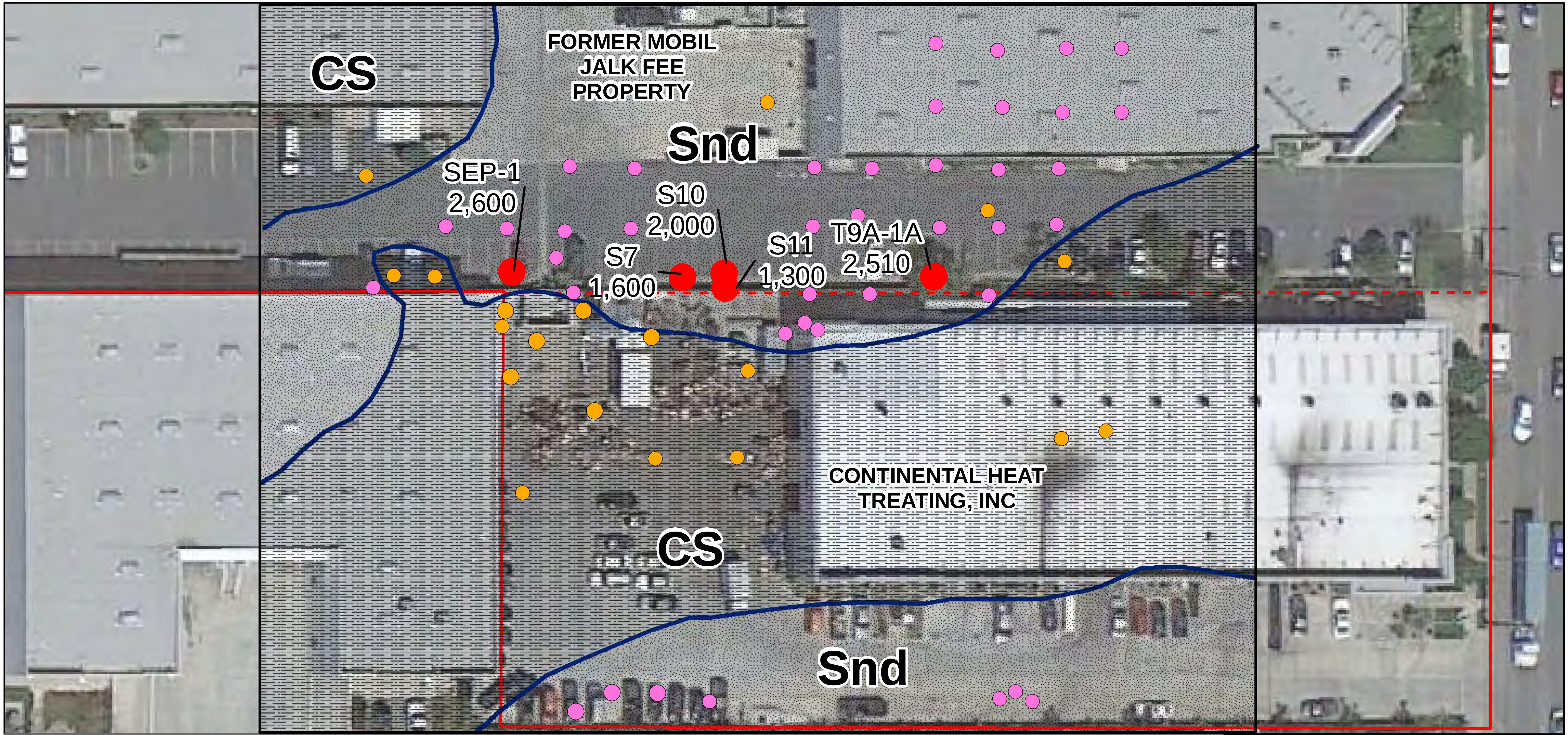
▮	SAND LAYER
▮	SILT LAYER
—	GROUNDWATER ELEVATION
– –	PROPERTY BOUNDARY
⁙	SAND
▤	SILT

Notes:
1. All locations and dimensions are approximate.
2. Well diameters are not drawn to scale.
3. MSL - Mean Sea Level.
4. Groundwater elevations were take in November 2012.
5. MW-6S and MW-6D share the same location and are separated to show detail.
6. MW10A, MW10B, and MW10C share the same location and are separated to show detail.

NewFields
600 Jefferson St., Suite 1040
Houston, Texas 77002
(713) 357-5244

FIGURE 5.1.2
Y2 - Y2'
CROSS SECTION
(NORTH - SOUTH)

Former ExxonMobil, Jalk Fee Property
10607 Norwalk Boulevard,
Santa Fe Springs, CA



Legend

● CONCENTRATION LOCATION

APPROXIMATE CONTACT

PROPERTY BOUNDARY

[1,000] PPM CONCENTRATION OF TOTAL CHC

LITHOLOGY

● SAND (Snd)

● CLAY/SILT (CS)

LITHOLOGY TEXTURE

▨ SAND (Snd)

▤ CLAY/SILT (CS)

SOIL CONCENTRATION

- 🟥 > 1,000 PPM
- 🟪 < 1,000 PPM
- 🟧 < 100 PPM
- 🟨 < 10 PPM
- 🟩 < 1 PPM
- 🟦 < 0.1 PPM
- 🟦 < 0.01 PPM
- 🟦 ND

N W E S

0 50 100 200 Feet

Notes:

1. All locations and dimensions are approximate.
2. Snd - Sand
3. CS - Clay/Silt

NewFields

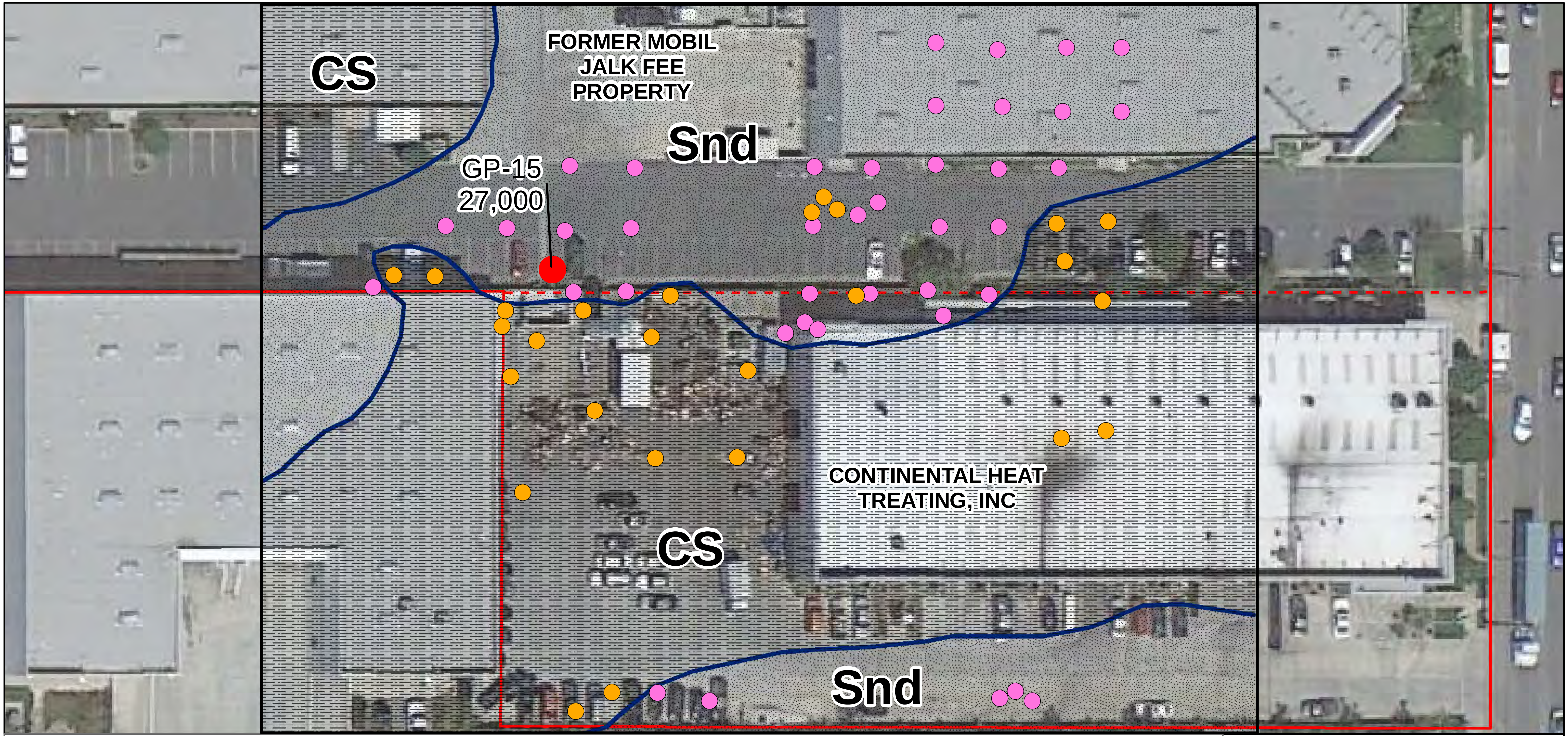
600 Jefferson St., Suite 1040
Houston, Texas 77002
(713) 357-5244

FIGURE 5.2.1

DISTRIBUTION OF CLAY/SILTS AND SANDS
6 FEET DEPTH

Former ExxonMobil, Jalk Fee Property
10607 Norwalk Boulevard,
Santa Fe Springs, CA

1/6/2014 W:\Jalk Fee\1 - Site Investigation\GIS\mxd\Prelim figures\Section 5\5\5.2.1.mxd JR Checked by IR



Legend

● CONCENTRATION LOCATION

— APPROXIMATE CONTACT

▭ PROPERTY BOUNDARY

[1,000] PPM CONCENTRATION OF TOTAL CHC

LITHOLOGY

● SAND (Snd)

● CLAY/SILT (CS)

LITHOLOGY TEXTURE

▨ SAND (Snd)

▤ CLAY/SILT (CS)

SOIL CONCENTRATION

🟥 > 1,000 PPM

🟪 < 1,000 PPM

🟧 < 100 PPM

🟨 < 10 PPM

🟩 < 1 PPM

🟦 < 0.1 PPM

🟦 < 0.01 PPM

🟦 ND

N
W E
S

Feet
0 50 100 200

Notes:

1. All locations and dimensions are approximate.
2. Snd - Sand
3. CS - Clay/Silt

NewFields
600 Jefferson St., Suite 1040
Houston, Texas 77002
(713) 357-5244

FIGURE 5.2.2

DISTRIBUTION OF CLAY/SILTS AND SANDS
10 FEET DEPTH

Former ExxonMobil, Jalk Fee Property
10607 Norwalk Boulevard,
Santa Fe Springs, CA

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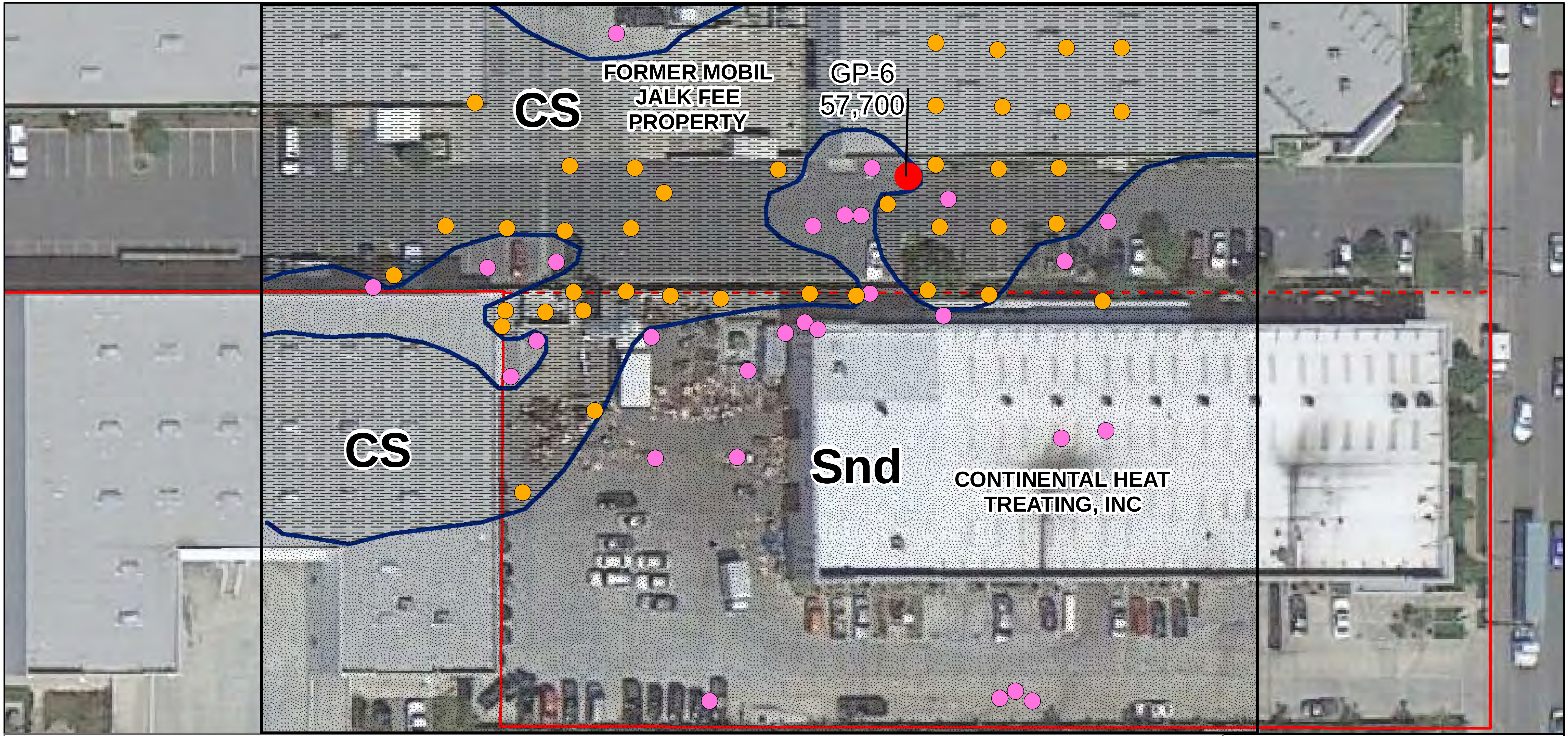

Legend

● CONCENTRATION LOCATION

LITHOLOGY

● SAND (Snd)

● CLAY/SILT (CS)

LITHOLOGY TEXTURE

▒ SAND (Snd)

▤ CLAY/SILT (CS)

— APPROXIMATE CONTACT

☐ PROPERTY BOUNDARY

[1,000] PPM CONCENTRATION OF TOTAL CHC

SOIL CONCENTRATION

🟥 > 1,000 PPM
🟪 < 1,000 PPM
🟧 < 100 PPM
🟨 < 10 PPM
🟩 < 1 PPM
🟦 < 0.1 PPM
🟦 < 0.01 PPM
🟦 ND

Feet
0 50 100 200

Notes:

1. All locations and dimensions are approximate.
2. Snd - Sand
3. CS - Clay/Silt

NewFields

600 Jefferson St., Suite 1040
Houston, Texas 77002
(713) 357-5244

FIGURE 5.2.3

DISTRIBUTION OF CLAY/SILTS AND SANDS
16 FEET DEPTH

Former ExxonMobil, Jalk Fee Property
10607 Norwalk Boulevard,
Santa Fe Springs, CA

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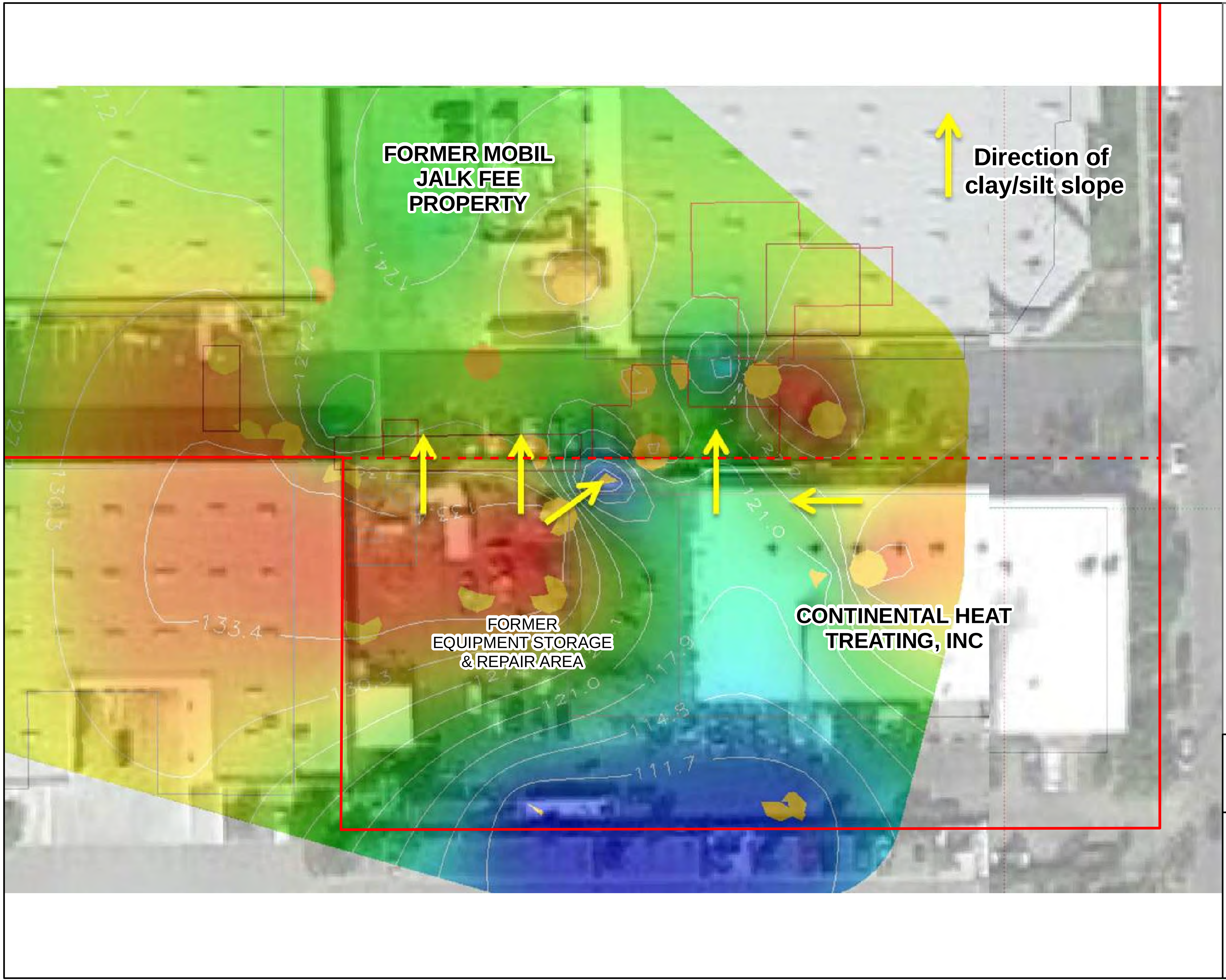


Legend

NewFields

600 Jefferson St., Suite 1040
Houston, Texas 77002
(713) 357-5244

FIGURE 3.4

STRUCTURE CONTOUR OF THE UPPER CLAY/SILT SURFACE

Former ExxonMobil, Jalk Fee Property
10607 Norwalk Boulevard,
Santa Fe Springs, CA

1/6/2014 W:\Jalk Fee\1 - Site Investigation\GIS\mxd\Prelim figures\Section 3\3.4.mxd JR Checked by IR

APPENDIX F

SCAQMD FILE DOCUMENTS

1969 CHT Degreaser SCAQMD Application

December 18, 1969

A-56927-28
Sector 5A

Continental Heat Treating Corp.
(A Div. of Tower Industries)
10643 South Norwalk Boulevard
Santa Fe Springs, California

Attention: Mr. William M. eems
Vice President - General Manager

Gentlemen:

Transmitted herewith are the following permits authorizing you to operate the described equipment:

Permit No.	Equipment Description
P-36337	DEGREASER
P-36338	DEGREASER

Rule 10. c. A person who has been granted under Rule 10 a permit to operate any article, machine, equipment, or other contrivance described in Rule 10 (b), shall firmly affix such permit to operate upon the article, machine, equipment, or other contrivance in such a manner as to be clearly visible and accessible. In the event that the article, machine, equipment, or other contrivance is so constructed or operated that the permit to operate cannot be so placed, the permit to operate shall be mounted so as to be clearly visible in an accessible place within 25 feet of the article, machine, equipment or other contrivance.

These permits are being issued covering your application on file at the Air Pollution Control District.

Very truly yours,

Louis J. Fuller
Air Pollution Control Officer

Beth Malin

By Beth Malin, Permit Section

LJF:BM:vm
Enclosures (2)

1982 CHT Solvent Storage Tank SCAQMD Application

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

APPLICATION FOR PERMIT TO CONSTRUCT AND PERMIT TO OPERATE

PLEASE TYPE OR PRINT

1A. PERMIT TO BE ISSUED TO: Continental Heat Treating

1B. DIV. TOWER INDUSTRIES

2A. MAILING ADDRESS: 10643 S. Norwalk Blvd. Santa Fe Springs, Ca.

2B. ZIP CODE: 90670

3A. EQUIPMENT LOCATION (IF SAME ENTER "SAME"): Same

3B. NEAREST INTERSECTING STREET:

4A. CONTACT PERSON (INITIALS & NAME): T. F. Inda

4B. CONTACT PHONE NO. (AREA & NO.): 213- 944-8800

5. EQUIPMENT. APPLICATION IS HEREBY MADE FOR PERMIT TO CO ST AND PERMIT TO OPERATE THE FOLLOWING EQUIPMENT:

PERCHLORETHYLENE STORAGE TANK

5B. PRIMARY AIR POLLUTION CONTROL EQUIP.

5C. SECONDARY AIR POLLUTION CONTROL EQUIP.

5D. BOILER OPERATING CAPACITY - (THOUSANDS OF BTU/HR.) % BOILER STEAM USED FOR SPACE HEAT

6. IF THIS EQUIPMENT HAD A PREVIOUS WRITTEN PERMIT, STATE NAME OF CORPORATION, COMPANY, OR INDIVIDUAL OWNER THAT OPERATED THIS EQUIPMENT, AND STATE PREVIOUS AIR POLLUTION CONTROL DISTRICT PERMIT NUMBER.

NAME: None

PREVIOUS PERMIT NUMBER:

7. PERMIT APPLICATION:
22 NEW CONSTRUCTION ■ 1
ALTERATION ☐ 2
CHANGE OF LOCATION ☐ 3
CHANGE OF OWNERSHIP ☐ 4

8. TYPE OF ORGANIZATION:
24 CORPORATION ☐ 1
PARTNERSHIP ☐ 2
INDIVIDUAL OWNER ☐ 3
LOCAL GOV'T. AGENCY ☐ 4
STATE AGENCY ☐ 5
FEDERAL AGENCY ☐ 6
UTILITY ☐ 7

9. NO. OF EMPLOYEES AT THIS LOCATION: 25-28

10. AREA OF

11. ESTIMATED COST OF EQUIPMENT OR ALTERATION:
BASIC EQUIPMENT $ Loaned (25-31)
AIR POLLUTION CONTROL EQUIPMENT $ -0- (32-38)
ANNUAL MAINTENANCE COST OF CONTROL EQUIPMENT $ -0- (39-45)

12. FOR THE NEW CONSTRUCTION, ALTERATION, TRANSFER OF OW OR LOCATION, WHAT IS
ESTIMATED STARTING DATE? ______ ESTIMATED COMPLETION DATE? ______

13. GENERAL NATURE OF BUSINESS: Heat Treating of Metal

14. PRINCIPAL PRODUCT: Service

15. % ANNUAL THROUGHPUT BY QUARTERS:
DEC-FEB ____, MAR-MAY ____, JUN-AUG ____, SEP-NOV ____,
56-57, 58-59, 60-61, 62-63

15A. DO YOU CLAIM CONFIDENTIALITY OF DATA?
YES ☐ 1
NO ☐ 2
IF YES, STATE NATURE OF DATA IN ITEM 23

16. NORMAL OPERATING HOURS OF SUBJECT EQUIPMENT:
HOURS/DAY 24
DAYS/WEEK 7
WEEKS/YEAR 52

17. SIGNATURE OF RESPONSIBLE MEMBER OF ORGANIZATION: Theodore F. Inda

18. OFFICIAL TITLE OF SIGNER: Maintenance supervisor

19. TYPED OR PRINTED NAME OF SIGNER: THEODORE F. INDA

20. PHONE NO.: 213-944-8800

21. DATE: October 31, 1979

APCD USE ONLY

APPLICATION NO. 17-18: 28137

TYPE: Comb unit

CLASS: 1

VALIDATION 33-37: SCAPCD006 5000:a 005A

FILING FEE $

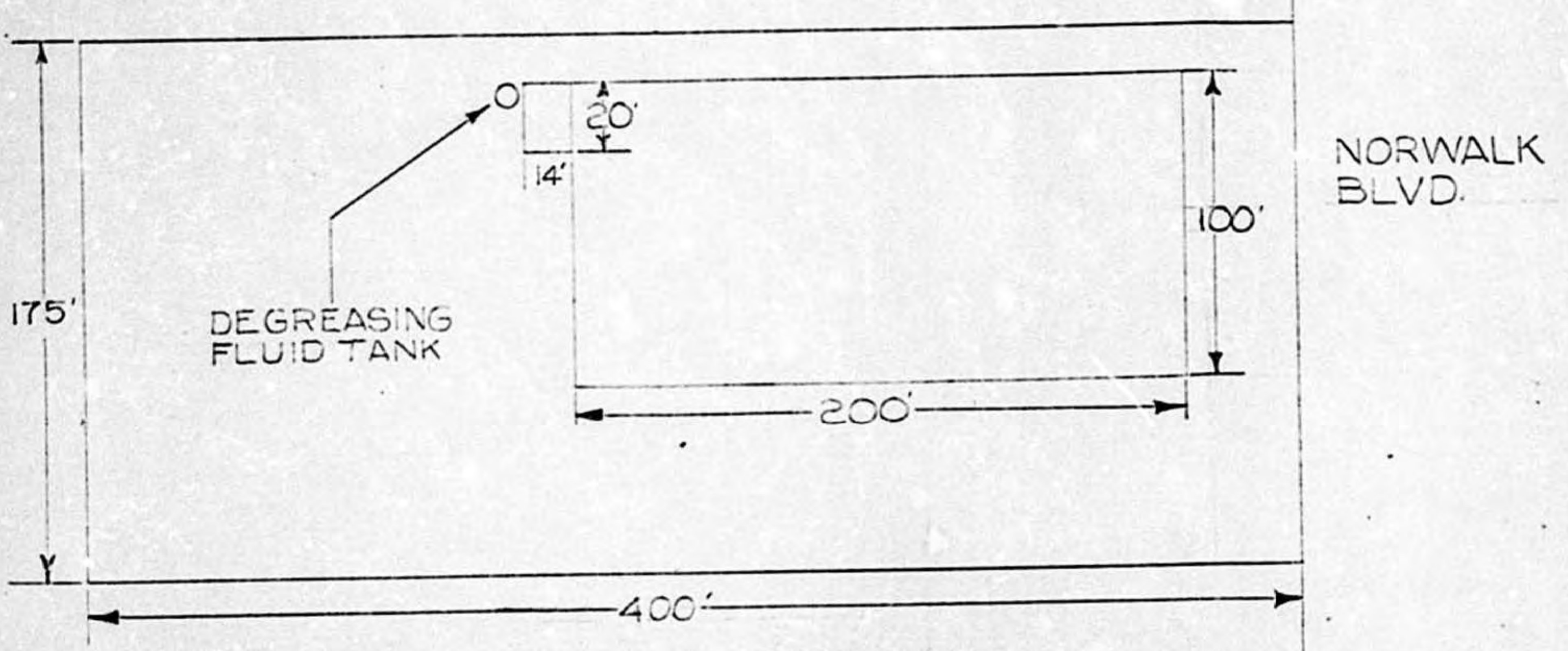
CHECK OR MONEY ORDER NO. 38521

PERMIT FEE $

CHECK OR MONEY ORDER NO.

Form 400A - REVISED 12-1-76. PRIOR VERSIONS NOT VALID

(Continued on reverse)



CONTINENTAL HEAT TREATING

SCALE: 1"=50'

R L PARKER

ENGINEERING DIVISION....MEMORANDUM

TO File

FROM BVH

DATE 1-2-80

REFERENCE Continental Heat Treating

PERMIT APPL. NO. C-28437

SUBJECT

Change to Class III as the equipment is installed.

1-20-82

T/C to company - Mr. Lerma.

1. tank in use
2. 575 gallon tank
3. use till empty - then refill
4. refill every 2-3 weeks. use 2 wks - 26 times/yr.
5. Perchlorethylene solvent.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
ENGINEERING DIVISION
APPLICATION PROCESSING AND CALCULATIONS

PAGES 3	PAGE 1
APPL. NO. C-28437	DATE 1-20-82
PROCESSED BY BVA	CHECKED BY

P/O

Accelerated permit processing
As per memo from S. Weiss, Director
of engineering, dated December 21, 1981

Applicant
Continental Heat Treating
10643 S Norwalk Blvd.
Santa Fe Springs, CA 90670

Attention: Mr. R. Lerma

Equipment Location: Same

Equipment Description
See Page 3

A. Equipment Status

1. T/C to applicant, following confirmed
   - (a) Tank in use
   - (b) 575 gal capacity
   - (c) Solvent is Perchlorethylene
   - (d) Used till empty and refilled
   - (e) 26 refills per yr.

2. No I/Rs on file
   Company in compliance per inspector - equipment list.

3. NSED
   0 for all contaminants.

Page 3

P/O EVALUATION - STORAGE TANK, ~~BIN OR SILO~~

Appl. No. C-23437 Date 1-20-82

Equipment Description: Processed By BVA Checked

Tank, Solvent Storage, 2'-2" Dia x 6'-8" L, 575 Gallon Capacity

Located At: Continental Heat Treating, 10643 S. Norwalk Blvd, Santa Fe Springs CA

Reason Application Required: ☒ New Const. ☐ Change of Loc. ☐ Other

Location of Equipment:

☐ Underground ☒ Above ground
☐ Plot plan in this application
☒ Plot plan in application C-28437 Dwg.

Description of Materials Stored:

Solids Liquids Perchlorethylene

MW = 166

Initial BP of Liquid Compound or Mixture:

M[illegible]rials Input:

☐ Product from manufacturing permit unit Appl.
☒ Tank car or truck ☐ Hand Dump ☐ Other

Materials Output:

☐ Raw material for manufacturing permit unit Appl.
☐ Packaging equipment
☐ Tank or Truck loading
☐ Other

Tank Is: ☒ Unheated
☐ Heated Steam Other

Tank Vents: ☒ Directly to atmosphere
☐ Vent trap or filter; description

☐ Control equipment description
See application Permit No.

F[illegible]ing Losses; API Formula:

$$F = \frac{2.4\ M\ P\ V\ K}{100.00\ C}$$

$$F = \frac{2.4\ (166)\ (.29)\ (575)\ (1)}{100{,}000\ (1)}$$

F = 0.66 lb

F= Filling loss, lb
M= Average mol wt, lb
P= Vapor press, psia
V= Volume fill, gals
K= % saturation in vapor space, usually 1
C= Compressibility factor, usually 1 for most organic liquids

Turnover Frequency 26 times/yr.

Evaluation and Disposition:

☐ Emissions expected Opacity for Minutes
☐ Odors
☒ Violations of Rules 401 & 402 are are not expected.
☐ Permit to construct is recommended
☐ Permit to construct is denied (Reasons in letter of den'al)

Comments:

For AEDS (Hydrocarbons) HC = 0.66 lbs/day

For EDP $R_1 = R_2 = 0.66$ lbs/hr 1 hr/day
26 days/yr

INSTRUCTIONS TO PERMIT SECTION ☐ P/C ☒ P/O ☐ CANCEL ☐ DENIAL

Application No. C-28437

DISPOSITION:	PERMIT UNIT WORDING:	CONDITIONS:
☒ APPROVED	☑ BELOW	☒ NONE
☐ DENIED	☐ ON FIELD REPORT DATED ____	☐ NUMBERS LISTED ____
☐ CANCELED - DON'T REFUND FILING FEE	☒ ~~ON PAGE 3 OF PROCESS SHEETS~~	☐ SPECIAL (SEE PERMIT UNIT WORDING & CONDITIONS)
☐ CANCELED - REFUND FILING FEE SEE COMMENTS	☐ ON ____	☐ AS ON ____

PREVIOUS PERMIT NO(S) None

PERMIT UNIT WORDING & CONDITIONS

TANK, SOLVENT STORAGE, 2'-2" DIA. x 6'-8" L.
575 GALLONS CAPACITY

☐ CHANGE OF OWNERSHIP LOCATION
☐ CHANGE OF CONDITION
☐ ALT. INCREASE IN RATING
☐ ALT. NO RATING INCREASE
☐ GOVERNMENT APPLICATION
☐ RULE 301 (f) FEE EXCEPTION

SCHEDULE	① H.P.*	② 1000's BTU*	③ KVA*	④ SQ FT*	⑤ GALLONS*	⑥ GASOLINE FUELING*	⑦ MISC*
RATING					575		
FEE							

* FOR ALTERATIONS SHOW ONLY INCREASES

FEE CALCULATIONS

No P/C
Penalty 50%

RULE 301 After 7-1-78 | After 7-1-81
PERMIT FEE $ 50 | $67

RULE 40
TOTAL FEE $ ____
FILING FEE $ ____
FEE BALANCE $ ____

FEES

APPLICABLE FEE SCHEDULE & STEP 5, 1
PERMIT FEE $ 75 —
REFUND $ 0

COMMENTS:

RECOMMENDED BY B. van Aalt DATE 1-20-82 REVIEWING ENGINEER ____ DATE 1-21-82

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

PERMIT to OPERATE

9150 FLAIR DRIVE, EL MONTE, CALIFORNIA 91731

M 24608

Operation under this permit must be conducted in compliance with all information included with the initial application and the initial permit conditions. The equipment must be properly maintained and kept in good operating condition at all times. In accordance with Rule 206, this Permit to Operate or copy must be posted on or within 8 meters of equipment.

LEGAL OWNER OR OPERATOR: **CONTINENTAL HEAT TREATING**

APPL NO. C-28437

EQUIPMENT LOCATED AT: **10643 S. NORWALK BLVD**
SANTA FE SPRINGS, CALIFORNIA

EQUIPMENT DESCRIPTION AND CONDITIONS:

TANK, SOLVENT STORAGE, 2'-2" DIA. x 6 -8" L. 575 GALLONS CAPACITY

FILE COPY

This initial permit must be renewed by 7/1/83 unless the equipment is moved, or changes ownership. If billing for annual renewal fe (Rule 301.f) not received by expiration date, contact office above.

This permit does not authorize the emission of air contaminants in excess of those allowed by Division 26 of the Health and Safety Code of the State of California or the Rules of the Air Quality Management District. This permit cannot be considered as permission to violate existing laws, ordinances, regulations or statutes of other government agencies.

SCAQMD001 7500Da $093

VOID UNLESS VALIDATED

EXECUTIVE OFFICER

BY

DATE JUL 1 '82

76P235M-REV.

1982 CHT Degreaser SCAQMD Application

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
ENGINEERING DIVISION
APPLICATION PROCESSING AND CALCULATIONS

PAGES	PAGE
	3
APPL. NO. C-28151	DATE 1-26-82
PROCESSED BY BVA	CHECKED BY

Perchloroethylene Solvent

16 hrs/day
6 days/wk
52 wks/yr

438 gals/mo – two degreasers

12 – 55 gal/drums from 3 months operation – return for reclaim for 2 degreasers

Ave. Monthly use = 6 day/wk × 52 wks/yr × 16 hrs/day ÷ 12 mon/yr = 416 hrs/mon.

Solvent supply:

$$\frac{438 \text{ gal/mon}}{2 \times 416 \text{ hrs/mon}} = 0.526 \text{ gal/hr} \text{ for each degreaser}$$

Reclaimed solvent: 60% of reclaimed solvent

$$\frac{12 \text{ drums} \quad 55 \text{ gal/drum} \times .6}{3 \text{ mon} \times 2} = 66 \text{ gal/mo. for each degreaser}$$

$$\frac{66 \text{ gal/mon}}{416} = .158 \text{ gal/hr}$$

Solvent Usage = .525 gal/hr − .158 gal/hr = 0.36 gal/hr = 5.76 gal/day

$R_1 = R_2 = 0.36$ gal/hr × 13.5 lb/gal = 4.86 lbs/hr

Daily emission = 16 × 4.86 = 77.76 lbs/day

* Credit from A/N A-56927 } = 33.8 lbs/day
P/O P-36337 }

Permit inactivated in 12-77

Increase in H.C. = 43.96 lbs/day

* Note: This application destroyed – see A/N A-56928 for info.

ENGINEERING DIVISION····MEMORANDUM

TO File

FROM BVA

DATE 1-26-82

REFERENCE Continental Heat Treat

PERMIT APPL. NO. C-28151

SUBJECT A.P.P. data

T/C from Richard Lerma — data as follows

16 Gal Capacity, No pump.

4 KW Electric Heated

Model is DB-1B (not as shown on application)

Solvent is Perchloroethylene

438 gals/mo. (both degreasers)

Roll Cover — Closed when not in use

Use is 16 hrs/day 6 days/wk

Water cooler ring — 30 gals/hr

T/C to Richard Lerma — Line busy

T/C to Richard Lerma — informed him that emissions were excessive and permit would be denied. Asked him about perch returned for reclamation to vendor. Said he would check.

T/C from Lerma. He said there are 12 - 55 gal drums waiting for vendor to pickup. He said these were from 3 months of operation. Told him I would refigure with this divided between the two degreasers as above.

1-27-82

T/C to R. Lerma — He not supply any data on the previous degreaser. Told him we would use what we show on the application for the other unit.

APPENDIX G

QUENCH OIL FILE DOCUMENTS

1969 CHT Degreaser SCAQMD Application

AIR POLLUTION CONTROL DISTRICT · COUNTY OF LOS ANGELES
434 SOUTH SAN PEDRO STREET, LOS ANGELES, CALIF. 90013. MADISON 9-4711

ENGINEERING DIVISION····FIELD REPORT

NAME OF APPLICANT: Continental Heat Treating Corp. (A Div. of Tower Industries)
DATE OF INSPECTION: 11-10-69
MAILING ADDRESS: 10643 Norwalk Boulevard, Santa Fe Springs, California 90670
PERMIT APPL. NO.: See Below
EQUIPMENT LOCATION (ADDRESS): Same
A.P.C.D. ZONE NO.: 54
REASON PERMIT IS REQUIRED: NEW CONSTRUCTION (X) CHANGE OF OWNERSHIP ( ) CHANGE OF LESSEE ( ) CHANGE OF LOCATION (X) EQUIPMENT ALTERATION ( )
DATE CONSTRUCTION AUTHORIZED: BY
TIME SPENT MAKING INSPECTION: FROM 10:30 a.m. TO 11:15 a.m.
USUAL OPERATING SCHEDULE FOR THIS EQUIPMENT: 24 hours/day, 5 days/week
WEATHER: Clear-Sunny
WIND: 5-10 mph
ESTIMATED COST: BASIC EQUIPMENT: $ A.P.C. EQUIPMENT: $
NAMES & TITLES OF PERSONS CONTACTED BY ENGINEER: Mr. William M. Weems, V.P. - General Manager
FOR DUST & FUME PROBLEMS ONLY: PROCESS* WEIGHT(S) LBS./HR. ALLOWED LOSSES: LBS./HR. ESTIMATED LOSSES: LBS./HR.

OFFICIAL EQUIPMENT DESCRIPTION, *CALCULATION OF PROCESS WEIGHT(S), PROCESS DESCRIPTION AND FINDINGS:

APPLICATION A-56927 Basic: $1,700

DEGREASER, DETREX, VAPOR SPRAY TYPE MODEL VS-800G, 3'-0" W. x 5'-0" L. x 5'-1" H., SERIAL NO. 52525, 150,000 BTU PER HOUR GAS FIRED WITH ONE 1/6 H.P. PUMP.

APPLICATION A-56928 Basic: $1,250

DEGREASER, DETREX, VAPOR-SPRAY TYPE, MODEL VS-800-S, 2'-6" W. x 4'-0" L. x 4'-10" H., SERIAL NO. 55442, 140,000 BTU PER HOUR, GAS FIRED, WITH ONE 1/4 H.P. PUMP.

Application A-56927, - BTU/HR. and pump H.P. Obtained from old application.
Application A-56928, - BTU/HR. obtained from catalog data - ¼ H.P. pump from name plate.

BACKGROUND INFORMATION

Continental Heat Treating Corp. was located at 12214 Woodruff Ave., in Downey, Calif

One degreaser at their old plant was issued permit P-19401, 3-22-67; Appl. A-39870. The new Appl. No. is A-56927.

The degreaser in Appl. A-56928 is new.

The degreaser solvent was trichloroethylene, but the solvent used now is perchloroethylene.

RECOMMENDED DISPOSITION: (X) APPROVE FOR PERMIT. ( ) APPROVE FOR PERMIT SUBJECT TO CONDITIONS LISTED BELOW. ( ) HOLD. SEE EXPLANATION BELOW. ( ) DENY PERMIT.

Standard Condition 60

REVIEWING ENGINEER:
( ) I CONCUR WITH RECOMMENDATIONS
( ) I DO NOT CONCUR WITH RECOMMENDATIONS
( ) SEE COMMENTS ON ATTACHED PAGE

SIGNATURE John C. Hall
John C. Hall, Engineer

PAGE 1 OF 2 PAGES

16-50D106 R2-55-

ENGINEERING DIVISION····FIELD REPORT

NAME OF APPLICANT: Continental Heat Treating Corp. (A Div. of Tower Industries)
APPL. NO.: See P. 1
DATE OF INSPECTION: 11-10-69

OBSERVATIONS

The two degreasers were in operation and the solvent vapor could be seen up to the water cooled condenser line. To demonstrate in operation, torque wrench handles, to be heat treated, were cleaned in the new degreaser.

Many steel parts to be heat treated have a thin oil film on the part and it is desirable to remove this oil film by the use of a degreaser.

Some heat treated parts are oil quenched and to clean the parts for shipment the parts are cleaned in the degreaser.

Most of the parts heat treated are of a size that to degrease they are loaded into a basket which is lowered into the degreaser.

The degreasers, having a steel cover, are in operation 24 hours/day, 5 days/week as is the plant. The work load is light and actual operation is less than 2 hours/day per degreaser.

The solvent useage is not recorded for each degreaser. The solvent use is just over a 55 gal. drum per month or estimated a 5 gal/day for the two degreasers.

Solvent loss:

1/2 x 5 gal/day x 13.5 lbs/gal = 33.8 lbs/day each degreaser.

RECOMMENDATIONS

It is recommended that the two degreasers be issued permits to operate based on the use of perchloroethylene degreasing solvent.

The operation of the two degreasers in the plant is not likely to cause a public nuisance.

nd: 11/12/69

SIGNATURE John C. Hall
John C. Hall, Engineer

1982 CHT Electrostatic Precipitator SCAQMD Application

16.500118

AIR POLLUTION CONTROL DISTRICT - COUNTY OF LOS ANGELES

ENGINEERING DIVISION
APPLICATION PROCESSING AND CALCULATIONS

PAGES	PAGE
3	1
APPL. NO. C-14636	DATE 1-19-78
PROCESSED BY JTT	CHECKED BY

CONTINENTAL HEAT TREATING
Division of Tower Industries
10643 So. Norwalk Blvd.
Santa Fe Springs, CA 90670

APPLICATION NO. C-14636

AIR POLLUTION CONTROL SYSTEM CONSISTING OF:

1. ELECTRIC PRECIPITATOR, UNITED AIR SPECIALISTS, SMOG-HOG, MODEL MS-6-2T, TWO-STAGE, DOUBLE PASS, 4'-1" W. x 6'-8" H. x 19'-8" L.
2. EXHAUST SYSTEM WITH ONE 5-H.P. BLOWER VENTING ONE DRAW FURNACE.

HISTORY:

The precipitator will be new equipment, and there is no record of previous SCAQMD permits having been issued.

An afterburner was used in an earlier attempt to control the furnace emissions, but was found to be inadequate.

DESCRIPTION:

This source is a job-shop operation that does abrasive blasting, degreasing, and heat-treating of small metal items. The process of present interest is as represented below:

The heat-treat furnace brings the metal pieces up to 1800°F before they are automatically pushed into the oil quench tank. The pieces are manually placed in the drain cart/wash basket and allowed to drain for approximately 5 minutes. The basket is then submerged in and lifted from, a number of times, the water and detergent washer for a period of approximately two minutes. The washer liquid is maintained at 160°F. The pieces are then placed in the 1100°F draw furnace where they remain for periods varying from 1/2 to 3 hours, depending upon the size of the pieces.

The proposed Smog-Hog electrostatic precipitator is a two-stage, double-pass precipitator which utilizes a solid state power pack to impart 11,000 VDC to the ionizers and 5,500 VDC to the collector plates. The ionizers are gold-plated wires and the collector plates are aluminum with 21,000 sq. in. of plate surface in each of six collector cells. Two water heat exchanger coils are an integral part of the precipitator and are located just downstream from the prefilter.

Cleaning is accomplished by removing the collector cells, cleaning with water and detergent, drying, and reinstalling. The limited use of the furnace and precipitator, one hour in each eight-hour shift, should easily allow this procedure.

A five -H.P. motor will power a Peerless Model [illegible] blower to provide a capture flow, at the furnace, of 5,000 CFM at a temperature of 250°F. The ducting system consists of a hood, three 90° elbows, and approximately 30 feet of 20-inch-diameter duct. The capture velocity and charging temperature are approximately 450 FPM and 120°F.

EVALUATION:

The electrostatic precipitator operates by producing ions, through electrical discharge, that collide with and charge particles entrained in the exhaust gases. The particles are then attracted to downstream plates of the opposite charge and adhere to them for various types of removal.

The process mechanism indicates that electrostatic precipitation is not effective for collecting emissions in the gaseous state. However, for this application, the precipitator should effectively control the oil mists expected to be emitted from the draw furnace.

Exhaust System:

The furnace is 6'-0" D. x 5'-6" W. and is overlapped by the venting hood by 4" on each side, 1'-2" in the front, and is flush in the rear. Also, the plane of the hood opening is essentially flush with the furnace top. This configuration has an open area (flow area) of:

$$\frac{(14 \times 74) + (8 \times 72)}{144} = 11.2 \text{ sq. ft. open area}$$

Industrial Ventilation, page 5-9, recommends 200 scfm/sq. ft. of open area, which for this installation is:

$$200 \times 11.2 \text{ ft}^2 = 2240 \text{ scfm.}$$

Manufacturer states that this installation will provide:

$$5{,}000 \text{ cfm } \frac{460 + 60}{460 + 250} = 3{,}662 \text{ scfm.}$$

The capture velocity, given as 450 fpm maximum, yields an efficiency of approximately 70% when controlling oil mists (Fig. 93, p. 162, Engineering Manual).

Manual data may be out of date

Emissions:

The quench oil is L-100 Pale Neutral made by Far-Best Corporation. Continental Heat-Treating records show that in 1977, 1,650 gallons were purchased;

1,540 gallons of "waste oil" was trucked away by Lakeland Oil Company; and the water wash was pumped out seven times and contained 101 gallons of oil. The oil remaining in the metal pores after being washed was:

$$1650 - 1540 = 110 - 101 = 9 \text{ gals/year} \times 7 \text{ lbs/gal} = 63 \text{ lbs/year}$$

$$\frac{63 \text{ lbs/year}}{360 \text{ days/year} \times 3 \text{ hrs/day}} = .06 \text{ lb /hour} = R_1$$

The quench oil has a flash point of 320°F, and the vapors will be driven off within ten minutes of being charged into the 1100°F furnace.

$$R_2 = 0.06 \text{ lb /hour} \times .3 \text{ (70\% efficiency)} = 0.018 \text{ lb /hour.}$$

Rule 405 allowable = 0.99 lb /hour.

$$\text{Particulate concentration} = \frac{.018 \times 7,000}{4084 \times 60} = .0005 \text{ gr/ft}^3$$

Rule 404 allowable = .105 gr/ft^3

SUMMARY

A two-stage electrostatic precipitator has been demonstrated to be an effective control device for oil-mist emissions.

This source, after modification, will emit less than 15 lbs/hour or 150 lbs/day, and should not be denied a permit to construct on the basis of Rule 213.

Calculations indicate that the precipitator will control the basic equipment emission to comply with Rule 404 and 405.

Compliance with Rules 401 and 402 is anticipated, due to the small amount of emissions.

The capture velocity, approximately 7.5 fps, and the charging temperature, approximately 120°F, are within the desirable range.

RECOMMENDATIONS:

It is recommended that a permit to construct be issued, subject to the condition that a light to indicate precipitator operation must be mounted so as to be visible to the furnace operator.

Undated LACFD Small Quantity Generator Contingency Plan

LOS ANGELES COUNTY FIRE DEPARTMENT-HEALTH HAZ MAT DIVISION
SMALL QUANTITY GENERATOR CONTINGENCY PLAN

You are required by the California Code of Regulations, Title 22 to design, operate and maintain your business to minimize hazards to human health and the environment from any unplanned releases of hazardous materials.

Section 1 General Business Information

Name of Business CONTINENTAL HEAT TREATING CO. INC.

Address 10643 S. NORWALK B.VD City SANTA FE SPRINGS Zip 90670

Phone Number(310) 944 -8808 Emergency Phone(310) 697 - 0903

Description of Business HEAT TREATING METAL PARTS

Number of Employees 30 Operating Hours(M-F) 24HRS M-F Sat Sun

Business Owner JAMES G. STULL Home Phone Number(714) 675 -0408

Address 319 GRAND CANAL City BALBOA ISLAND Zip 92662

Property Owner ANNA HATHAWAY TRUST Phone Number(714) 661 - 6969 C.P.A.

Section 2 Hazardous Material / Waste Activities - List all Chemicals at your business.

RAW MATERIALS				HAZARDOUS WASTE	
Chemical Name or Trade Name*	Specific Usage	Quantity of Chemicals Stored	Manner of Storage	Quantity of Waste Stored	Manner of Storage
OIL	QUENCH OIL	500 GAL	TANK	300 GAL	DRUMS
PERCHLORETHLENE	DEGREASING	200 GAL	TANK	300 GAL	DRUMS
ACETONE	CLEANING	55	DRUM	0	0
AMMONIA	CARBONITRIDE	250	TANK	0	0

*Obtain from your Supplier the Material Safety Data Sheets for trade name chemical and attach to this form.

Section 3 Emergency Coordinator

Your company is required to list the names, addresses, and telephone numbers for your emergency coordinators(EC). The EC shall have the authority to commit resources and shall have the responsibility for coordinating the company's activities to mitigate an unplanned release of hazardous materials.

Name of EC DENNIS HUGE AfterHours Phone(310) 697- 0903

Address 141 NORTH VIRGINIA ST. City LA HABRA Zip 90631

Alternate EC RAY CROSS AfterHours Phone(909) 674 - 1529

Address 29264 NORTHPOINTE City LAKE ELSINORE Zip 92530

Section 4 Notification

The EC must notify the following agencies in the event of a release, fire, or explosion which could threaten human health or the environment.

Fire 911 Health Haz Mat (213) 890-4317 Police 911

If the EC determines that evacuation of local areas may be advisable, the EC Shall notify the above agencies and the State Office of emergency Services at 1-800-852-7550.

List an Emergency Response Contractor you may use in the event of a major Hazardous Materials Spill.

Name PACIFIC ENVIRONMENTAL MGMT. Emergency Phone(800) 777 - 3363

List all hospitals or clinics you may use in the event of hazardous materials exposures or injuries.

Hospital or Clinic HEALTH FIRST MEDICAL Phone(310) 949 - 9328

Address 11817 E. TELEGRAPH RD City SANTA FE SPRINGS

The EC shall report to the Health Haz Mat Division within 15 days all details of any incident where this contingency plan was activated.

Section 5 Emergency Procedures.

Attach a description of what your employees will do to prevent or stop a hazardous materials spill at your facility. (Training is required for procedures involving the handling of hazardous wastes.)

Section 6 Site Map

Attach a map of your company and indicate the locations of the following:

*Layout work areas
*Fire Extinguishers
*Chemical Storage
*Alarms - Telephone
*Employee Protect'n Equip
*First Aid Stations
*Gas & electrical shut-off
*Emergency Exits
*Waste Storage
*Offices & Restrooms
*All Drains & Clarifiers
*Emergency Shut-offs
*Material Safety Sheets
*Underground Tanks
*Above Ground Tanks
*Evacuation Routes
*Emergency Equipment
*Leak detection devices

*Indicate schools, residences, and public gathering places less than a block away from your facility.

Section 7 Additional Requirements

This Contingency Plan must be updated on a continuous basis and copied to our office. This Contingency Plan is designed for your use in the event of a hazardous materials incident. You must keep copies of your completed plan at your facility at all times. Review the contents of the plan with your employees and make the location of your completed plan known and accessible to them.

Send your completed Contingency plan to the following address:

County of Los Angeles Fire Department-Prevention Bureau/HEALTH HAZ MAT DIVISION
7300 E Alondra Blvd. #203, Paramount, Calif. 90723
Phone: (310) 790-1810, Fax: (310) 790-8002

Your Inspector is: GEORGE BAKER

CONTINGENCY PLAN - SUPPLEMENTAL INFORMATION

BUSINESS NAME CONTINENTAL HEAT TREATING CO. INC.

ADDRESS 10643 S. NORWALK BLVD. CITY SANTA FE SPRINGS ZIP 90670

Section 5: Emergency Procedures

In the event of a OIL spill, the following procedures will be followed.

☒ Using DRY SORB the spilled material will be contained and prevented from going onto the ground or off the property.

☒ The absorbed OIL & DRY SORB will be placed in a leak-proof container with tight fitting lid, labelled "Hazardous Waste" and held as hazardous waste until lawfully disposed.

☒ Based on the:

- ☒ Material Safety Data Sheet
- ☐ Personal knowledge
- ☐ Other

of the Material, the following precautions should be taken when handling the spilled material:

Wear:

- ☐ Gloves and goggles
- ☐ Respirator
- ☒ Boots and Apron
- ☐ Other

See Reverse side, page 4 for Site Map

SECTION 6 SITE MAP

(See page 2, Section 6 for requested information, as applicable)

CONTINGENCY PLAN - SUPPLEMENTAL INFORMATION

BUSINESS NAME CONTINENTAL HEAT TREATING CO. INC.

ADDRESS 10643 S. NORWALK BLVD. CITY SANTA FE SPRINGS ZIP 90670

Section 5: Emergency Procedures

In the event of a PERCHLORETHLYENE spill, the following procedures will be followed.

☒ Using DRY SORB the spilled material will be contained and prevented from going onto the ground or off the property.

☒ The absorbed DRY SORB will be placed in a leak-proof container with tight fitting lid, labelled "Hazardous Waste" and held as hazardous waste until lawfully disposed.

☒ Based on the:

- ☒ Material Safety Data Sheet
- ☐ Personal knowledge
- ☐ Other

of the Material, the following precautions should be taken when handling the spilled material:

Wear:

- ☒ Gloves and goggles
- ☒ Respirator
- ☒ Boots and Apron
- ☐ Other

See Reverse side, page 4 for Site Map

CONTINGENCY PLAN - SUPPLEMENTAL INFORMATION

BUSINESS NAME CONTINENTAL HEAT TREATING CO. INC.

ADDRESS 10643 S. NORWALK BLVD. CITY SANTA FE SPRINGS ZIP 90670

Section 5: Emergency Procedures

In the event of a ACETONE spill, the following procedures will be followed.

☒ Using DRY SORB the spilled material will be contained and prevented from going onto the ground or off the property.

☒ The absorbed ACETONE AND DRY SORB will be placed in a leak-proof container with tight fitting lid, labelled "Hazardous Waste" and held as hazardous waste until lawfully disposed.

☒ Based on the:

- ☒ Material Safety Data Sheet
- ☐ Personal knowledge
- ☐ Other ____________________

of the Material, the following precautions should be taken when handling the spilled material:

Wear:

- ☒ Gloves and goggles
- ☒ Respirator
- ☒ Boots and Apron
- ☐ Other ____________________

See Reverse side, page 4 for Site Map

CONTINGENCY PLAN - SUPPLEMENTAL INFORMATION

BUSINESS NAME CONTINENTAL HEAT TREATING CO. INC.

ADDRESS 10643 S. NORWALK BLVD. CITY SANTA FE SPRINGS ZIP 90670

Section 5: Emergency Procedures

In the event of a AMMONIA (NH3) spill, the following procedures will be followed.

☒ Using DRY SORB
the spilled material will be contained and prevented from going onto the ground or off the property.

☒ The absorbed DRY SORB
will be placed in a leak-proof container with tight fitting lid, labelled "Hazardous Waste" and held as hazardous waste until lawfully disposed.

☒ Based on the:

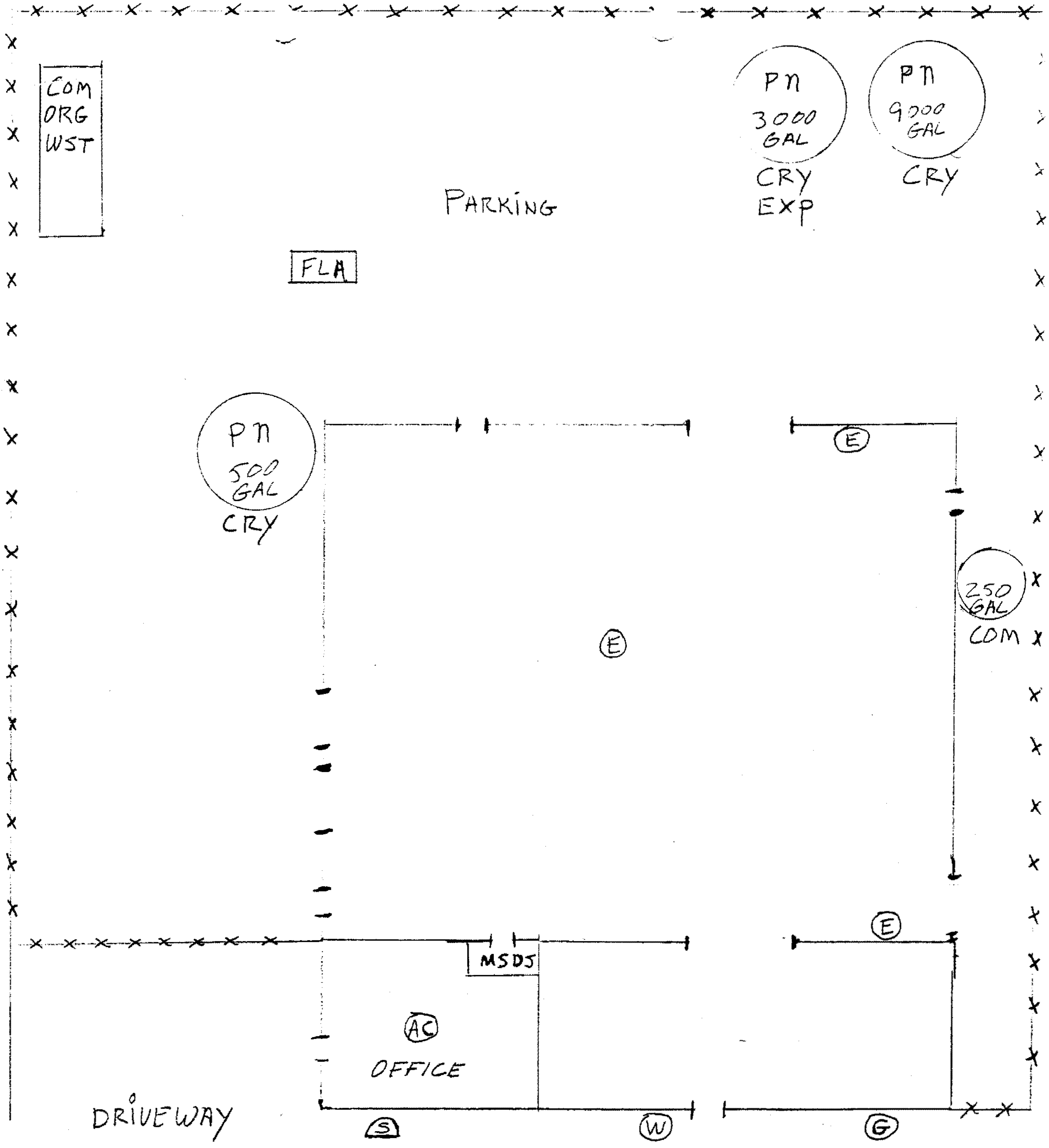
- ☒ Material Safety Data Sheet
- ☐ Personal knowledge
- ☐ Other

of the Material, the following precautions should be taken when handling the spilled material:

Wear:

- ☐ Gloves and goggles
- ☒ Respirator (APPROBED)
- ☐ Boots and Apron
- ☒ Other FULL PROTECTIVE CLOTHING

See Reverse side, page 4 for Site Map



10643 So Norwalk Blvd.

May 19, 1989 County of Los Angeles Survey Report

COUNTY OF LOS ANGELES DEPARTMENT OF HEALTH SERVICES
HAZARDOUS WASTE CONTROL PROGRAM

SIC.
DATE: 5-19-89
pl

COMPANY NAME: Continental Heat Treating
STREET: 10643 Norwalk Bl
CITY & ZIP: SFS 90670
DISTRICT: SE

OWNER: Stull, James, - owner
PERSON INTERVIEWED & TITLE: Bastian, Mike, G.M.
PHONE NO. (213) 944-8808
EMERGENCY NO.
NO. EMPLOYEES: 48

L.A. CO. PHL NO.: 153090-101
INDUSTRIAL WASTE NO.
EPA NO.: CAD053582995

SAFETY SHOWER: nw
EATING AREA: ok
TOILET & WASHING FACILITIES ADEQUATE: ok
PLANT SANITATION ADEQUATE: ok

TYPE OF FACILITY & DESCRIPTION OF OPERATION/PRODUCTS: Metal Heat Treating

HAZARDOUS WASTE

PROCESS	MATERIAL	TYPE	VOL/LBS	STORAGE METHOD	DISPOSAL METHOD	MANIFEST	CONTROL	I.H. HAZARD
(1) Degreasing →	PERC →	~~2,200g~~ Waste PERC	2,200 gal / year	55 gal steel	Acto-Kleen (Pico Rivera)	400 gal (10 drum) 3/21/89 8774641705	AAD Disposal 87746425	(3/1/89 completed
quenching	mineral oil	min oil water mix		clarifier pumped once per quarter yr	Disposal Control Service	84497012 11-29-88 1200 Gal.	Dan lemmo Rerdon 89586539	7/25/89
(3) Floor sweepings spills	Dry absorbant	—	— irregular →	→	Disposal Control Service.	13 drum 12-5-88 87595747	Casmalia Resource mgmt	
(4) ~~(2)~~ Retort & Tempering }	H_2		approx 2500 gal	used in process } →	to atmosphere as reacted + unreacted gas			
(5) ~~N2~~ Vacuum Furnace cooling & backfill →	N_2		approx 5000 gal 2 tanks	nw				

NUMBER OF UNDERGROUND STORAGE TANKS:
VOLUME & TYPE OF WASTE IN UNDERGROUND TANK(S):
PRIVATE DISPOSAL SYSTEMS ON PREMISES: YES ___ NO ___

ACCESS TO STORM INLET ON PREMISES: Yes ✓ No ___
CHLORINATED HYDROCARBON USED: YES ✓ NO ___
SEWER CONNECTION ON PREMISES: YES ✓ NO ___

REMARKS: Hauls approx 1/quarter all wastes
apparent motor oil discharge(s) with one auto-type oil filter on ground SW corner.

VIOLATIONS:

REFERRAL TO:
ACTION:
SURVEY CONDUCTED BY: James Odlung / G Broughton

COUNTY OF LOS ANGELES DEPARTMENT OF HEALTH SERVICES

SIC.

HAZARDOUS WASTE CONTROL PROGRAM

DATE: 5/19-89 p2

COMPANY NAME	STREET	CITY & ZIP	DISTRICT
OWNER	PERSON INTERVIEWED & TITLE	PHONE NO. EMERGENCY NO.	NO. EMPLOYEES

L.A. CO. PHL NO.

INDUSTRIAL WASTE NO.

EPA NO.

TYPE OF FACILITY & DESCRIPTION OF OPERATION/PRODUCTS:

SAFETY SHOWER ____

EATING AREA ____

TOILET & WASHING FACILITIES ADEQUATE ____

PLANT SANITATION ADEQUATE ____

		HAZARDOUS WASTE						
PROCESS	MATERIAL	TYPE	VOL/LBS	STORAGE METHOD	DISPOSAL METHOD	MANIFEST	CONTROL	I.H. HAZAR
Truck Service	oils grease				Service Company			
Vacuum pumps	oil	waste oil			onto ground & asphalt top at rear yard.			
Hydraulic pump								
Parts cleaning by blasting (of tool steel)	Steelshot glass beads	dust		swept to	domestic trash			

NUMBER OF UNDERGROUND STORAGE TANKS:

VOLUME & TYPE OF WASTE IN UNDERGROUND TANK(S):

PRIVATE DISPOSAL SYSTEMS ON PREMISES: YES ___ NO ___

ACCESS TO STORM INLET ON PREMISES: Yes ___ No ___

CHLORINATED HYDROCARBON USED: YES ___ NO ___

SEWER CONNECTION ON PREMISES: YES ___ NO ___

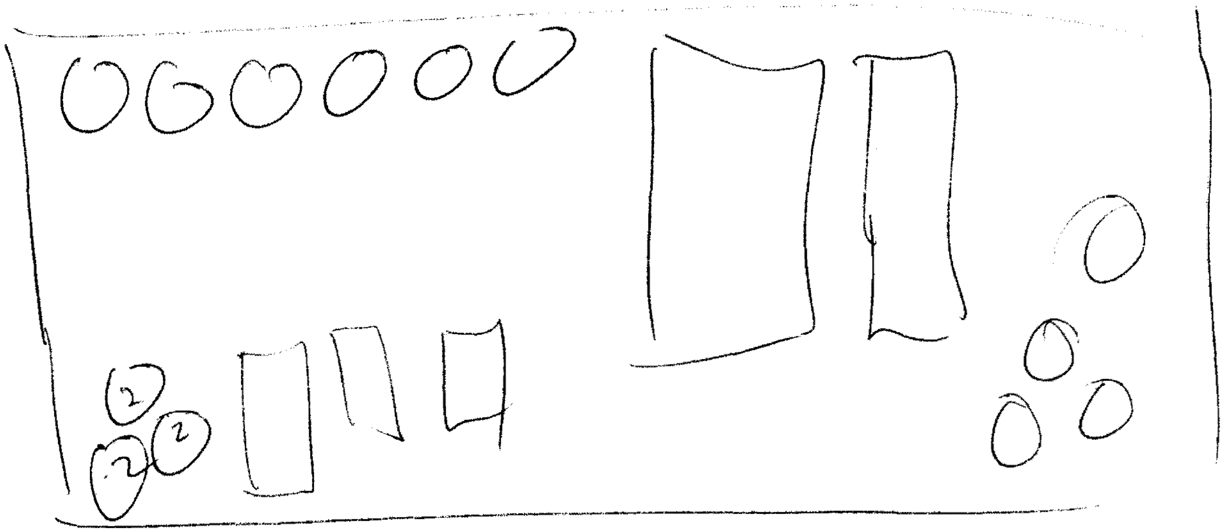
REMARKS: AQMD for ovens & vapor degreaser

VIOLATIONS:

REFERRAL TO:

ACTION:

SURVEY CONDUCTED BY:



Rear sw

COUNTY OF LOS ANGELES DEPARTMENT OF HEALTH SERVICES
HAZARDOUS WASTE CONTROL PROGRAM

SIC.

DATE: 5-19-69 R3

COMPANY NAME

STREET

CITY & ZIP

DISTRICT

OWNER

PERSON INTERVIEWED & TITLE

PHONE NO.

EMERGENCY NO.

NO. EMPLOYEES

L.A. CO. PHL NO.

INDUSTRIAL WASTE NO.

EPA NO.

SAFETY SHOWER ____

EATING AREA ____

TOILET & WASHING FACILITIES ADEQUATE ____

PLANT SANITATION ADEQUATE ____

TYPE OF FACILITY & DESCRIPTION OF OPERATION/PRODUCTS:

		HAZARDOUS WASTE						
PROCESS	MATERIAL	TYPE	VOL/LBS.	STORAGE METHOD	DISPOSAL METHOD	MANIFEST	CONTROL	I.H. HAZARD
Carbnitriting of steel	Anhyd NH_3	→	6[illegible] tank	→ Consumed in process				
Parts wiping	rags	oil solvent	→	→ covered cans	→ Prudential	overall service		

NUMBER OF UNDERGROUND STORAGE TANKS:

VOLUME & TYPE OF WASTE IN UNDERGROUND TANK(S):

PRIVATE DISPOSAL SYSTEMS ON PREMISES: YES ___ NO ___

ACCESS TO STORM INLET ON PREMISES: Yes ___ No ___

CHLORINATED HYDROCARBON USED: YES ___ NO ___

SEWER CONNECTION ON PREMISES: YES ___ NO ___

REMARKS:

VIOLATIONS:

REFERRAL TO:

ACTION:

SURVEY CONDUCTED BY:

March 16, 1984 County of Los Angeles Department of Health Services Official Notice of Violation

(OFFICE ADDRESS)

OFFICIAL NOTICE OF VIOLATION №042136

County of Los Angeles Department of Health Services

Community Health Services Environmental Management

DATE 3/16/84

TO Tower Industries - Att: Dennis Hugie

ADDRESS 10643 S Norwalk - SFS 90670

SUBJECT Hazardous Waste

ADDRESS above

You are hereby directed to remove oil from ground in rear storage area

This notice shall be complied with as required by: ☐ State Health and Safety Code, ☒ California Administrative Code, ☒ Los Angeles County Ordinance No. 7583, ☐ City Ordinance No. , Other Code

CORRECTION DATE 4/23/84

RECEIVED BY U.S. MAIL

MAIL SERVICE: ☒ FIRST CLASS ☐ CERTIFIED

LOS ANGELES COUNTY HEALTH OFFICER

BY H Walter

(TITLE)

H-777 (REV. 3/75)
760296

(*White* - VIOLATOR; *Canary* - SANITARIAN; *Pink* - DISTRICT DIRECTOR)

May 19, 1989 County of Los Angeles Department of Health Services Official Notice of Violation and Order to Comply

L. ---COUNTY HEALTH SERVICES
HAZARDOUS WASTE CONTROL PROGRAM

CASE NAME Continental Heat Treating

TE	TIME	INITIALS	REMARKS
5/19/89	pm	JC, GB	(1) Discharge of oil waste both onto asphalt top and onto soil (SW corner or rear yard) (2) Unlabelled barrels that Mr ~~[illegible]~~ Bastian indicated contained either PERC or waste oil (3) Incomplete manifests (no disposal facility signed copy available) (4) Seals + bungs missing on some oil waste barrels Has valid PHL
7-25-89		JD	Manifest 89485618 7/10/89 for removal of oil/absorbent. Mr Bastian states this was from both the rear area (soil) and asphalt – 4 drums removed. All violations abated. Facility has a continuing problem with mineral oil drag out on the asphalted area.

COUNTY OF LOS ANGELES • DEPARTMENT OF HEALTH SERVICES

'ZARDOUS MATERIALS CONTROL PROGRAM

Owner James Stull

Business Continental Heat treating, Inc.

Address 10643 S. Norwalk Blvd

City, Zip Code 90670

Date 5-19-89

Reply refer to:
2615 South Grand Avenue, Room 607
Los Angeles, CA 90007
(213) 744- 3723
James Odling

NOTICE OF VIOLATION AND ORDER TO COMPLY

The following conditions or practices observed at your facility are violations of the California Code of Regulations (CCR), Title 26, Division 22 or the California Health and Safety Code, Division 20, Chapter 6.5, (H&S) or both, which relate to the disposal, management, transportation, and storage of hazardous waste. YOU ARE DIRECTED TO CORRECT THE VIOLATIONS WITHIN THE TIMES SPECIFIED BELOW.

CORRECTION DATE

DISPOSAL:

5/19/89 ☒ 1. Discontinue the disposal of hazardous waste to an unauthorized point(s). (H&S 25189.5). any waste oil onto the ground

☐ 2. Legally dispose of all hazardous waste and contaminated materials (H&S 25189.5) ___ discharged to ___

☐ 3. Legally dispose of all stored hazardous waste and contaminated materials located at (H&S 25___) ___

C/K 5/19/89 - reviewed by GB

MANAGEMENT:

~~6/1/89~~ ☒ 4. Submit to this office a copy of your facility's hazardous materials contingency plan and employee training plan. (CCR 67105, 67120-67126, 67140-67145)

TRANSPORTATION:

☐ 5. Discontinue the transport of hazardous waste until the following have been met:
  - ☐ A. Obtain an EPA Identification Number from the State Department of Health Services at (916) 324-1781. (CCR 66472)
  - ☐ B. Complete a uniform Hazardous Waste Manifest or obtain a receipt when applicable under State Department of Health Services variance procedures. (H&S 25160 and 25143)
  - ☐ C. Transport all hazardous waste by a State registered hauler. (H&S 25163)

☒ 6. Submit to this office a copy of the completed hazardous waste manifest(s) used to dispose of all completed manifests (CCR 66328).

Note → ☐ 7. Keep copies at your facility of all completed manifests, receipts or both for a minimum of three (3) years and make documents available for agency review. (CCR 66492)

STORAGE:

☐ 8. Discontinue the storage of hazardous waste for longer than 90 days without a permit from the State Department of Health Services. (CCR 66508)

6/19/89 ☒ 9. Store all hazardous waste in compatible containers which are closed and in good condition. (CCR 66241 - 67243) keep lids & bungs on, don't over fill

6/19/89 ☒ 10. Properly label all containers with the following: the words, "HAZARDOUS WASTE" + PERC name and address of generator; hazardous properties; a composition and physical state of the waste; and the accumulation date. (CCR 66508) Label waste oil as waste oil

OTHER:

☐ 11. Provide this office with a site assessment and mitigation plan for the contamination at your facility.

☒ 12. Remove + legally dispose of oily surface in rear asphalted yard

Failure to fully comply with this Notice and Order may result in further legal action.

X ___
Owner or Authorized Representative

James Odling / GB
Hazardous Materials Specialist

HMCP 2/89

May 25, 2006 City of Santa Fe Springs Fire Department
Inspection Report and Notice of Violation

[illegible]y of Santa Fe Springs Fire Departm[illegible]t
Environme[illegible]l Protection Division ▪ Certified Unified Pro[illegible]ram Agency
11300 Greenstone Ave ▪ Santa Fe Springs ▪ CA 90670 (562) 944-9713 FAX (562) 941-1817

INSPECTION REPORT & NOTICE OF VIOLATION

Continental Heat Treating
10643 Norwalk
SFS, CA 90670

HMBP RMP
HWG SPCC
IW SW
UFC RECY.

Page 1 of ___

The following items, if applicable, have been inspected. This document constitutes a Summary of Violations and Notice to Comply if the violation (V) column is checked.
Reference: Titles 19 and 22 of the California Code of Regulations (CCR), Chapters 6.5, 6.67, and 6.95 of the Health and Safety Code (HSC), and Chapter 97 of the City Code.

Inspector(s) Richard Kallman **Inspection date** 5 / 25 / 06

Inspection consent given by Charlie Sotelo **Contact phone number** (562) 944-8808

HAZARDOUS WASTE GENERATOR				**HAZARDOUS WASTE GENERATOR**			
	V	*SUBJECT*	*REFERENCE*		V	*SUBJECT*	*REFERENCE*
1		Hazardous waste generator permit	City Ordinance 97.400	27		Hazardous waste analysis retained for 3 yrs	CCR 66262.40(c)
2		EPA ID number (call DTSC 800-618-6942)	CCR 66262.12(a)	28	✓	Personnel training for LQG	CCR 66265.16
3		Hazardous waste determination	CCR 66262.11	29		Personnel training for generators of waste	CCR 66262.34(d), CFR
4		Proper disposal of hazardous waste	HSC 25189.5(a)	30		Contingency plan for LQG	CCR 66265.51
5		Reckless management of hazardous waste	HSC 25189.6	31		Emergency preparedness/prevention	CCR 66265.30
6		Hazardous waste labeling	CCR 66262.34(f)	32	✓	SB14 requirements for LQGs	CCR 67100.3
7		Hazardous waste accumulation time	CCR 66262.34(a-d)	33		Biennial report for RCRA LQGs	CCR 66262.40
8		Retrograde/speculative accumulation	CCR 66262.10	34		Excluded recyclable material management	HSC 25143.2-.9
9		Satellite accumulation	CCR 66262.34(e)	35		Recyclable material report	HSC 25143.10
10		Containers leaking or not in good condition	CCR 66265.171	36		Proper management of Universal Waste	CCR 66273
11		Hazardous waste container closed	CCR 66265.173(a)	37	✓	Other hazardous waste violation(s)	
12		Separation of incompatibles	CCR 66265.177			**HAZARDOUS MATERIALS BUSINESS PLAN**	
13		Management of empty containers	CCR 66261.7	38		HMBP established and filed	HSC 25503.5
14		Used oil management	CHSC 25250.4	39		Inventory and plot plan accurate	HSC 25509
15		Used oil filter management	CCR 66266.130	40		Owner/operator information accurate	Ch. 6.95, HSC
17		Contaminated textile management	HSC 25144.6			**INDUSTRIAL WASTE**	
18		Container storage inspection – weekly	CCR 66265.174	42		Discharging industrial waste w/o a permit	City Ordinance, Ch. 97
19		Tank inspection – daily	CCR 66265.195	43	○	Other violation(s)	
20		Tank operating requirements	CCR 66265.194			**STORM WATER**	
21		Hazardous waste transported w/o manifest	CCR 66262.20-23	44	●	Storm water permit required (GIASP)	City Ordinance, Ch. 52
22		Hazardous waste manifest complete	CCR 66262.23(a)	45		Failure to implement BMPs	City Ordinance, Ch. 52
23		Manifest copies to DTSC	CCR 66262.23(a)(4)			**ABOVE GROUND PETROLEUM STORAGE**	
24		Manifest copies retained for 3 years	CCR 66262.40(a)	46	○	SPCC plan complete per requirements	CHSC 25270.5(c)
25		Consolidated manifest requirements	HSC 25160.2			**UNIFORM FIRE CODE**	
26		LDR documents retained onsite	CCR 66268.7(a)(6)	47		Uniform Fire Code	Uniform Fire Code

☐ **No hazardous waste violation(s) observed on date of inspection**

☒ **Notice to Comply: The violation(s) must be corrected by** 6-25-06.

☒ **Return "Certificate of Compliance"** **$** **Fee after this date**

Attention: The item(s) checked are in violation. A re-inspection may occur at any time to verify compliance. Non-compliance could result in re-inspection fees, permit revocation, and/or administrative/civil/criminal penalties. Any time granted for correction of the violation(s) does not preclude any enforcement action by this Department or other agencies. The giving of this notice and recent inspection of your facility is not a representation by the City of Santa Fe Springs that no other violations exist on your premises.

Program(s) inspected: ☒ HMBP ☒ HWG ☐ TP ☐ PBR ☒ RECYCLER ☐ UST ☒ CAL ARP ☒ SPCC ☒ SW ☒ IW ☒ UFC

Inspection type: ☒ Routine ☐ Other HWG Status: ☐ RCRA LQG ☐ RCRA SQG ☒ CA ONLY ☐ RECYCLER ☐ CESQG Silver ☐ SPG

Inspection Category: ☐ Single Program ☒ Combined ☐ Joint ☒ Integrated/Multi-Media Number of Employees: ~50

Notes: On 5-25-06 Continental Heat Treating was inspected. Facility heat treats metal parts and does copper plating on various parts.

28. Continental Heat Treating violated 22CCR66265.16 by not having a training program that meets all the requirements for Large Quantity Generators (LQG). Facility must implement a program which identifies employees that manage hazardous waste, their job title, job description, and a description of the training they receive. Implement a training program that meets LQG requirements and provide documentation to the Fire Dept.

I have read and understand the above stated violations. After these violations have been corrected, I will sign and return the "Certification of Compliance" form and submit any other required or requested information.

Signature of responsible party

Print name Charlie Sotelo

Date 5-25-06

City of Santa Fe Springs Fire Department
Environmental Protection Division ▪ Certified Unified Program Agency
11300 Greenstone Ave ▪ Santa Fe Springs ▪ CA 90670 (562) 944-9713 FAX (562) 941-1817

INSPECTION REPORT & NOTICE OF VIOLATION

BUSINESS Continental Heat Treating	SITE ADDRESS 10643 Norwalk
CONTACT Charlie Sotelo	
INSPECTED BY Richard Kallman	DATE INSPECTED 5-25-06

Reference: Titles 19 and 22 of the California Code of Regulations (CCR), Chapters 6.5, 6.67, and 6.95 of the Health and Safety Code (HSC), and Chapter 97 of the City Code.

32. Continental Heat Treating must ensure their waste minimization plan (SB14 plan) is up to date in accordance with 22CCR 67100.3. Facility has plan on site, but it appears it was last updated in 1999.

37. Continental Heat Treating violated 22CCR 66264.175(b)(5) by having liquid waste in their Copper plating line secondary containment. Spills into secondary containment must be removed as quickly as possible and in all cases within 24 hours. Facility must pump out containment and appropriately manage spilled material/waste.

43 Continental Heat Treating violated City Ordinance Chapter 52 by having oil in their 3rd stage of their clarifier. Oil must be removed from the clarifier and maintained such that oil is kept out of the sewer system.

44. Continental Heat Treating must ensure their stormwater pollution prevention plan is up to date. The plan on site was dated 1997. Ensure plan is accurate and still meets regulatory requirements.

46. Observation: Continental Heat Treating has in excess of 1,320 gallons of petroleum products stored aboveground. Facility is subject to SPCC requirements.

Correct violations by 6-25-06

5-25-06

May 9, 2007 City of Santa Fe Springs Fire Department Inspection Report and Notice of Violation

City of Santa Fe Springs Fire Department

Environm[illegible]l Protection Division ■ Certified Unified P[illegible]ram Agency

11300 Greenstone Ave ■ Santa Fe Springs ■ CA 90670 (562) 944-9713 FAX (562) 941-1817

INSPECTION REPORT & NOTICE OF VIOLATION

Continental Heat Treating
10643 Norwalk
SFS, CA 90670

HMBP
HWG - non-RCRA LQG
IW
UFC

RMP
SPCC
SW
Recy

Page 1 of 2

The following items, if applicable, have been inspected. This document constitutes a Summary of Violations and Notice to Comply if the violation (V) column is checked.

Reference: Titles 19 and 22 of the California Code of Regulations (CCR), Chapters 6.5, 6.67, and 6.95 of the Health and Safety Code (HSC), and Chapter 97 of the City Code.

Inspector(s) Richard Kallman **Inspection date** 5/9/07

Inspection consent given by Charlie Sotelo **Contact phone number** (562) 944-8808

HAZARDOUS WASTE GENERATOR				**HAZARDOUS WASTE GENERATOR**			
	V	*SUBJECT*	*REFERENCE*		V	*SUBJECT*	*REFERENCE*
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26		LDR documents retained onsite	CCR 66268.7(a)(6)	47	O	Uniform Fire Code	Uniform Fire Code

☐ **No hazardous waste violation(s) observed on date of inspection**

☒ **Notice to Comply: The violation(s) must be corrected by** 6-10-07.

☒ **Return "Certificate of Compliance"** **$** **Fee after this date**

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Program(s) inspected: ☒ HMBP ☒ HWG ☐ TP ☐ PBR ☒ RECYCLER ☐ UST ☒ CAL ARP ☒ SPCC ☒ SW ☒ IW ☒ UFC

Inspection type: ☒ Routine ☐ Other | HWG Status: ☐ RCRA LQG ☒ RCRA SQG ☐ CA ONLY ☐ RECYCLER ☐ CESQG Silver ☐ SPG

Inspection Category: ☐ Single Program ☒ Combined ☐ Joint ☒ Integrated/Multi-Media | Number of Employees: 60

Notes: On 5-9-07 Continental Heat Treating was inspected. Facility utilizes furnaces to heat treat parts and copper plates various parts as well.

7. Continental Heat Treating violated 22CCR66262.34 by storing waste for longer than allowed. 1 x 55 gallon drum of waste filters was stored in the Plating Department Storage area. The drum had an accumulation start date of 11-6-06. Continental Heat Treating must not store waste for more than 90 days unless waste storage meets satellite accumulation requirements.

35. Continental Heat Treating violated CA HSC 25143.10 by not completing a recyclable material report. This report is due July 1 of even numbered years and was last completed in 2004. Continental Heat Treating must complete this report and submit it to the Fire Department.

I have read and understand the above stated violations. After these violations have been corrected, I will sign and return the "Certification of Compliance" form and submit any other required or requested information.

Signature of responsible party: Charlie Sotelo

Print name: Charlie Sotelo

Date: 5-10-07

City of Santa Fe Springs Fire Department
Environmental Protection Division ▪ Certified Unified Program Agency
11300 Greenstone Ave ▪ Santa Fe Springs ▪ CA 90670 (562) 944-9713 FAX (562) 941-1817

INSPECTION REPORT & NOTICE OF VIOLATION

Page 2 of 2

BUSINESS Continental Heat Treating
SITE ADDRESS 10643 Norwalk
CONTACT Charlie Sotelo
INSPECTED BY Richard Fallman
DATE INSPECTED 5-9-07

Reference: Titles 19 and 22 of the California Code of Regulations (CCR), Chapters 6.5, 6.67, and 6.95 of the Health and Safety Code (HSC), and Chapter 97 of the City Code.

39. Continental Heat Treating violated HSC25509 by not having an accurate business plan inventory on site. A cylinder of nitrogen/hydrogen gas used by the ZE unit was not listed as well as welding gas. Continental Heat Treating must determine if the quantity of these materials requires a chemical inventory form to be submitted. Updates shall be sent to the Fire Department.

43. Continental Heat Treating violated City Code 97.60 section 20.30.610 by failing to maintain pretreatment equipment in good working order. The third stage of the clarifier had oil in it. Continental Heat Treating must maintain the clarifier to prevent oil from entering the sewer system.

47A Continental Heat Treating violated UFC8001.4.7 by not maintaining equipment in good working order. The flow meters associated with Furnace N2 was found to be leaking ammonia. Continental Heat Treating must stop the ammonia leak and ensure equipment is maintained to prevent leaks.

47B. Continental Heat Treating violated UFC8001.11.8 by having incompatible materials stored together. Acids & Bases were stored together in the storage area for the plating department. Incompatible materials must be separated by 20 feet or a non-combustible partition.

Other: Continental Heat Treating violated 19CCR2755.6 by not completing a CalARP self Audit. Self Audits are required to be completed every three years. The CalARP was initially submitted 4-29-04, so the audit was due to be completed by 4-29-07. Continental Heat Treating must complete the audit and send a copy of the audit results to the Fire Department.

Correct violations by 6-10-07

Signature

Charlie Sotelo
Name

5-10-07
Date

APPENDIX H

CARDNO'S *REPORT OF SOIL BORINGS IN SUPPORT OF FORENSIC INVESTIGATION*, DATED FEBRUARY 8, 2017

Cardno
Shaping the Future

February 8, 2017
Cardno 08115504.R24

Cardno
License A/C10-611383

4572 Telephone Road
Suite 916
Ventura, CA 93003
USA

Phone 805 644 4157
Fax 805 644 5610

www.cardno.com

Mr. Luis Changkuon
California Regional Water Quality Control Board
Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, California 90013

SUBJECT **Report of Soil Borings In Support of Forensic Investigation**
Former ExxonMobil Jalk Fee Property
10607 Norwalk Boulevard
Santa Fe Springs, California
CRWQCB-LAR Case No. 0203; Site I.D. No. 1848000

Mr. Changkuon:

At the request of ExxonMobil Environmental Services (EMES), on behalf of ExxonMobil US Production Company (ExxonMobil), Cardno has prepared this *Report of Soil Borings in Support of Forensic Investigation* for the subject site. The purpose of the report is to document the investigation methodology associated with the advancement of 14 soil borings along the property boundary between the Jalk Fee site and the Continental Heat Treating (CHT) site. This investigation was performed as part of a forensic investigation conducted by Newfields to identify and evaluate the co-occurrence of markers associated with wastes generated from heat treating operations with previously identified PCE in soil at the subject site. The scope of work was to collect 10 samples of native soil beneath and directly surrounding former excavation SB49 (the area directly adjacent to the property boundary with Continental Heat Treating where the highest PCE concentrations have been detected in shallow soil), that exhibited high concentration of VOCs based upon field screening, as well as a background reference location to the west (B33) (Plate 1). These selected samples were then submitted to Newfields for analysis and forensic evaluation.

FIELD ACTIVITIES

Pre-Field Activities

Underground Service Alert of Southern California was notified at least 48 hours prior to conducting the fieldwork. A geophysical survey was conducted to identify subsurface features in the vicinity of the boring locations. No permit was required by the County of Los Angeles Department of Public Health. The fieldwork was conducted under the supervision of a State of California professional geologist. The field protocol for the drilling and sampling of the soil borings is included in Attachment A.

Soil Borings

On October 18 through 21, 2016, soil borings B24 through B37 were advanced to depths ranging from 3 to 20 feet bgs using a direct-push rig and/or hand auger equipment (Plate 1). The borings were continuously cored for field screening and lithologic description to identify the presence of backfill associated with excavation SB49 and determine the depth to native soil (Attachment B). After identifying native soil, the borings were advanced until field screening indicated decreasing concentrations of VOCs. The soil samples with the highest field screening indications of VOCs were preserved using EPA Method 5035 and submitted to Newfields/Alpha Analytical Laboratories, Inc. for laboratory analysis. Samples were not submitted from borings if the respective field screening did not indicate the presence of significant VOCs.

Please refer to Newfields report titled *Forensic Signature of Hydrocarbons,* dated February 7, 2017, for details on the analytical methods, laboratory reports, and COC records.

Waste Management Plan

The soil and decontamination water generated during field activities were temporarily stored on site in DOT-approved and sealed 55-gallon drums. Soil cuttings were transported to Soil Safe, Inc.'s approved facility in Adelanto, California, for recycling. Decontamination water was transported to Crosby & Overton's approved facility in Long California, for disposal. Copies of the manifests are included as Attachment C.

LIMITATIONS

For documents cited that were not generated by Cardno, the data taken from those documents is used "as is" and is assumed to be accurate. Cardno does not guarantee the accuracy of this data and makes no warranties for the referenced work performed nor the inferences or conclusions stated in these documents.

This document and the work performed have been undertaken in good faith, with due diligence and with the expertise, experience, capability and specialized knowledge necessary to perform the work in a good and workmanlike manner and within all accepted standards pertaining to providers of environmental services in California at the time of investigation. No soil engineering or geotechnical references are implied or should be inferred. The evaluation of the geologic conditions at the site for this investigation is made from a limited number of data points. Subsurface conditions may vary away from these data points.

If you have questions regarding this document, please call Mr. James Anderson at 805 644 4157, extension 181805.

Sincerely,

James Anderson
Senior Engineer
for Cardno
Direct Line 805 644 4157, ext. 181805
Email: james.anderson@cardno.com

ANDREW B. NELSON
exp. 9/30/17
NO 8360

Andy Nelson
Senior Geologist
P.G. 8360
for Cardno
Direct Line 805 644 4157, ext. 181809
Email: andy.nelson@cardno.com

cc: Ms. Marla Madden, ExxonMobil Environmental Services Company

Enclosures:

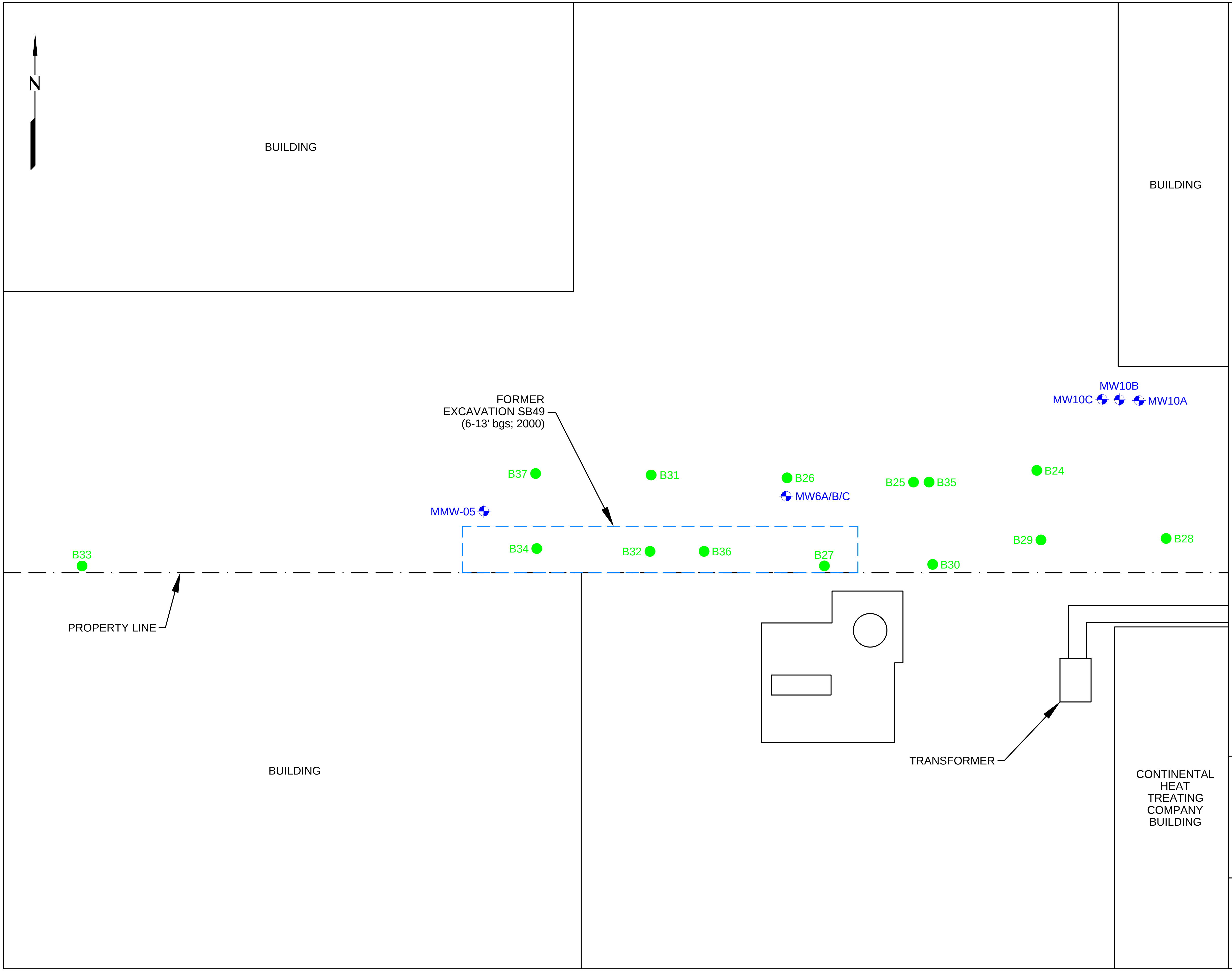
Acronym List

Plate 1	Generalized Site Plan

Attachment A	Field Protocol
Attachment B	Boring Logs
Attachment C	Manifests

ACRONYM LIST

µg/L	Micrograms per liter
µs	Microsiemens
1,2-DCA	1,2-dichloroethane
acfm	Actual cubic feet per minute
AS	Air sparge
bgs	Below ground surface
BTEX	Benzene, toluene, ethylbenzene, and total xylenes
CEQA	California Environmental Quality Act
cfm	Cubic feet per minute
COC	Chain of Custody
CPT	Cone Penetration (Penetrometer) Test
DIPE	Di-isopropyl ether
DO	Dissolved oxygen
DOT	Department of Transportation
DPE	Dual-phase extraction
DTW	Depth to water
EDB	1,2-dibromoethane
EPA	Environmental Protection Agency
ESL	Environmental screening level
ETBE	Ethyl tertiary butyl ether
FID	Flame-ionization detector
fpm	Feet per minute
GAC	Granular activated carbon
gpd	Gallons per day
gpm	Gallons per minute
GWPTS	Groundwater pump and treat system
HVOC	Halogenated volatile organic compound
J	Estimated value between MDL and PQL (RL)
LEL	Lower explosive limit
LPC	Liquid-phase carbon
LRP	Liquid-ring pump
LUFT	Leaking underground fuel tank
LUST	Leaking underground storage tank
MCL	Maximum contaminant level
MDL	Method detection limit
mg/kg	Milligrams per kilogram
mg/L	Milligrams per liter
mg/m^3	Milligrams per cubic meter
MPE	Multi-phase extraction
MRL	Method reporting limit
msl	Mean sea level
MTBE	Methyl tertiary butyl ether
MTCA	Model Toxics Control Act
NAI	Natural attenuation indicators
NAPL	Non-aqueous phase liquid
NEPA	National Environmental Policy Act
NGVD	National Geodetic Vertical Datum
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and Maintenance
ORP	Oxidation-reduction potential
OSHA	Occupational Safety and Health Administration
OVA	Organic vapor analyzer
P&ID	Process & Instrumentation Diagram
PAH	Polycyclic aromatic hydrocarbon
PCB	Polychlorinated biphenyl
PCE	Tetrachloroethene or perchloroethylene
PID	Photo-ionization detector
PLC	Programmable logic control
POTW	Publicly owned treatment works
ppmv	Parts per million by volume
PQL	Practical quantitation limit
psi	Pounds per square inch
PVC	Polyvinyl chloride
QA/QC	Quality assurance/quality control
RBSL	Risk-based screening levels
RCRA	Resource Conservation and Recovery Act
RL	Reporting limit
scfm	Standard cubic feet per minute
SSTL	Site-specific target level
STLC	Soluble threshold limit concentration
SVE	Soil vapor extraction
SVOC	Semivolatile organic compound
TAME	Tertiary amyl methyl ether
TBA	Tertiary butyl alcohol
TCE	Trichloroethene
TOC	Top of well casing elevation; datum is msl
TOG	Total oil and grease
TPHd	Total petroleum hydrocarbons as diesel
TPHg	Total petroleum hydrocarbons as gasoline
TPHmo	Total petroleum hydrocarbons as motor oil
TPHs	Total petroleum hydrocarbons as stoddard solvent
TRPH	Total recoverable petroleum hydrocarbons
UCL	Upper confidence level
USCS	Unified Soil Classification System
USGS	United States Geologic Survey
UST	Underground storage tank
VCP	Voluntary Cleanup Program
VOC	Volatile organic compound
VPC	Vapor-phase carbon



EXPLANATION

⊕	MW10A	Groundwater monitoring well
●	B33	Soil Boring

SOURCE:
Modified from a map
provided by
GOOGLE EARTH

APPROXIMATE SCALE

0 25 50
FEET

FN 08115504 R24.P1

GENERALIZED SITE PLAN

FORMER EXXONMOBIL JALK FEE PROPERTY
10607 Norwalk Boulevard
Santa Fe Springs, California

Cardno®
Shaping the Future

PROJECT NO.
1155

PLATE
1

DATE: 01/24/17

ATTACHMENT A

FIELD PROTOCOL

Cardno
Soil Boring and Well Installation
Field Protocol

Preliminary Activities

Prior to the onset of field activities at the site, Cardno obtains the appropriate permit(s) from the governing agency(s). Advance notification is made as required by the agency(s) prior to the start of work. Cardno marks the borehole locations and contacts the local one call utility locating service at least 48 hours prior to the start of work to mark buried utilities. Borehole locations may also be checked for buried utilities by a private geophysical surveyor. Prior to drilling, the borehole location is cleared in accordance with the client's procedures. Fieldwork is conducted under the advisement of a registered professional geologist and in accordance with an updated site-specific safety plan prepared for the project, which is available at the job site during field activities.

Drilling and Soil Sampling Procedures

Cardno contracts a licensed driller to advance the boring and collect soil samples. The specific drilling method (e.g., hollow-stem auger, direct push method, or sonic drilling), sampling method [e.g., core barrel or California-modified split spoon sampler (CMSSS)] and sampling depths are documented on the boring log and may be specified in a work plan. Soil samples are typically collected at the capillary fringe and at 5-foot intervals to the total depth of the boring. To determine the depth of the capillary fringe prior to drilling, the static groundwater level is measured with a water level indicator in the closest monitoring well to the boring location, if available.

The borehole is advanced to just above the desired sampling depth. For CMSSSs, the sampler is placed inside the auger and driven to a depth of 18 inches past the bit of the auger. The sampler is driven into the soil with a standard 140-pound hammer repeatedly dropped from a height of 30 inches onto the sampler. The number of blows required to drive the sampler each 6-inch increment is recorded on the boring log. For core samplers (e.g., direct push), the core is driven 18 inches using the rig apparatus.

Soil samples are preserved in the metal or plastic sleeve used with the CMSSS or core sampler, in glass jars or other manner required by the local regulatory agency (e.g., Environmental Protection Agency Method 5035). Sleeves are removed from the sample barrel, and the lowermost sample sleeve is immediately sealed with Teflon^{TM} tape, capped and labeled. Samples are placed in a cooler chilled to 4º Celsius and transported to a state-certified laboratory. The samples are transferred under chain-of-custody (COC) protocol.

Field Screening Procedures

Cardno places the soil from the middle of the sampling interval into a plastic re-sealable bag. The bag is placed away from direct sunlight for approximately 20 minutes, after which the tip of a photo-ionization detector (PID) or similar device is inserted through the plastic bag to measure organic vapor concentrations in the headspace. The PID measurement is recorded on the boring log. At a minimum, the PID or other device is calibrated on a daily basis in accordance with manufacturer's specifications using a hexane or isobutylene standard. The calibration gas and concentration are recorded on a calibration log. Instruments such as the PID are useful for evaluating relative concentrations of volatilized hydrocarbons, but they do not measure the concentration of petroleum hydrocarbons in the soil matrix with the same precision as laboratory analysis. Cardno trained personnel describe the soil in the bag according to the Unified Soil Classification System and record the description on the boring log, which is included in the final report.

Air Monitoring Procedures

Cardno performs a field evaluation for volatile hydrocarbon concentrations in the breathing zone using a calibrated PID or lower explosive level meter.

Groundwater Sampling

A groundwater sample, if desired, is collected from the boring by using Hydropunch^{TM} sampling technology or installing a well in the borehole. In the case of using Hydropunch^{TM} technology, after collecting the capillary fringe soil sample, the boring is advanced to the top of the soil/groundwater interface and a sampling probe is pushed to approximately 2 feet below the top of the static water level. The probe is opened by partially withdrawing it and thereby exposing the screen. A new or decontaminated bailer is used to collect a water sample from the probe. The water sample is then emptied into laboratory-supplied containers constructed of the correct material and with the correct volume and preservative to comply with the proposed laboratory test. The container is slowly filled with the retrieved water sample until no headspace remains and then promptly sealed with a Teflon-lined cap, checked for the presence of bubbles, labeled, entered onto a COC record and placed in chilled storage at 4° Celsius. Laboratory-supplied trip blanks accompany the water samples as a quality assurance/quality control procedure. Equipment blanks may be collected as required. The samples are kept in chilled storage and transported under COC protocol to a client-approved, state-certified laboratory for analysis.

Backfilling of Soil Boring

If a well is not installed, the boring is backfilled from total depth to approximately 5 feet below ground surface (bgs) with either neat cement or bentonite grout using a tremie pipe. The boring is backfilled from 5 feet bgs to approximately 1 foot bgs with hydrated bentonite chips. The borehole is completed from 1 foot bgs to surface grade with material that best matches existing surface conditions and meets local agency requirements. Site-specific backfilling details are shown on the respective boring log.

Well Construction

A well (if constructed) is completed using materials documented on the boring log or specified in a work plan. The well is constructed with slotted casing across the desired groundwater sampling depth(s) and completed with blank casing to within 6 inches of surface grade. No further construction is conducted on temporary wells. For permanent wells, the annular space of the well is backfilled with Monterey sand from the total depth to approximately 2 feet above the top of the screened casing. A hydrated granular bentonite seal is placed on top of the sand filter pack. Grout may be placed on top of the bentonite seal to the desired depth using a tremie pipe. The well may be completed to surface grade with a 1-foot thick concrete pad. A traffic-rated well vault and locking cap for the well casing may be installed to protect against surface-water infiltration and unauthorized entry. Site-specific well construction details including type of well, well depth, casing diameter, slot size, length of screen interval and sand size are documented on the boring log or specified in the work plan.

Well Development and Sampling

If a permanent groundwater monitoring well is installed, the grout is allowed to cure a minimum of 48 hours before development. Cardno personnel or a contracted driller use a submersible pump or surge block to develop the newly installed well. Prior to development, the pump is decontaminated by allowing it to run and re-circulate while immersed in a non-phosphate solution followed by successive immersions in potable water and de-ionized water baths. The well is developed until sufficient well casing volumes are removed so that turbidity is within allowable limits and pH, conductivity and temperature levels stabilize in the purge water. The volume of groundwater extracted is recorded on a log.

Following development, groundwater within the well is allowed to recharge until at least 80% of the drawdown is recovered. A new or decontaminated bailer is slowly lowered past the air/water interface in the well, and a water sample is collected and checked for the presence of non-aqueous phase liquid, sheen or emulsions. The water sample is then emptied into laboratory-supplied containers as discussed above.

Surveying

If required, wells are surveyed by a licensed land surveyor relative to an established benchmark of known elevation above mean sea level to an accuracy of +/- 0.01 foot. The casing is notched or marked on one side to identify a consistent surveying and measuring point.

Decontamination Procedures

Cardno or the contracted driller decontaminates soil and water sampling equipment between each sampling event with a non-phosphate solution, followed by a minimum of two tap water rinses. De-ionized water may be used for the final rinse. Downhole drilling equipment is steam-cleaned prior to drilling the borehole and at completion of the borehole.

Waste Treatment and Soil Disposal

Soil cuttings generated from the drilling or sampling are stored on site in labeled, Department of Transportation-approved, 55-gallon drums or other appropriate storage container. The soil is removed from the site and transported under manifest to a client- and regulatory-approved facility for recycling or disposal. Decontamination fluids and purge water from well development and sampling activities, if conducted, are stored on site in labeled, regulatory-approved storage containers. Fluids are subsequently transported under manifest to a client- and regulatory-approved facility for disposal or treated with a permitted mobile or fixed-base carbon treatment system.

ATTACHMENT B

BORING LOGS

Cardno
Shaping the Future

BORING LOG B24

(Page 1 of 1)

Date Drilled : 10-20-2016
Drilling Co. : JDK Drilling Inc.
Drilling Method : Direct Push
Sampling Method : Continuous Core
Borehole Diameter : 2.5"
Casing Diameter : N/A
Latitude : 33.937213°
Longitude : -118.073942°
Total Boring Depth : 20' bgs
First GW Depth : N/A

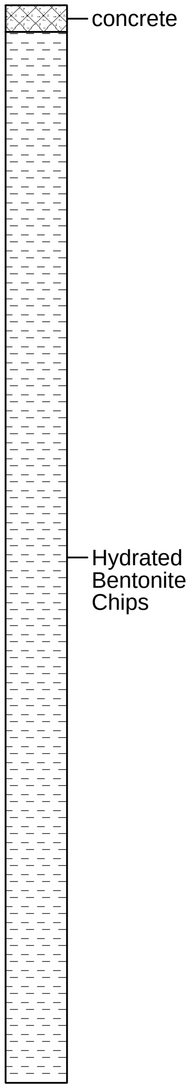
Project No. : 081155
Site : Jalk Fee Property 10607 Norwalk Blvd, Santa Fe Springs
Logged By : Andy Nelson
Reviewed By : Andy Nelson, P.G. 8360
Signature :

Sample Condition
☒ No Recovery
☐ Sampled Interval
■ Described Sample
▩ Preserved Sample

Water Levels
▼ Groundwater After Completion
▽ Groundwater During Drilling

Depth (ft)	Blow Count / 6"	OVM/PID (ppmv)	Sample	Column	USCS	DESCRIPTION (%clay/silt/sand/gravel)
0		25.4	■			3" asphalt at surface. Hand augered to 8' bgs
		9.0	■		SW	(FILL) Well graded SAND with gravel: very fine to coarse grained, dark brown, moist, gravel is angular (0/0/50/50)
		19.1	■		SP	(FILL) Poorly graded Sand with traces of gravel: very fine to fine grained, dark brown, moist (0/5/85/10)
		16.2	■			
		23.5	■			
5		2.1	■		ML	Sandy SILT: light reddish brown, moist, sand is very fine to fine grained, low-plasticity (0/70/30/0)
		0.0	■			
		0.0	■			
		13	▩			same as above
		6.3	■			
10			■			same as above
		0.1	■			
		0.3	■		SP	Poorly graded SAND: tan/light brown, moist, very fine to fine grained (0/0/100/0)
15		0.6	■			same as above
		0.4	▩		ML	SILT, tan/light brown, moist, non-plastic (0/100/0/0)
		0.7	■			Same as above
20						
25						

Boring: B24



BORING LOG B25

(Page 1 of 1)

Date Drilled	: 10-20-2016
Drilling Co.	: JDK Drilling Inc.
Drilling Method	: Direct Push
Sampling Method	: Continuous Core
Borehole Diameter	: 2.5"
Casing Diameter	: N/A
Latitude	: 33.937212°
Longitude	: -118.073919°
Total Boring Depth	: 19' bgs
First GW Depth	: N/A

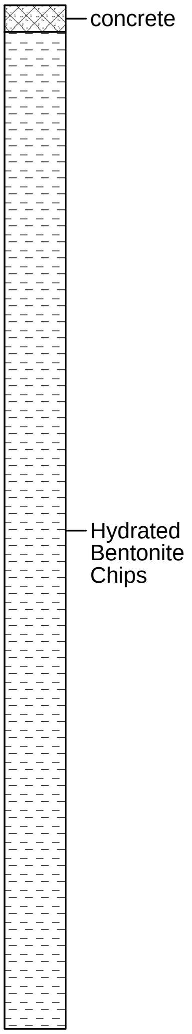
Project No.	: 081155
Site	: Jalk Fee Property 10607 Norwalk Blvd, Santa Fe Springs
Logged By	: Andy Nelson
Reviewed By	: Andy Nelson, P.G. 8360
Signature	: Andy N

Sample Condition
- ☒ No Recovery
- ☐ Sampled Interval
- ■ Described Sample
- ▩ Preserved Sample

Water Levels
- ▼ Groundwater After Completion
- ▽ Groundwater During Drilling

Boring: B25

Depth (ft)	Blow Count / 6"	OVM/PID (ppmv)	Sample	Column	USCS	DESCRIPTION (%clay/silt/sand/gravel)
0		52.4	■			3" asphalt at surface. Hand augered to 8' bgs
			■		SW	(FILL) SAND: well graded SAND with gravel: dark brown, moist, gravel is angular (0/0/60/40)
		38.4	■		ML	
		43.6	■			(FILL) Sandy SILT: brown, moist, sand is very fine to fine grained, non-plastic (0/60/40/0)
		221.9	■			Same as above, except trace gravel (0/60/30/10)
		137.9	■			
5		10.3	■		ML	Sandy SILT: reddish brown, moist, sand is fine-grained, non-plastic (0/75/25/0)
		0.2	■			
		0.8	■			
		1.8	■			Same as above
10		3.0	■			Same as above
			▩			Same as above
		24.9	■			
			■		SP	Poorly graded SAND: tan/light brown, moist, very fine to fine grained (0/0/100/0)
		1.0	■			
15			■		ML	SILT: tan/light brown, moist, non-plastic (0/100/0/0)
			▩			SILT: with sand dark reddish brown, moist, non-plastic, sand is medium grained (0/85/15/0)
			▩			SILT: tan/light brown, non-plastic (0/100/0/0)
		20.6	■			
		2.1	■			
		0.6	■			Same as above
20						
25						



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BORING LOG B26

(Page 1 of 1)

Date Drilled	: 10-18-2016
Drilling Co.	: JDK Drilling Inc.
Drilling Method	: Direct Push
Sampling Method	: Continuous Core
Borehole Diameter	: 2.5"
Casing Diameter	: N/A
Latitude	: 33.937215°
Longitude	: -118.074024°
Total Boring Depth	: 20' bgs
First GW Depth	: N/A

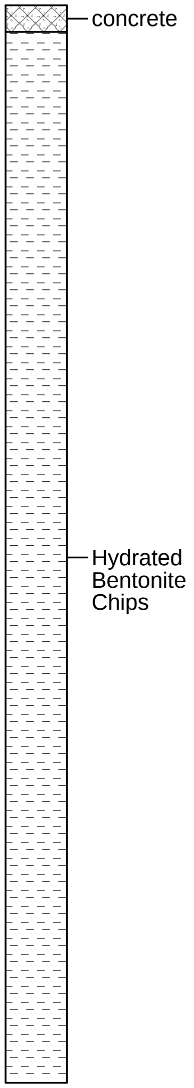
Project No.	: 081155
Site	: Jalk Fee Property 10607 Norwalk Blvd, Santa Fe Springs
Logged By	: Andy Nelson
Reviewed By	: Andy Nelson, P.G. 8360
Signature	:

Sample Condition
- ☒ No Recovery
- ☐ Sampled Interval
- ■ Described Sample
- ▩ Preserved Sample

Water Levels
- ▼ Groundwater After Completion
- ▽ Groundwater During Drilling

Boring: B26

Depth (ft)	Blow Count / 6"	OVM/PID (ppmv)	Sample	Column	USCS	DESCRIPTION (%clay/silt/sand/gravel)
0		5.3	■			3" asphalt at surface. Hand augered to 5' bgs
1		3.8	■		SW	(FILL) well graded SAND with gravel: dark brown, moist, gravel is angular (0/0/60/40)
2		5.2	■		ML	(FILL) Sandy SILT: dark brown, moist, sand is fine grained, (0/75/25/0).
3		7.6	■			
4		35.7	■			
5		465	■			(FILL) Sandy SILT: reddish brown, moist, sand is fine grained, low-plasticity (0/90/10/0)
6		55.3	■		SW	(FILL) well graded SAND with gravel: brown, fine to coarse grained, gravel its angular (0/10/60/30)
8		32.4	■			
8.5			■		ML	Sandy SILT: reddish brown, moist, sand is fine grained, low-plasticity (0/60/40/0)
10		21.7	■			
10.5			▩			
11.5			■		SP	Poorly graded SAND: fine grained, brown, moist (0/0/100/0)
12		8.3	■			
14		0.7	■			
15			■		ML	SILT: grayish brown, moist, low-plasticity, very minor calcification in between 15-15.5' (0/100/0/0)
15.5			▩			
16		11.9	▩			
16.5			■			
18		1.4	■			
18.5			▩			
19		2.6	▩			same as above
19.5			■			
20						
25						



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BORING LOG B27

(Page 1 of 1)

Date Drilled : 10-18-2016
Drilling Co. : JDK Drilling Inc.
Drilling Method : Direct Push
Sampling Method : Continuous Core
Borehole Diameter : 2.5"/1.5"
Casing Diameter : N/A
Latitude : 33.937154°
Longitude : -118.073993°
Total Boring Depth : 19' bgs
First GW Depth : N/A

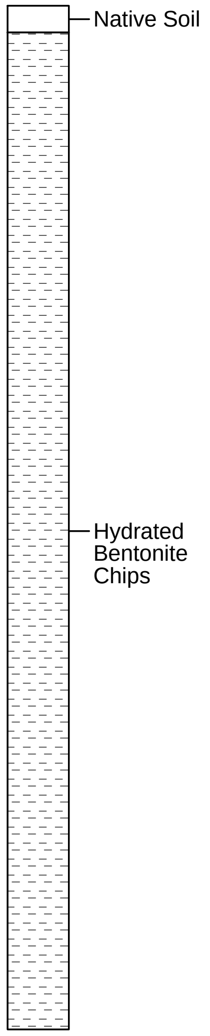
Project No. : 081155
Site : Jalk Fee Property 10607 Norwalk Blvd, Santa Fe Springs
Logged By : Andy Nelson
Reviewed By : Andy Nelson, P.G. 8360
Signature :

Sample Condition
☒ No Recovery
☐ Sampled Interval
■ Described Sample
▩ Preserved Sample

Water Levels
▼ Groundwater After Completion
▽ Groundwater During Drilling

Boring: B27

Depth (ft)	Blow Count / 6"	OVM/PID (ppmv)	Sample	Column	USCS	DESCRIPTION (%clay/silt/sand/gravel)
0		0.5	■			Hand augered to 5' fet bgs. Sandy SILT: sand is fine grained, dark brown, moist, non-plastic (5/70/25/0)
		6.0	■			
		3.7	■			SILT with sand and clay: brown, wet (possibly from irrigation) sand is fine grained, low-plasticty (10/70/15/0)
		11.7	■			
		54.4	■			
5		85.7	■			Sandy SILT: sand is fine grained, brown, moist, non-plastic (5/70/15/0)
		9.3	■		ML	
			▩			
		16.0	■			same as above
10		351	■			Clayey SILT: with sand, brown, moist, high-plasticty, sand is fine grained (60/25/15/0)
		352	■			Poorly Graded SAND: fine grained, brown, moist (0/0/100/0)
		2445	■		SP	
15			■			Calcification, (from 15 to 15.5') chalky white/grey, cemented
		53.1	▩			SILT with sand: light brown, moist, sand is fine grained, non-plastic (0/80/20/0) Switched to a 2" long, 1.5" diameter sampler same as above
			■		ML	
		299	▩			
		36	☒			
20						
25						



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BORING LOG B28

(Page 1 of 1)

Date Drilled : 10-19-2016
Drilling Co. : JDK Drilling Inc.
Drilling Method : Direct Push
Sampling Method : Continuous Core
Borehole Diameter : 2.5"
Casing Diameter : N/A
Latitude : 33.937173°
Longitude : -118.073709°
Total Boring Depth : 20' bgs
First GW Depth : N/A

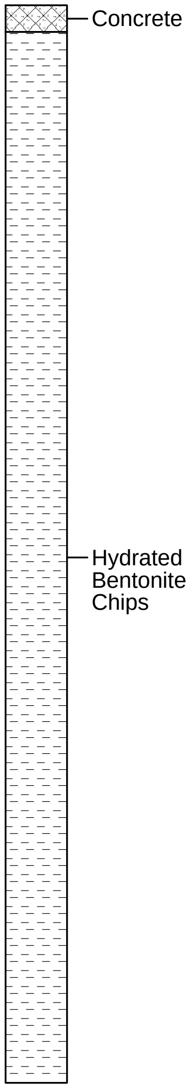
Project No. : 081155
Site : Jalk Fee Property 10607 Norwalk Blvd, Santa Fe Springs
Logged By : Andy Nelson
Reviewed By : Andy Nelson, P.G. 8360
Signature :

Sample Condition
☒ No Recovery
☐ Sampled Interval
■ Described Sample
▩ Preserved Sample

Water Levels
▼ Groundwater After Completion
▽ Groundwater During Drilling

Depth (ft)	Blow Count / 6"	OVM/PID (ppmv)	Sample	Column	USCS	DESCRIPTION (%clay/silt/sand/gravel)
0		0.0	■			3" asphalt at surface. Hand augered to 5' bgs
		0.1	■		SW	(FILL) Well graded SAND with gravel: fine to coarse grained, dark brown, moist (0/0/70/30)
		0.0	■			Sandy SILT: sand is fine grained, reddish brown, moist, non-plastic (0/65/35/0)
		0.0	■			
		0.7	■			Same as above
5		6.9	■			
			▩			
		0.0	■			same as above, except with iron oxide staining
		0.2	■			
10		0.6	■			Same as above
			■		ML	
		36.7	■			Sandy SILT: trace clay, sand is fine to medium grained, black, moist, non-plastic, oily staining (5/65/30/0)
		83.7	▩			Same as above
15		1.7	■			
		22.3	■			1" transition in color; Sandy SILT: trace clay, sand is fine to medium grained, reddish brown, moist non-plastic (5/65/30/0)
		0.9	■			SILT: tan/brown, moist, non-plastic (0/100/0/0)
		4.6	▩			Same as above, except light tan
20						
25						

Boring: B28



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BORING LOG B29

(Page 1 of 1)

Date Drilled : 10-19-2016
Drilling Co. : JDK Drilling Inc.
Drilling Method : Direct Push
Sampling Method : Continuous Core
Borehole Diameter : 2.5"
Casing Diameter : N/A
Latitude : 33.937172°
Longitude : -118.073813°
Total Boring Depth : 20' bgs
First GW Depth : N/A

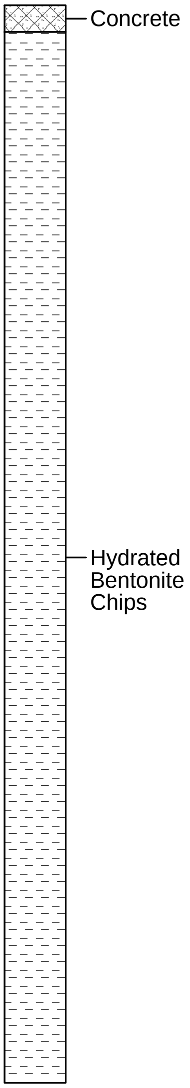
Project No. : 081155
Site : Jalk Fee Property 10607 Norwalk Blvd, Santa Fe Springs
Logged By : Andy Nelson
Reviewed By : Andy Nelson, P.G. 8360
Signature :

Sample Condition
- ☒ No Recovery
- ☐ Sampled Interval
- ■ Described Sample
- ▩ Preserved Sample

Water Levels
- ▼ Groundwater After Completion
- ▽ Groundwater During Drilling

Boring: B29

Depth (ft)	Blow Count / 6"	OVM/PID (ppmv)	Sample	USCS	DESCRIPTION (%clay/silt/sand/gravel)
0		0.0	■		3" asphalt at surface. Hand augered to 5"bgs
		0.0	■	SW	(FILL) Well graded SAND with gravel: dark brown, moist, fine to coarse grained
		0.0	■	ML	Clayey SILT with sand: trace gravel, reddish brown, sand is fine grained, gravel is angular, moist, low plasticity (25/60/10/5)
		2.3	■		
		4.2	■		
5		0.0	■		Sand SILT: Sand is fine to medium grained, reddish brown, moist, non-plastic (0/70/30/0)
		2.6	■		
		1.0	■		Same as above
10		5.6	▩		Same as above
		1.8	■		
			■	SP	Poorly graded SAND: very fine to fine grained, grayish brwon, moist, (0/70/30/0)
		0.0	■		
15		1.7	▩	ML	Sandy SILT: sand is fine grained, brwon, moist, non-plastic (0/70/30/0)
			■	SP	Poorly graded SAND with silt: very fine to fine grained, brown (0/20/80/0)
		0.0	■		
		4.2	■	ML	SILT: brown, moist, non-plastic (0/100/0/0)
			■	SP	Poorly graded SAND: very fine to fine grained, light brown, moist (0/0/100/0)
		0.3	■	ML	SILT: tan, moist, non-plastic (0/100/0/0)
20					
25					



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BORING LOG B30

(Page 1 of 1)

Date Drilled : 10-18-2016
Drilling Co. : JDK Drilling Inc.
Drilling Method : Direct Push
Sampling Method : Continuous Core
Borehole Diameter : 2.5"
Casing Diameter : N/A
Latitude : 33.937155°
Longitude : -118.073903°
Total Boring Depth : 16.5' bgs
First GW Depth : N/A

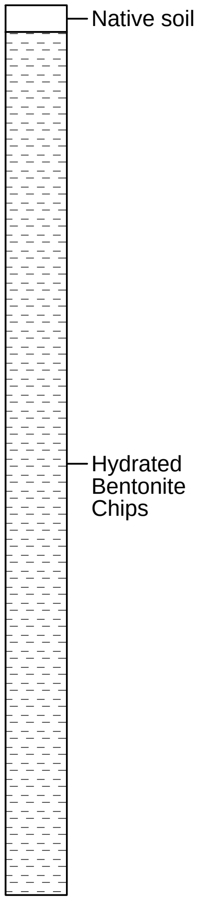
Project No. : 081155
Site : Jalk Fee Property 10607 Norwalk Blvd, Santa Fe Springs
Logged By : Andy Nelson
Reviewed By : Andy Nelson, P.G. 8360
Signature : Andy N

Sample Condition
☒ No Recovery
☐ Sampled Interval
■ Described Sample
▩ Preserved Sample

Water Levels
▼ Groundwater After Completion
▽ Groundwater During Drilling

Boring: B30

Depth (ft)	Blow Count / 6"	OVM/PID (ppmv)	Sample	Column	USCS	DESCRIPTION (%clay/silt/sand/gravel)
0		0.0	■			Hand Augered to 5' bgs
		3.5	■	▨	ML	Sandy SILT: sand is medium to coarse grained, dark brown.black, moist (0/60/40/0)
		1.0	■	▨		Same as above, except brown
		0.1	■	▨		
		1.9	■	▨		
5		1.8	■	▨		Same as above
		3.3	■	▨		
		3.5	■	▨		
			■	▨		Clayey SILT with sand: snad is fine grained, reddish brown moist (35/50/15/0)
10		2.9	■	▨		
			▩	▨		
		4.1	■	▨		
		0.0	■		SP	Poorly graded SAND: fine to medium grained, olive brown, moist (0/0/100/0)
15			■	▨	ML	SILT with sand: olive brown, moist, sand is fine grained (0/90/10/0)
		5.2	▩	▨		Sleeve stuck in shoe- only 0.5 retreived from 16-16.5"
20						
25						



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BORING LOG B31

(Page 1 of 1)

Date Drilled : 10-20-2016
Drilling Co. : JDK Drilling Inc.
Drilling Method : Driect Push
Sampling Method : Continuous Core
Borehole Diameter : 2.5"
Casing Diameter : N/A
Latitude : 33.937217°
Longitude : -118.074137°
Total Boring Depth : 17' bgs
First GW Depth : N/A

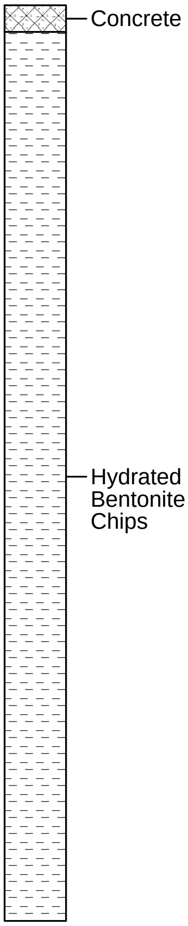
Project No. : 081155
Site : Jalk Fee Property 10607 Norwalk Blvd, Santa Fe Springs
Logged By : Andy Nelson
Reviewed By : Andy Nelson, P.G. 8360
Signature :

Sample Condition
☒ No Recovery
☐ Sampled Interval
■ Described Sample
▩ Preserved Sample

Water Levels
▼ Groundwater After Completion
▽ Groundwater During Drilling

Boring: B31

Depth (ft)	Blow Count / 6"	OVM/PID (ppmv)	Sample	Column	USCS	DESCRIPTION (%clay/silt/sand/gravel)
0		0.3	■			3" asphalt at surface, Hand augered to 8'
		1.9	■		SW	(FILL) well graded SAND with gravel: dark brown, sand is fine to coarse grained, gravel is angular, moist (0/0/60/40)
		0.8	■		ML	Sandy SILT with gravel: dark brown, moist, sand is fine to medium grained, non-plastic (0/60/30/10)
		5.1	■			
		68.5	■			Same as above except reddish brown
5		10.0	■			
		0.0	■			
		0.0	■			
		7.0	▩			same as above, very expansive (pounding 2' filler a 4' liner)
10		1.5	■			
		0.0	■			
		2.3	■			
		0.0	■		SP	Poorly granded SAND: tan/light brown, very fine to fine grained, moist (0/0/100/0)
		2.4	▩		ML	SILT: light brown, moist, non-plastic (0/100/0/0)
15			■			
		1.0	■			same as above, except tan
		0.5	■			
20						
25						



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BORING LOG B32

(Page 1 of 1)

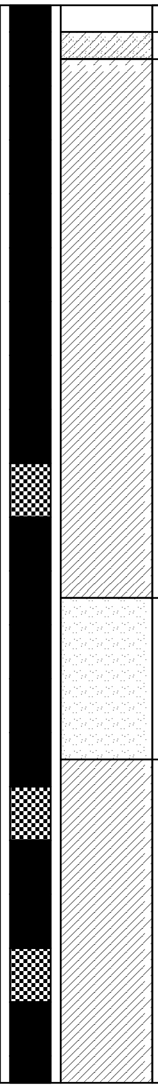
Date Drilled : 10-19-2016
Drilling Co. : JDK Drilling Inc.
Drilling Method : Direct Push
Sampling Method : Continuous Core
Borehole Diameter : 2.5"
Casing Diameter : N/A
Latitude : 33.937164°
Longitude : -118.074138°
Total Boring Depth : 20' bgs
First GW Depth : N/A

Project No. : 081155
Site : Jalk Fee Property 10607 Norwalk Blvd, Santa Fe Springs
Logged By : Andy Nelson
Reviewed By : Andy Nelson, P.G. 8360
Signature : ____________________

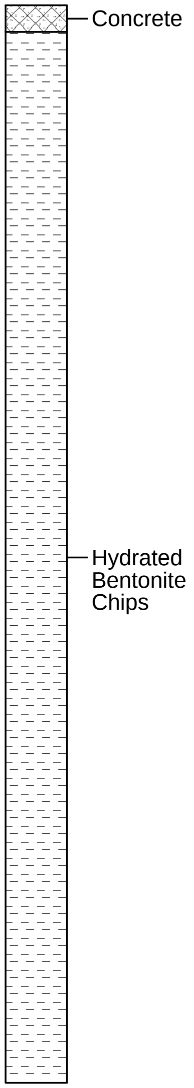
Sample Condition	
☒	No Recovery
☐	Sampled Interval
■	Described Sample
▩	Preserved Sample

Water Levels	
▼	Groundwater After Completion
▽	Groundwater During Drilling

Depth (ft)	Blow Count / 6"	OVM/PID (ppmv)	USCS	DESCRIPTION (%clay/silt/sand/gravel)
0		0.2		3" asphalt at surface, hand augered to 5" bgs
		0.1	SM	(FILL) will graded SAND with gravel: dark brown, moist (0/0/60/40)
				Sandy SILT: trace gravel, brown, dry, non-plastic (0/60/30/10)
		0.4		
		2.2		Same as above
5		3.4		Same as above, except no gravel (0/60/40/0)
		7.3	ML	Same as above, except reddish brown
		290.2		Same as above, except dark reddish brown
10		1279		
		349	SP	Poorly graded SAND: very fine to fine grained, light reddish brown, moist (0/0/100/0)
		28.7		SILT: light brown, moist (0/100/0/0)
15				
		94.2		
			ML	SILT with sand and gravel: sand is very fine to coarse grained, gravel is rounded, tan/brown, moist (0/60/20/20)
		84.8		SILT: tan/brown, moist, non-plastic (0/100/0/0)
		5.2		
20				
25				



Boring: B32



Cardno Shaping the Future

BORING LOG B33

(Page 1 of 1)

Date Drilled : 10-21-2016
Drilling Co. : JDK Drilling Inc.
Drilling Method : Driect Push
Sampling Method : Continuous Core
Borehole Diameter : 2.5"
Casing Diameter : N/A
Latitude : 33.937150°
Longitude : -118.074610°
Total Boring Depth : 10.5' bgs
First GW Depth : N/A

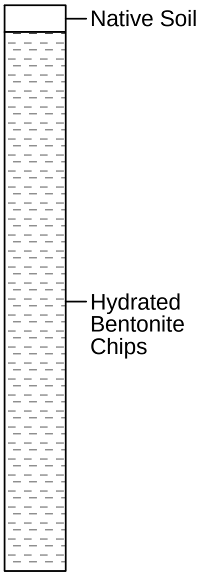
Project No. : 081155
Site : Jalk Fee Property 10607 Norwalk Blvd, Santa Fe Springs
Logged By : Andy Nelson
Reviewed By : Andy Nelson, P.G. 8360
Signature :

Sample Condition
- ☒ No Recovery
- ☐ Sampled Interval
- ■ Described Sample
- ▩ Preserved Sample

Water Levels
- ▼ Groundwater After Completion
- ▽ Groundwater During Drilling

Boring: B33

Depth (ft)	Blow Count / 6"	OVM/PID (ppmv)	Sample	Column	USCS	DESCRIPTION (%clay/silt/sand/gravel)
0			■			Hand augered to 8' bgs.
			■	▨		Sandy SILT: dark brown, wet low-plasticity, some roots and plant matrial, sand is fine grained (0/60/40/0)
1		8.5	■	▨		
2		0.0	■	▨		
3		1.5	■	▨		Same as above, except reddish brown, moist, no roots and plant matrial (0/60/40/0)
4		2.1	■	▨		
5		0.0	■	▨	ML	
6		0.4	■	▨		Same as above
7		1.2	■	▨		
8		0.0	■	▨		
9			▩	▨		Same as above
10		0.0	■	▨		
15						
20						
25						



Cardno
Shaping the Future

BORING LOG B34

(Page 1 of 1)

Date Drilled : 10-20-2016
Drilling Co. : JDK Drilling Inc.
Drilling Method : Direct Push
Sampling Method : Continuous Core
Borehole Diameter : 2.5"
Casing Diameter : N/A
Latitude : 33.937166°
Longitude : -118.074232°
Total Boring Depth : 17.5' bgs
First GW Depth : N/A

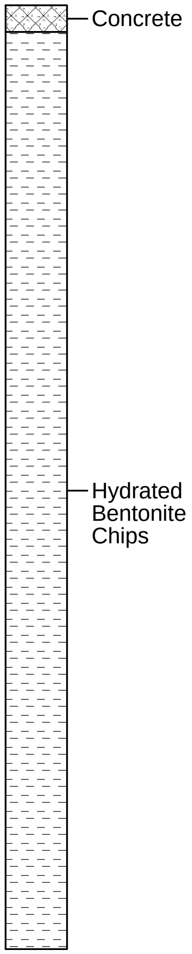
Project No. : 081155
Site : Jalk Fee Property 10607 Norwalk Blvd, Santa Fe Springs
Logged By : Andy Nelson
Reviewed By : Andy Nelson, P.G. 8360
Signature : Andy N

Sample Condition
☒ No Recovery
☐ Sampled Interval
■ Described Sample
▩ Preserved Sample

Water Levels
▼ Groundwater After Completion
▽ Groundwater During Drilling

Depth (ft)	Blow Count / 6"	OVM/PID (ppmv)	Sample	Column	USCS	DESCRIPTION (%clay/silt/sand/gravel)
0		3.9	■			3" asphalt at surface. Hand augered to 5' bgs
			■			SILT with clay and gravel: olive brown, moist, gravel is anguler (10/75/5/10)
		3.2	■			
		2.6	■			
		5.6	■			
		10.6	■			Sandy SILT with gravel: dark brown, moist, sand is fine grained (0/20/70/10)
5		34.1	▩			
		421	■		ML	
		8.8	■			Same as above, except with black oily staning (0/60/30/10)
			▩			
10		133.9	■			
		2.0	■			Poorly graded SAND: reddish brown, moist (0/0/100/0)
		0.6	■		SP	Same as above, except tan/light brown
15			■			
		0.3	■			SILT, tan, moist, non-plasticity (0/100/0/0)
		0.1	■		ML	
20						
25						

Boring: B34



BORING LOG B35

(Page 1 of 1)

Date Drilled : 10-20-2016
Drilling Co. : Cardno
Drilling Method : Hand Auger
Sampling Method : Slide Hammer
Borehole Diameter : 4"
Casing Diameter : N/A
Latitude : 33.937212°
Longitude : -118.073906°
Total Boring Depth : 3' bgs
First GW Depth : N/A

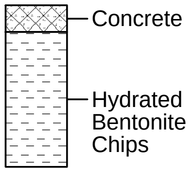
Project No. : 081155
Site : Jalk Fee Property 10607 Norwalk Blvd, Santa Fe Springs
Logged By : Andy Nelson
Reviewed By : Andy Nelson, P.G. 8360
Signature :

Sample Condition
☒ No Recovery
☐ Sampled Interval
■ Described Sample
▩ Preserved Sample

Water Levels
▼ Groundwater After Completion
▽ Groundwater During Drilling

Boring: B35

Depth (ft)	Blow Count / 6"	OVM/PID (ppmv)	Sample	Column	USCS	DESCRIPTION (%clay/silt/sand/gravel)
0			■			3" asphalt at aurface, hand augered to 3" bgs
			■ ▩	▨	ML	sandy SILT: with gravel brown, moist sand is fine to medium grained, gravel is angular
5						
10						
15						
20						
25						



11-21-2016 R:\ExxonMobil\ExxonMobil Projects\081155 (Jalk Fee) Santa Fe Springs\Borelogs\B35.bor

BORING LOG B36

(Page 1 of 1)

Date Drilled	: 10-21-2016
Drilling Co.	: JDK
Drilling Method	: Direct push
Sampling Method	: Continuous Core
Borehole Diameter	: 2.5"
Casing Diameter	: N/A
Latitude	: 33.937164°
Longitude	: -118.074093°
Total Boring Depth	: 20' bgs
First GW Depth	: N/A

Project No.	: 081155
Site	: Jalk Fee Property 10607 Norwalk Blvd, Santa Fe Springs
Logged By	: Andy Nelson
Reviewed By	: Andy Nelson, P.G. 8360
Signature	:

Sample Condition

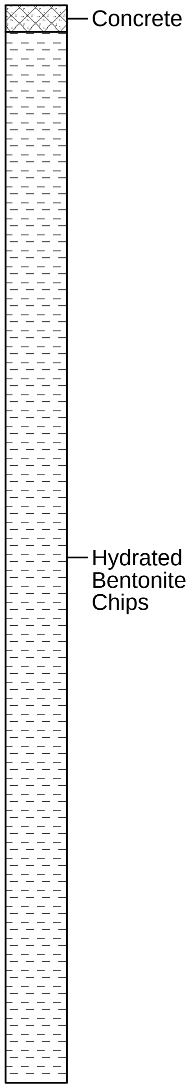
- ☒ No Recovery
- ☐ Sampled Interval
- ■ Described Sample
- ▩ Preserved Sample

Water Levels

- ▼ Groundwater After Completion
- ▽ Groundwater During Drilling

Depth (ft)	Blow Count / 6"	OVM/PID (ppmv)	Sample	Column	USCS	DESCRIPTION (%clay/silt/sand/gravel)
0		6.2	■			3" asphalt at surface, hand augered to 5' bgs
		9.3	■		SW	Well graded SAND: with gravel, dark brown,moist, fine to coarse grained (0/0/60/40)
		18.5	■			Sandy SILT with gravel: dark brown, sand is fine to medium grained, non-plasticity (0/55/25/20)
		22.3	■			Sandy SILT: trace gravel, reddish brown, moist, sand is fine to medium grained, non-plastic (0/60/30/10)
		254	■			
5		546	▩			Same as above
			■		ML	
		7.5	■			
			▩			Same as above
10		320	■			
			■			Poorly graded SAND: tan/brown, very fine to fine grained mosit (0/0/100/0)
		2.0	■		SP	
		0.9	■			
			■			SILT< tan, moist, non-plastic (0/100/0/)
15			▩			
		88.7	■		ML	
		0.6	■			same as above, except with trace angular gravel (0/80/5/15)
		23.2	■			
20						
25						

Boring: B36



Cardno
Shaping the Future

BORING LOG B37

(Page 1 of 1)

Date Drilled	: 10-21-2016
Drilling Co.	: JDK
Drilling Method	: Direct push
Sampling Method	: Continuous Core
Borehole Diameter	: 2.5"
Casing Diameter	: N/A
Latitude	: 33.937218°
Longitude	: -118.074233°
Total Boring Depth	: 20' bgs
First GW Depth	: N/A

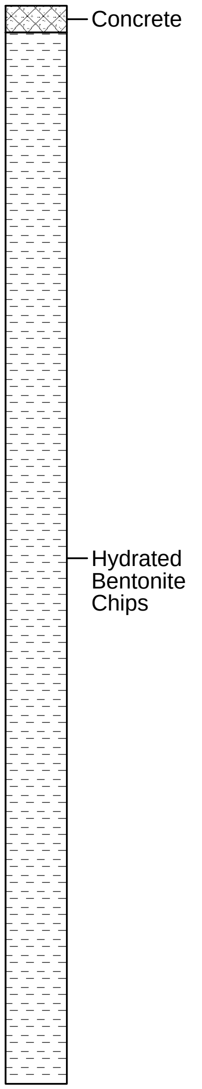
Project No.	: 081155
Site	: Jalk Fee Property 10607 Norwalk Blvd, Santa Fe Springs
Logged By	: Andy Nelson
Reviewed By	: Andy Nelson, P.G. 8360
Signature	:

Sample Condition
- ☒ No Recovery
- ☐ Sampled Interval
- ■ Described Sample
- ▩ Preserved Sample

Water Levels
- ▼ Groundwater After Completion
- ▽ Groundwater During Drilling

Boring: B37

Depth (ft)	Blow Count / 6"	OVM/PID (ppmv)	Sample	Column	USCS	DESCRIPTION (%clay/silt/sand/gravel)
0		22.4	■			3" asphalt at surface, hand augered to 5' bgs
		28.2	■		SW	(FILL) Well graded SAND with gravel: dark brown, sand is fine to medium grained (0/5/70/25)
		20.5	■		ML	Sandy SILT with gravel: sand is fine to medium grained, moist non-plastic (0/60/25/15)
		51.2	■		ML	Sandy SILT: dark reddish brown, moist, low-plasticity, sand is fine grained (5/60/35/0)
		10.8	■		ML	
5		16.9	■		ML	Same as above
		2.0	▩		ML	Same as above
10		0.4	■		ML	
		0.0	■		SP	Poorly graded SAND: very fine to fine grained, tan/brown, moist (0/0/100/0)
		3.5	■		SP	
15			▩		ML	SILT: trace fine sand, tan/brown, moist, non-plastic (0/80/10/10)
		0.0	■		ML	
		0.2	■		ML	Same as above, except with trace gravel (0/80/10/10)
		0.3	■		ML	
20						
25						



ATTACHMENT C

MANIFESTS

Manifest

SOIL SAFE OF CA – TPST
Non-Hazardous Soils

↓ Manifest # ↓

Date of Shipment: / /
Responsible for Payment:
Transport Truck #:
Facility #: A07
Approval Number: 40804
Load # 0011

Generator and/or Consultant

Generator's Name and Billing Address:
EXXONMOBIL OIL CORPORATION
C/O CARDNO
4572 TELEPHONE ROAD #916
VENTURA, CA 93003

Generator's Phone #: 805-644-4157
Person to Contact:
FAX#:
Customer Account Number

Consultant's Name and Billing Address:

Consultant's Phone #:
Person to Contact:
FAX#:
Customer Account Number

Generation Site (Transport from): *(name & address)*
JALK FEE
10607 NORWALK BLVD
SANTA FE SPRINGS, CA 90670

Site Phone #:
Person to Contact:
FAX#:

Designated Facility (Transport to): *(name & address)*
SOIL SAFE
12328 HIBISCUS AVENUE
ADELANTO, CA 92301

Facility Phone #: (800) 862-8001
Person to Contact: JOE PROVANSAL
FAX#: (760) 246-8004

Transporter Name and Mailing Address:
BELSHIRE
25971 TOWNE CENTRE DRIVE
FOOTHILL RANCH, CA 92610
BESI: 276236

Transporter's Phone #: 949-460-5200
Person to Contact: LARRY MOOTHART
FAX#: 949-460-5210
CAR000183913
450647
Customer Account Number

Description of Soil	Moisture Content	Contaminated by:	Approx. Qty:	Description of Delivery	Gross Weight	Tare Weight	Net Weight
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐	001 DM	Soil	38120	37400	720
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐					.36

List any exception to items listed above:
Scale Ticket # 136602

Generator's and/or consultant's certification: I/We certify that the soil referenced herein is taken entirely from those soils descried in the Soil Data Sheet completed and certified by me/us for the Generation Site shown above and nothing has been added or done to such soil that would alter it in any way.

Print or Type Name: Generator ☐ Consultant ☐
Larry Moothart of BESI on behalf of generator
Signature and date:
Month 12 Day 22 Year 16

Transporter

Transporter's certification: I/We acknowledge receipt of the soil referenced above and certify that such soil is being delivered in exactly the same condition as when received. I/We further certify that the soil is being directly transported from the Generation Site to the Designated Facility without off-loading, adding to, subtracting from or in any way delaying delivery to such site.

Print or Type Name: Thomas Buch
Signature and date:
Month 12 Day 22 Year 16

Recycling Facility

Discrepancies:

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Print or Type Name: J. PROVANSAL
Signature and date: 1-11-17

Please print or type.

TRANSPORTER COPY

10607NOR/1525188

NO. 723432

NON-HAZARDOUS WASTE DATA FORM

BESI # 277014

GENERATOR

Generator's Name and Mailing Address
EXXONMOBIL OIL CORPORATION
C/O CARDNO
4572 TELEPHONE ROAD #916
VENTURA, CA 93003

Generator's Phone: 805-644-4157

Generator's Site Address (if different than mailing address)
Oalk Fee
10607 Norwalk Blvd.
Santa Fe Springs, CA

Container type removed from site:

☐ Drums ☐ Vacuum Truck ☐ Roll-off Truck ☐ Dump Truck

☒ Other Tank Truck

Quantity 30 gal

Container type transported to receiving facility:

☐ Drums ☒ Vacuum Truck ☐ Roll-off Truck ☐ Dump Truck

☐ Other

Quantity Volume

WASTE DESCRIPTION NON-HAZARDOUS WATER

GENERATING PROCESS PURGED GROUNDWATER

COMPONENTS OF WASTE	PPM	%	COMPONENTS OF WASTE	PPM	%
1. WATER		99-100%	3.		
2. TPH		<1%	4.		

Waste Profile 12620 PROPERTIES: pH 7-10 ☐ SOLID ☒ LIQUID ☐ SLUDGE ☐ SLURRY ☐ OTHER

HANDLING INSTRUCTIONS: Water bulked at Cardno 4572 Telephone Rd., Ventura, CA

D140469

Generator Printed/Typed Name: Alex Chavez on behalf of XOM
Signature
Month Day Year: 11 30 16

The Generator certifies that the waste as described is 100% non-hazardous

TRANSPORTER

Transporter 1 Company Name: CARDNO
Phone# (805) 644-4157

Transporter 1 Printed/Typed Name: Alex Chavez
Signature
Month Day Year: 11 30 16

Transporter Acknowledgment of Receipt of Materials

Transporter 2 Company Name: NIETO & SONS TRUCKING, INC.
Phone# 714-990-6855

Transporter 2 Printed/Typed Name: GILBERT GARCIA
Signature
Month Day Year: 1 10 17

Transporter Acknowledgment of Receipt of Materials

RECEIVING FACILITY

Designated Facility Name and Site Address
CROSBY & OVERTON
1630 W. 17TH STREET
LONG BEACH, CA 90813

Phone# 562-432-5445

Printed/Typed Name
Signature
Month Day Year: 1 10 17

Designated Facility Owner or Operator: Certification of receipt of materials covered by this data form.

10607NOR
1529479

APPENDIX I

NEWFIELDS' *FORENSIC SIGNATURE OF HYDROCARBONS IN SOIL AT THE FORMER JALK FEE FACILITY*, DATED FEBRUARY 7, 2017

Forensic Signature of Hydrocarbons in Soil at the Former Jalk Fee Facility

February 7, 2017

Prepared for: ExxonMobil Oil Corporation

Prepared by:

Mark J. Benotti, Ph.D. and Scott A. Stout, Ph.D.

NewFields
Perspective. Vision. Solutions.

300 Ledgewood Place, Suite 305
Rockland, MA 02370

Contents

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Executive Summary

An investigation of the forensic signature of contamination, specifically perchloroethylene (PCE) and hydrocarbons, in soil at the former Jalk Fee facility (the Site) was conducted to determine the nature and likely source of these contaminants. Soil samples were collected along the southern boundary of the Site in the area that historically exhibited the highest PCE concentrations in shallow soils. This area is also adjacent to the Continental Heat Treating, Inc. (CHT) property, a facility known to have stored, used and released PCE and oils used in the cleaning and heat treatment of metal parts for more than 25 years. Soil samples were analyzed for volatile organic compounds (including PCE and its degradation products), total petroleum hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAHs), petroleum biomarkers, and other organic and inorganic analytes. Resultant data were compared to 1) a forensic study of soil samples collected at the Site in 2012 that showed the presence of weathered crude oil in the subsurface, and 2) the forensic analysis of fifteen oils used in the heat treating and metalworking process.

The ten (10) soil samples collected and analyzed in 2016 exhibited PCE concentrations from 0.0030 – 1,100 mg/kg, and the PCE was largely undegraded. The chlorine isotopic signature of PCE varied much more than would be expected had the PCE stemmed from a single release. Rather, because PCE stable isotope ratios will vary over time between manufacturer’s production batches, the relatively large variability among the chlorine isotopic signature of PCE in soils is consistent with multiple releases or chronic release of PCE over time. Isotopically-variable PCE would be expected from recurrent or ongoing releases by the CHT degreasing operations, which used PCE from different chemical origins over a period of more than 25 years.

The soil samples collected and analyzed in 2016 exhibited TPH concentrations between non-detect (< 2.6 mg/kg) and 1,760 mg/kg. The GC/FID chromatograms for the eight soil samples containing measurable TPH showed hydrocarbon signatures that were composed of diesel-range organics (DRO; C_{10}-C_{28} range) and/or residual range organics (RRO; C_{28}+ range). These hydrocarbon signatures were clearly distinct from those measured in the 2012 crude oil-impacted soil samples, and there is no mechanism(s) by which crude oil might produce the hydrocarbon signatures observed in the 2016 soil samples along the property boundary. In other words, weathering of the 2012 crude oil-impacted hydrocarbon signatures could not possibly produce the 2016 hydrocarbon signatures. Similarly, the hydrocarbon signature of diesel fuel, which was likely used during historic oil field Site operation, is clearly distinguished from the hydrocarbon signatures of the 2016 soil samples, leaving an offsite, non-crude oil and non-diesel fuel, release as the most reasonable source of hydrocarbons present in the shallow soils along the CHT property boundary.

In order to further assess this possibility, the hydrocarbon signatures of the 2016 soil samples were compared to those of oils typically used in heat treating and metalworking to determine the extent to which these oils might explain the hydrocarbon signatures observed in soils along the property boundary. Results indicate that the soil samples with the largest DRO component exhibited characteristics comparable to used quench oil. First, the soil samples and used quench oil both exhibited a similarly-shaped unresolved complex mixture (UCM) with a maximum at C_{22}. Second, they both contained aliphatic hydrocarbons consistent with a paraffinic quench oil; the used quench oil contained both n-alkanes and isoprenoids, whereas the soil sample only contained isoprenoids, a phenomenon attributed to loss of n-alkanes due to biodegradation in the soil. Third, the broader UCM in the soil samples was consistent with the broadening of the UCM evident upon comparing fresh and used quench oil, which is attributed to the formation of sludge and the deterioration of the quench oil during its normal usage in heat treatment operations. Fourth, as explained further below, the soil samples had a low aromatic (PAH) content consistent with the dearomatized nature of quench oils.

The PAH and petroleum biomarker data were also studied to further assess the similarity (or dissimilarity) between the hydrocarbons in the soil samples collected along the property boundary in 2016 and the 2012 crude-oil impacted samples or the oils used in heat treating/metalworking. The 2016 soil samples exhibited relatively low PAH content (normalized to TPH) compared to the 2012 crude-oil impacted soil samples. Conversely, the PAH content of the 2016 soil samples (particularly that of the most DRO-dominated soil sample bearing the TPH signature that was most similar to that of the used quench oil as discussed in the previous paragraph) was similar to that of the used quench oil. A relatively low PAH content is consistent with the dearomatized nature of quench oils – and inconsistent with crude oil. Additionally, the petroleum biomarkers in the 2012 crude oil-impacted soil samples show similar diagnostic source ratios—an indication that the crude oil in these samples arose from a similar source (i.e., local Monterey Formation crude oil from the Santa Fe Springs oil field). Conversely, the 2016 soil samples exhibit a range of petroleum biomarker diagnostic ratios that were distinct from the local crude oil, indicating they were derived from a variety of different sources of petroleum, such as might be anticipated for quench (or other mineral) oils used and discharged over time.

In summary, the PCE present in soils along the southern boundary of the Jalk Fee property is attributable to multiple or chronic release of isotopically-variable PCE over time, such as wastes from CHT's degreasing operations over a period of more than 25 years. The PCE occurs in soils coincident with petroleum, of which multiple lines of chemical fingerprinting evidence (i.e. the TPH, PAHs and petroleum biomarker data) clearly demonstrates the hydrocarbons are; 1) consistent with mixtures of used quench oils and other waste (mineral) oils, such as were known to be used and generated by CHT, and 2) distinct from local Santa Fe Springs Field crude oil or diesel fuel associated with ExxonMobil's historic oil field operations. When coupled with the fact that there is a record of improper disposal of waste oil onto the ground and asphalt on the CHT property, the only reasonable conclusion to be drawn is that the source of both PCE and hydrocarbon contamination in soil along the southern property boundary at the Site resulted from spills and discharges by, and/or the disposal practices of CHT, which have migrated onto the Jalk Fee property.

Introduction

Site History

The Jalk Fee property is located within a small portion of the prolific Santa Fe Springs oil field. Crude oil production at the Site spanned from approximately the 1920s until 1996. The property was originally operated as a crude oil production facility by ExxonMobil, and later leased and operated by Hathaway Oil Company. Crude oil impacts to soils on the property are reasonably attributable to historic oil production activities and/or are naturally-occurring to the region. However, PCE was not used by ExxonMobil or Hathway Oil Company. In 2001, ExxonMobil sold the property to SFS Norwalk.

Bordering the former Jalk Fee property to the South is the Continental Heat Treating, Inc. (CHT) property. CHT is a metal heat treating facility that, as part of its operations, engaged in degreasing practices and used chlorinated solvents from approximately 1969 to 1995. In addition, the heat treatment of metals utilized multiple petroleum products (e.g., quench oils and associated mineral oils), and CHT thereby also generated petroleum wastes. In fact, it is documented that waste oil from the property was disposed of "*onto the ground and asphalt top at rear yard*"[1]. Any waste that was released along the paved surface near the property boundary would have contaminated the unpaved Jalk Fee property following a rain event. Thus, independent of the chemical evidence presented below, there is a historic and practical basis upon which to conclude it is likely that the PCE and waste oil in the subsurface soil at the Jalk Fee property is attributable to CHT operations and disposal practices.

For a more detailed description of the Site History and/or CHT operations, see "Cardno's Request to Name Continental Heat Treating as Discharger", dated March 25, 2015.

Previous Forensic Investigation of Soil Hydrocarbons

In 2012, four soil samples collected from three borings on the Jalk Fee property were analyzed by hydrocarbon fingerprinting (Table 1). The locations of these samples, as well as the sample depth, perchloroethyene (PCE) concentration and total petroleum hydrocarbons (TPH) concentration are depicted on Figure 1. Tables of raw concentration data for these 2012 soil are provided in Attachment A. The soil depths sampled from the B10 (15 and 80 ft. below ground surface, bgs) and B11 (80 ft. bgs) borings were targeted because screening analysis had indicated elevated TPH, including gasoline-range organics (GRO), diesel-range organics (DRO) and oil-range organics (ORO), existed at these depths/locations. Borings B10 and B11 were located in the southeastern part of the Site (east of the soils collected and analyzed in 2016, which are described below). The B19 boring's sample (25 ft bgs) was collected in an area/depth apparently unimpacted by hydrocarbons. The objective of this limited 2012 forensic investigation was to characterize the nature of the hydrocarbons found in the three soil samples from borings B10 and B11 that had exhibited elevated concentrations of TPH.

---

[1] May 19, 1989 County of Los Angeles Survey Report (Appendix I of "Request to Name Continental Heat Treating as Discharger", dated March 25, 2015)

Table 1: Inventory and character of site soils previously studied (2012).

Client ID	Date Collected	TPH C_9-C_{40} (mg/kg)	TPAH (mg/kg)	mgTPAH/ kgTPH	Description of Petroleum Present
S-15-B10	Aug. 13, 2012	2,880	33.2	11,500	Severely weathered local crude oil
S-80-B10	Aug. 14, 2012	145	2.5	17,100	Severely weathered local crude oil
S-80-B11	Aug. 21, 2012	271	2.7	9,900	Severely weathered local crude oil
S-25-B19	Sept. 29, 2012	0.6	na	na	"clean" background

The 2012 soil samples were analyzed for TPH, an extended list of parent and alkylated polycyclic aromatic hydrocarbons (PAHs), and petroleum biomarkers (as described in detail below). From the resultant data, it was determined that three of the soil samples (i.e., the sample collected from B11 and the two samples collected from B10) contained severely weathered crude oil. The fourth sample (i.e., the sample collected from B19) contained a very low concentration of TPH, typical of soil unimpacted by hydrocarbons. Detailed analysis of the oils' petroleum biomarkers, discussed in more detail later in this report, showed the crude oil present in the B10 and B11 soils was typical of Monterey Formation (Miocene) crude oil, as expected for oil production within the Santa Fe Springs oil field. These 2012 chemical fingerprinting results are relevant to the current analysis because these crude oil-impacted soils analyzed in 2012 exhibit clear differences from the "non-crude" hydrocarbon signatures found in soils collected and analyzed in 2016. The differences are described later in this report.

2016 Samples

Soil Samples

Between October 18 and 21, 2016, soil samples were collected by ExxonMobil's contractor Cardno from the former Jalk Fee property in the area that historically contained the highest PCE concentrations (i.e., proximal to the southern boundary of the property, adjacent to the CHT facility). The locations of these borings, labeled B24-B37, are shown on Figure 1. For the metals analysis (see discussion of analyses, below), a sample from B33, which was outside the area that historically contained the highest PCE concentrations to determine background concentrations of metals. Details of the method used to screen for samples as well as the technique for soil sample collection and handling are provided elsewhere[2].

Neat Oil Samples

Subsequent to the collection and analysis of the soils collected in 2016 from the Site, fifteen (15) neat oils that are used in metal heat treating and/or metalworking were also analyzed for TPH, PAHs and petroleum biomarkers and results were compared to data collected from the 2012 and 2016 soil samples (Table 2). All but two of these neat oils were commercially available and purchased for this study. These purchased oils included various types of mineral oils, spindle oils, way oils, and cutting oils. The results of the forensic analyses on these oils were considered but not relied upon in this report due to uncertainty regarding which specific types of oils were used in CHT's operations. The remaining two oil samples, however, represented a "fresh" and a "used" quench oil collected from an operating metal

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[2] "Report of Soil Borings in Support of Forensic Evaluation" dated February 3, 2017 (Appendix H of "Additional Evidence for Request to Name Continental Heat Treating as Discharger" dated February 6, 2017

heat treating facility (unrelated to CHT). These fresh and used quench oils were of obvious relevance since CHT used large quantities of quench oils in its operations. CHT's use, storage and disposal practices are documented in multiple CHT regulatory submittals (e.g., CHT's 1982 Applications to SCAQMD; CHT's 1969 Degreaser Application to LAC APCD; CHT's 1982 Electrostatic Precipitator Application to SCAQMD; CHT's LAC Fire Department Hazardous Material Contingency Plan). In the absence of actual samples of quench oils from the CHT facility, the fresh and used quench oil samples considered in this study are considered generally representative of those used/produced at the CHT facility, and therefore particularly relevant to this study.

Table 2: Oils analyzed to demonstrate the types of hydrocarbon signatures that may be attributable to heat treating or metalworking operations.

Oil	Description	Flash point (°F)
Brownells Tough Quench™	Paraffinic Quench Oil	355
100 Quenching Oil – Black Bear	Naphthenic Quench Oil	370
Advantage Quench 1021	Paraffinic Quench Oil	365
Used Advantage Quench 1021	Used Paraffinic Quench Oil	(365)
Tap Magic Cutting Fluid	Cutting Oil	300
MobilMet® 426 Cutting Oil	Cutting Oil	381
Mobil™ Velocite™ No. 3	High-speed spindle/machine tool lubricant	183
Mobil™ Velocite™ No. 6	High-speed spindle/machine tool lubricant	356
Mobil™ Velocite™ No. 10	High-speed spindle/machine tool lubricant	414
Mobil™ Vactra™ No. 2	Slideaway lubricant	228
Mobil™ Vactra™ No. 4	Slideaway lubricant	240
Crystal Plus Tech Grade Min. Oil 70T	Technical Grade White Mineral Oil	365
Crystal Plus Tech Grade Min. Oil 200T	Technical Grade White Mineral Oil	436
Crystal Plus Tech Grade Min. Oil 350T	Technical Grade White Mineral Oil	471
Crystal Plus Tech Grade Min. Oil 500T	Technical Grade White Mineral Oil	520

Sample Analysis

The soils and neat oils were each prepared and analyzed using multiple chemical fingerprinting analytical methods specifically designed for the forensic characterization of petroleum. These methods have been described in detail elsewhere[3] and are summarized in the following sections.

TPH (EPA Method 8015)

Soil and neat oil samples were analyzed by a modified EPA Method 8015 for TPH and to determine the gas chromatography fingerprint. This analysis allows for the quantitative determination of TPH concentration, as well as a qualitative understanding of the relevant characteristics (e.g., boiling range, degree of weathering, oil type) of the hydrocarbons in the sample. TPH concentrations in soils and oil are reported as mg/kg_{dry} and mg/kg_{oil}, respectively, and represent all hydrocarbons measured between

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[3] Douglas, G.D., Emsbo-Mattingly, S.D., Stout, S.A., Uhler, A.D., and McCarthy, K.J. (2015) Chemical fingerprinting of hydrocarbons and polychlorinated biphenyls. In: *Introduction to Environmental Forensics, 3rd Ed.*, B. Murphy and R. Morrison, Eds., Academic Press, New York, pp. 201-345.

C_9 and C_{40}. For the soils (only), the TPH present within the diesel range organics (DRO; C_{10}-C_{28}) was determined, thereby allowing the percentage of TPH as DRO to be calculated.

PAHs (EPA Method 8270)

Soil and neat oil samples were analyzed by a modified EPA Method 8270 to determine concentrations of 71 semi-volatile compounds or compound groups, including decalins, Priority Pollutant PAHs, alkylated PAH groups and individual isomers, and sulfur-containing aromatics (S-PAH). The concentrations of target analytes in soils and oils were reported in $\mu g/kg_{dry}$ and mg/kg_{oil}, respectively. The total PAHs (TPAH) is defined as the sum of all 50 PAH and S-PAH analytes ranging from naphthalene to benzo(*ghi*)perylene.

In addition to providing a basis to compare PAH distributions (fingerprints) among samples, the concentration of TPAH normalized to the concentration of TPH provides a measure of the aromaticity of different petroleums – and also allows comparison between soils and neat oils (despite matrix differences). In this study, the total mg of TPAH per kg of TPH has been used in this manner.

Petroleum Biomarkers (EPA Method 8270)

Soil and neat oil samples were analyzed by a modified EPA Method 8270 to determine concentrations of 54 petroleum biomarkers, including tri- and pentacyclic triterpanes, regular and rearranged steranes, and triaromatic steroids. Petroleum biomarkers are molecular fossils of the biomolecules in the original organic matter that gave rise to the fossil fuel and are extremely resistant to weathering.[4] As such, they provide a high degree of specificity, and thereby can be used to unequivocally link hydrocarbon contamination to a particular source, or conversely, demonstrate that hydrocarbon contamination did not stem from a particular source. The concentrations of target analytes in soils and oils were reported in $\mu g/kg_{dry}$ and mg/kg_{oil}, respectively.

PIANO VOCs (EPA Method 8260)

Soil samples were analyzed using a modified EPA Method 8260 for quantification of 88 volatile hydrocarbons contained in the five compound classes, paraffins, isoparaffins, aromatics, naphthenes, and olefins (PIANO). In addition, various oxygenated compounds commonly found in oxygenated and reformulated gasolines were targeted, viz., *tert*-butyl alcohol (TBA), methyl-*tert*-butyl ether (MTBE), di-isopropyl ether (DIPE), ethyl-*tert*-butyl ether (ETBE), and *tert*-amyl-methyl ether (TAME). Lead scavengers historically used (1,2-dichloroethane and 1,2-dibromoethane) and various volatile sulfur species were also targeted. These results provide a basis to characterize and distinguish different types of gasoline and other light petroleum products if present from these samples. The concentrations of target compounds in the soils are reported in mg/kg_{dry}.

Standard VOCs (EPA Method 8260)

Soil samples were analyzed using conventional EPA Method 8260 to determine concentrations of PCE; its degradation products trichloroethylene (TCE), *cis*-1,2-dichloroethylene (C12DCE), *trans*-1,2-dichloroethylene (T12DCE), 1,1-dichlorethylene (11DCE), and vinyl chloride (VC); as well as other volatile organic compounds.

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[4] Peters, K.E. and Moldowan, J.M. (1993) The Biomarker Guide. Prentice Hall, London, UK.

Stable Isotope Analysis of Chlorine in PCE

The isotopic signature of the chlorine atoms associated with PCE in site samples was measured to determine whether the PCE in the study area resulted from a single release or multiple chronic releases over an extended period. Because isotopic ratios vary between PCE production batches received from the manufacturer, a small range of isotopic ratios is consistent with a single large release or releases over a relatively short period of time, while a larger range of isotopic PCE ratios is consistent with longer-term, chronic releases of PCE.

The chlorine isotopic ratio (R_{Cl}^{PCE}) of PCE in each sample was calculated using data collected using EPA Method 8260. R_{Cl}^{PCE} was calculated from the area of the PCE m/z 166 peak ($A_1^{m/z166}$; isotopologue $^{12}C_2{}^{35}Cl_3{}^{37}Cl$) and the PCE m/z 164 peak ($A_2^{m/z164}$; isotopologue $^{12}C_2{}^{35}Cl_4$) [5]:

$$R_{Cl}^{PCE} = \frac{1}{4} \times \frac{A_1^{m/z166}}{A_2^{m/z164}} \qquad (1)$$

These data were used to calculate the variability of PCE isotopic signatures at locations sampled for this study, thereby allowing the project team to determine whether PCE contamination originated from a single source of PCE release or a longer-term or chronic release with multiple sources of PCE related to the degreasing operations at CHT.

Analysis of Inorganic Contaminants

Other analytes, including metals and cyanide, were measured to investigate the presence of other contaminants in soil samples that, if present, can be used to forensically determine the source of contamination. The concentrations of twenty-eight (28) metals in soil samples were measured using EPA Method 6020A. The concentration of mercury in soil samples was measured using SW-846 Test Method 7474. The concentration of cyanide was measured using Standard Method 4500-CN^-.

Data Packages

Tables of raw data for all soil samples and neat oil samples analyzed in 2016 are provided in Attachments B and C, respectively.

Results - Concentrations of PCE and Hydrocarbons

Figure 1 shows the locations of the 2012 and 2016 soil samples, as well as the PCE and TPH concentrations detected at each location/depth. General features of these results are discussed in the following sections.

Chlorinated VOCs

Concentrations of PCE in soil samples ranged from 0.003 mg/kg to 1,100 mg/kg (Table 3). In each of these soil samples, PCE was the dominant species of chlorinated VOCs, compared to its degradation products (TCE, C12DCE, T12DCE, 11DCE, and VC). The percent of PCE (%PCE), defined as PCE divided by PCE plus all its degradation products, ranged from 88-100%. Therefore, PCE in these soil samples was largely undegraded. This result is not unusual given that highly chlorinated compounds, such as PCE,

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[5] Aeppli, C., Holmstrand, H., Andersson, P., and O. Gustafsson. 2010. Direct Compound-Specific Stable Chlorine Isotope Analysis of Organic Compounds with Quadrupole GC/MS Using Standard Isotope Bracketing. *Analytical Chemistry.* 82: 420-426.

can be persistent. Degradations rates will be site-specific and will depend on aerobic vs. anaerobic conditions, availability of co-metabolic substrates and numerous other factors.

Table 3: PCE, TCE, C12DCE, T12DCE, 11DCE and VC concentrations (nd = not detected)

Client ID	PCE	TCE	C12DCE	T12DCE	11DCE	VC	%PCE
S-16-B26	4.9	0.033	0.10	0.61	nd	nd	97%
S-14-B27	62	nd	nd	nd	nd	nd	100%
S-16-B30	1.1	0.0053	0.00017	nd	nd	nd	99%
S-6-B28	0.0030	0.00040	nd	nd	nd	nd	88%
S-9-B32	1,100	0.44	nd	nd	nd	nd	100%
S-8-B24	0.038	0.00087	0.40	nd	nd	nd	97%
S-5-B34	61	2.5	2.5	nd	nd	nd	92%
S-9-B34	59	2.0	1.3	nd	nd	nd	95%
S-3-B35	35	0.077	nd	nd	nd	nd	100%
S-5-B36	180	0.56	0.20	nd	nd	nd	100%

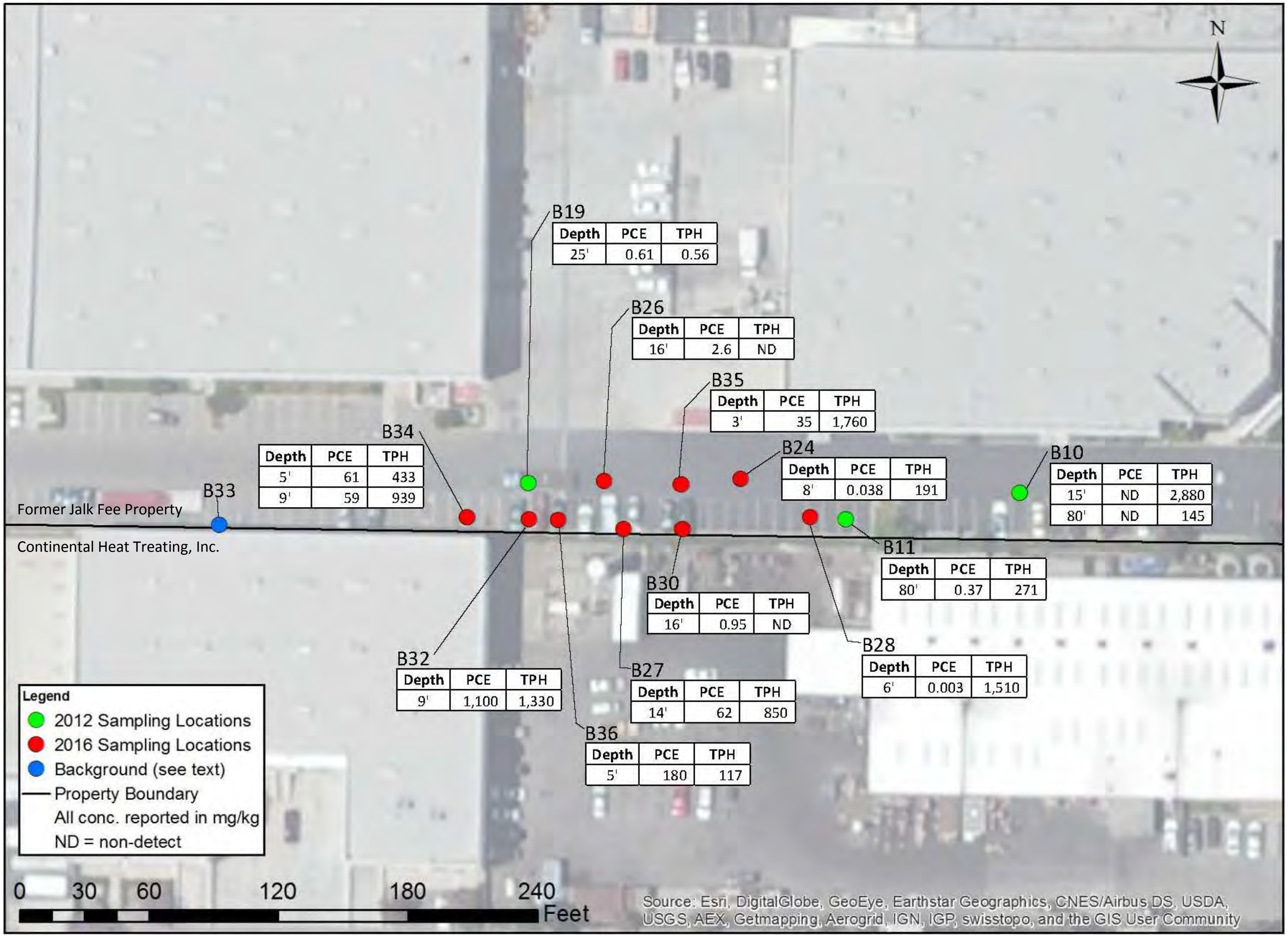
Hydrocarbons

The concentrations of TPH measured during the 2016 sampling event ranged from non-detected (nd: < 2.6 mg/kg$_{soil}$) to 1,760 mg/kg$_{soil}$ and the concentrations of TPAH ranged from 0.01 to 9.7 mg/kg$_{soil}$ (Table 4). For those soils containing detectable TPH, the mass of PAHs per mass of TPH ranged from 520 to 6,400 mg$_{TPAH}$/kg$_{TPH}$. Notably, and as will be highlighted further below, the relative concentration of PAHs in the petroleum in the 2016 soils is markedly lower than was observed in the severely weathered crude oils from the 2012 soils (9,960-17,200 mg$_{TPAH}$/kg$_{TPH}$; Table 1). The significance of this difference is discussed later in this report.

Table 4: Hydrocarbon concentrations and selected metrics for the Site soil samples (nd = not detected; nc = not calculable)

Client ID	Date Collected	TPH C_9-C_{40} (mg/kg)	%TPH as DRO (C_{10}-C_{28})	TPAH (mg/kg)	mg$_{TPAH}$/ kg$_{TPH}$
S-9-B32	10/19/2016	1,330	73	1.2	940
S-14-B27	10/18/2016	850	60	0.7	820
S-5-B36	10/21/2016	117	49	0.1	520
S-9-B34	10/20/2016	939	38	3.9	4,200
S-5-B34	10/20/2016	433	33	1.0	2,200
S-6-B28	10/19/2016	1,510	31	9.7	6,400
S-8-B24	10/20/2016	191	20	0.7	3,600
S-3-B35	10/20/2016	1,760	9	4.8	2,700
S-16-B26	10/18/2016	nd	nd	0.01	nc
S-16-B30	10/18/2016	nd	nd	0.01	nc

Although limited by the number of samples, the distribution of TPH concentrations in the soils studied revealed no obvious centralized location (e.g., “hot spot”) or depth where petroleum was encountered (Figure 1). In other words, TPH concentrations appear to vary throughout the study area, laterally and with depth, indicating there was no single location, such as from a tank or pipeline, from which the petroleum seemed to emanate. All eight soils collected between 3 ft. and 9 ft. bgs contained measurable TPH (117 to 1,760 mg/kg), whereas the two deepest samples collected (B26 and B30 16 ft. bgs) each had no detectable TPH (nd: < 2.6 mg/kg). The latter is consistent with the absence of TPH detected in the 25 foot deep soil from B19 studied in 2012 (Table 1) that was collected in this same area (Figure 1). Thus, the available data suggest the TPH impacts to soils in this area of the Site may be limited to the soils shallower than ~15 ft., indicating a near surface/surface source(s) of the petroleum. This contrasts with the deep (80 ft. bgs) soil impacts of severely weathered crude oil in the B10 and B11 soils further to the east (Table 1; Figure 1), likely derived from a subsurface (likely naturally-occurring) source. The specific character of the TPH in the soils analyzed in 2016 is discussed further below.



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Chlorine Isotopic Signature of PCE

In order to determine whether the PCE found during the 2016 sampling event along the Jalk Fee property boundary with CHT resulted from a single large release or multiple releases over an extended time period, it was necessary to determine how variable the chlorine isotopic signature was for the PCE present in these soil samples. The basis for this approach is that heterogeneity among the PCE chlorine isotopic signatures would signify that multiple releases of PCE over time had occurred. Homogeneity among chlorine isotopic signature would imply a single release of PCE had occurred.

Table 5 lists the results of the investigation of chlorine isotopic signature in the soil samples, including the areas of the PCE m/z 166 and 164 peaks ($A_1^{m/z166}$ and $A_2^{m/z164}$, respectively) and the chlorine isotopic ratio (R_{Cl}^{PCE}) for each sample. (See section above entitled "Stable Isotope Analysis - Chlorine in PCE" for a description of the methodology.) Table 6 lists the average and standard deviation of $R_{Cl}^{PCE}$for the 2016 soil samples compared to average and standard deviation of R_{Cl}^{PCE} for three single sources of PCE as reported in the literature[6].

Table 5: Chlorine isotope data for PCE measured in soil samples

	$A_1^{m/z166}$	$A_1^{m/z164}$	R_{Cl}^{PCE}
S-16-B26	6311936	5214208	0.30263
S-14-B27	961984	748288	0.32139
S-16-B30	1308672	1025152	0.31914
S-6-B28	3583	2933	0.30540
S-9-B32	821120	659584	0.31123
S-8-B24	59688	47816	0.31207
S5-B34	969216	763904	0.31719
S-9-B34	846400	655552	0.32278
S-3-B35	568320	447680	0.31737
S-5-B36	551680	440832	0.31286

Table 6: Average and standard deviation of R_{Cl}^{PCE} for single PCE sources compared to soil data

	R_{Cl}^{PCE}, average (±standard deviation)	Comment
PCE#1 (n=8-10)	0.32300 (±0.00023)	Single source of PCE
PCE#5 (n=8-10)	0.32211 (±0.00020)	Single source of PCE
PCE PPG (n=8-10)	0.31782 (±0.00037)	Single source of PCE
Soil Samples (n=10)	0.31421 (±0.00663)	-

The standard deviation of the n=10 R_{Cl}^{PCE} values in the 2016 soil samples was more than an order of magnitude greater than the standard deviations of n=8-10 replicate measurements of three separate PCE source materials (Table 6). Therefore, the chlorine isotopic signature of the PCE measured in the

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[6] Aeppli, C., Holmstrand, H., Andersson, P., and O. Gustafsson. 2010. Direct Compound-Specific Stable Chlorine Isotope Analysis of Organic Compounds with Quadrupole GC/MS Using Standard Isotope Bracketing. *Analytical Chemistry.* 82: 420-426.

soil samples is heterogeneous and cannot have been derived from a single release of PCE bearing the same isotopic signature. Rather, the isotopic heterogeneity of the PCE measured in soil samples is consistent with a longer-term release or multiple releases composed of PCE with varying isotopic compositions.

Results - Character of Petroleum in the Soils Studied

The general character of the petroleum(s) in each of the 2016 soils studied is revealed by the GC/FID chromatograms ("fingerprints") obtained in the course of TPH analysis. Additional details of the petroleum(s) are revealed by the relative and/or absolute abundance and composition of PAHs and petroleum biomarkers. In the sections that follow, the petroleum encountered in the 2016 soils studied (i.e., the eight samples containing measurable TPH; Table 4) are described, compared to one another, and compared to candidate source petroleum samples, including local crude oil as represented by the 2012 soils studied, diesel fuel #2, and neat quench oils, the latter of which are common to the metal heat treating industry.

TPH Fingerprints in 2016 Soil Samples

Similar to the isotopic heterogeneity among the PCE in the 2016 soils, the petroleum found in the 2016 soils was also heterogeneous. This, of course, indicates that the petroleum also did not come from a single release of a specific type of petroleum, but rather to multiple releases of different types of petroleum. Heterogeneity is evident in the varying boiling ranges of the petroleums within the impacted soils, as reflected by the proportions of DRO (C_{10}-C_{28}) and residual range organics (RRO; C_{28}+).

The GC/FID chromatograms for the eight soil samples collected in 2016 containing measurable TPH are shown in Figure 2. The samples are arranged (top-to-bottom) in order of the decreasing percentage of TPH within the DRO range (or increasing proportion of RRO range; per Table 3). In other words, the average boiling point of the petroleum in each soil increases from top-to-bottom in Figure 2. The petroleum in S-9-B32 soil contained the greatest proportion of DRO (73%) whereas that in the S-3-B35 soil contained the least (9%). None of the soils studied contained measurable TPH within the GRO ($<C_{10}$) range.

As noted above, the variability in the character of TPH among the soils studied argues they do not contain a single type of petroleum. Even the most severe forms of weathering of a single petroleum source cannot explain the heterogeneity among the hydrocarbon signatures present in these soils. Therefore, the heterogeneity evident among the soils indicates the presence of at least two different types of petroleum present in the soils studied: a DRO-dominant petroleum and a RRO-dominant petroleum. The DRO-dominant component is dominated by an unresolved complex mixture (UCM) that appears as a "hump" on the chromatogram beginning at approximately C_{15} and reaching a maximum around C_{22} (see S-9-B32; Figure 2). The RRO-dominant component is dominated by a variable and high boiling UCM with a maximum around C_{35} (see S-3-B-35; Figure 2).

As will be demonstrated in the sections that follow, the DRO-dominant and RRO-dominant petroleum components evident in the 2016 soils are not reasonably attributable to historic oil field operations in which crude oil and fuels (e.g., diesel fuel) could have been potential sources. On the other hand, these DRO- and RRO-dominant petroleum components are reasonably attributable to the types of wastes produced from metal heat treating.

Crude Oil vs. 2016 Soils

Previous analyses of the soils collected in 2012 reveals the presence of severely weathered crude oil in the B10 and B11 borings (Figure 1; Table 1). Figure 3 shows the GC/FID chromatograms for these three soils, along with those of the S-9-B32 (DRO-dominant) and S-3-B35 (RRO-dominant) soils (reproduced from Figure 2). The disparate character of the crude oils in the 2012 soils *versus* the range of petroleums found in the 2016 soils, as represented by the DRO-dominant and RRO-dominant “end-members” is obvious. The crude oils are much broader boiling and are dominated by a UCM that spans the entire practical boiling range of crude oil (C_9-C_{40}; Figure 3). The severity of weathering of the crude oil is evident by the complete absence of n-alkanes, and the shallowest soil (S-15-B10) is even devoid of isoprenoids. Despite the severe biodegradation, the crude oils each contain an abundance of lower boiling hydrocarbons, which are absent from the petroleums identified in the 2016 samples. The crude oil could not reasonably weather (evaporate) so severely so as to resemble the DRO- or RRO-dominant petroleums encountered in the 2016 soils. Natural evaporation could not achieve a UCM maximum at C_{22} or higher.[7] Thus, the petroleums encountered in the 2016 soils simply cannot be comprised of weathered (biodegraded and evaporated) crude oil – they must represent some form(s) of refined petroleum products (discussed below). Additional confirmation that the 2016 soils do not contain crude oil, but rather refined petroleum products, is achieved when the PAH relative concentrations (mg_{TPAH}/kg_{TPH}) and biomarker distributions are considered (see below).

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[7] Stout, S.A. and Wang, Z. (2016). Chemical fingerprinting methods and factors affecting petroleum fingerprints in the environment. In: Standard Handbook of Oil Spill Environmental Forensics: Fingerprinting and Source Identification, 2nd Ed., S.A. Stout and Z. Wang, Eds., Elsevier Publishing Co., Boston, MA, p. 61-130.

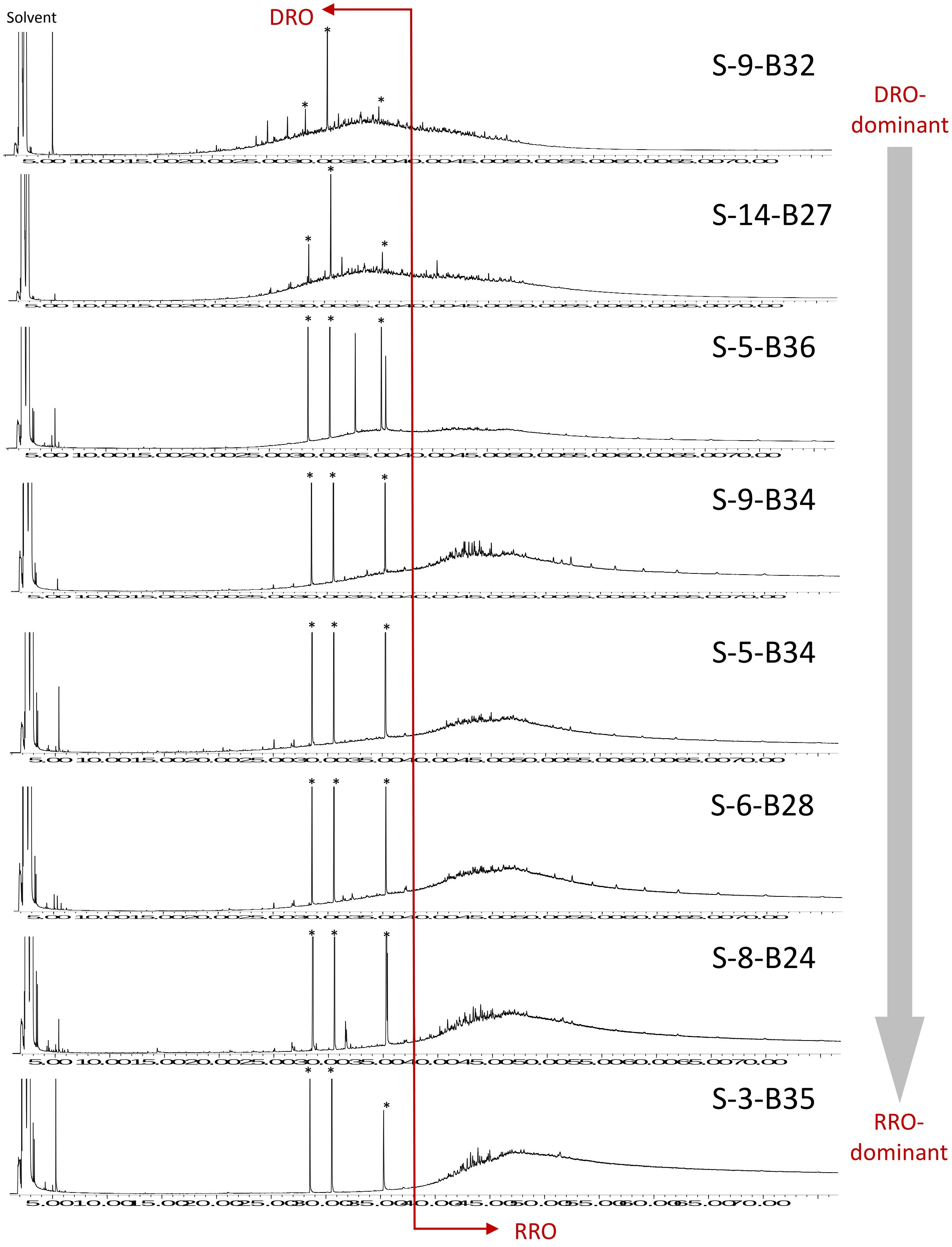
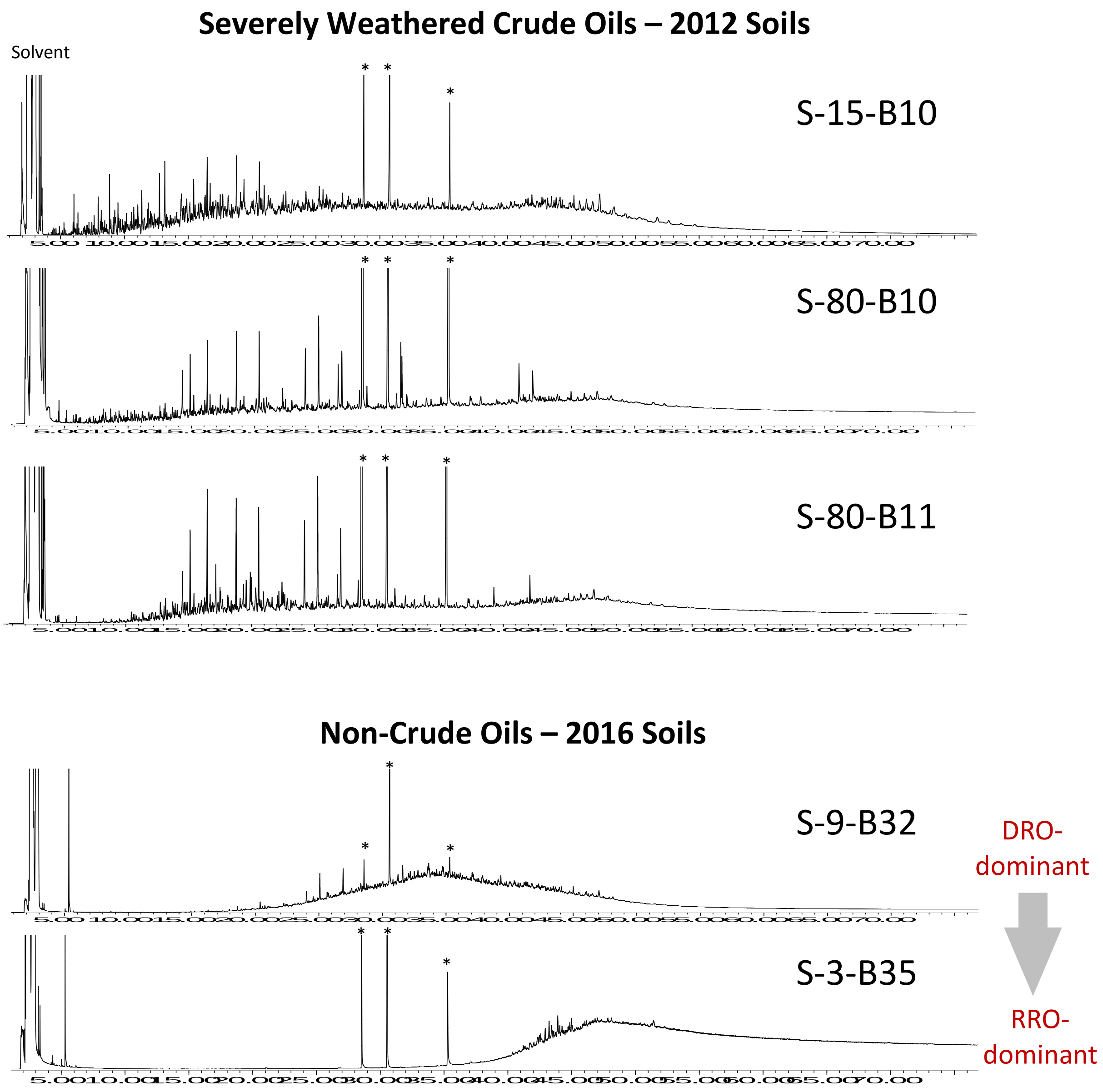


Figure 2: TPH fingerprints of the eight soil samples collected in 2016. Samples are arranged by % DRO from Table 3, as indicated by the arrow to the right; * = internal standards.


Severely Weathered Crude Oils – 2012 Soils

Non-Crude Oils – 2016 Soils

Figure 3: TPH fingerprints of the three crude oil-impacted soil samples collected in 2012 (top) compared to the DRO- and RRO-dominant (non-crude oil) petroleums in soils samples collected in 2016 (from Fig. 2). * = internal standards.

Diesel Fuel vs. 2016 Soils

It is worth noting that the DRO-dominant petroleum component in the 2016 soils is also inconsistent with diesel fuel. The basis for this disparity is seen in Figure 4, which shows the lower boiling character of severely weathered diesel fuel (reference sample; unrelated to the Site obtained from NewFields' database). The DRO-range UCM present in the diesel fuel reaches a maximum around C_{15}, which is much lower than exhibited by the DRO-dominant petroleum in the S-9-B32 soil (max. ~C_{22}; Figure 4). As was also true of the crude oil, additional weathering (natural evaporation) of diesel fuel could not reasonably resemble the DRO-dominant petroleum found in the 2016 soils. Thus, diesel fuel can also be ruled-out as a possible source of the DRO-dominant petroleum.

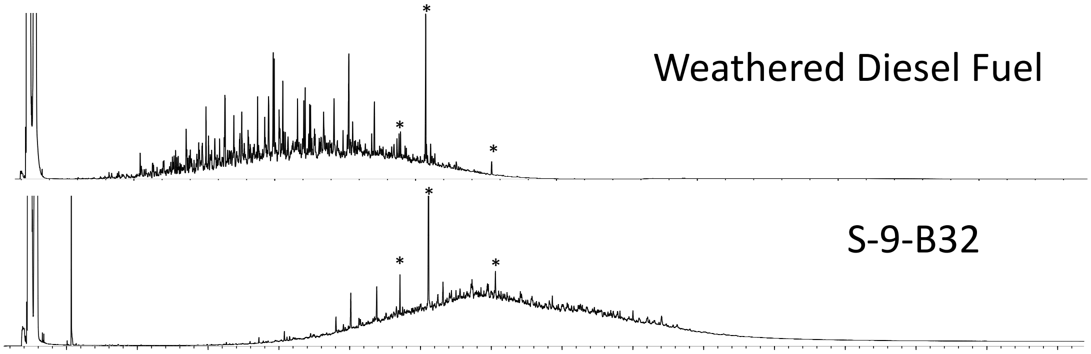


Figure 4: TPH fingerprints of a weathered diesel fuel (reference sample, unrelated to the Jalk Fee property study) compared to the DRO-dominant petroleum in the S-9-B32 soil sample collected in 2016 (from Fig. 2). * = internal standards.

Quench Oils vs. Soil Sample

Because the 2016 soils clearly did not contain petroleum that might be attributed to historic oil field operations (e.g., crude oil or diesel fuel), and because documents from the neighboring CHT facility had indicated the use of quench (mineral) oils and release of waste oil "*onto the ground and asphalt top at rear yard*"[8], it was prudent to compare the DRO- and RRO-dominant petroleums found in the 2016 soils to the oils used and wastes generated by the heat treating of metal.

As background, quenching is the process of cooling metal parts to achieve the desired properties (microstructure, hardness, or toughness)[9]. For many applications, quench oils (rather than water or gas solutions) are used to achieve the desired results. Quench oils are typically dearomatized mineral oils (i.e., they are low in aromatic compounds) and thereby classified as either paraffinic or naphthenic. Quench oil is circulated and re-used many times in the heat treating operation but eventually becomes oxidized and contaminated with sludge reducing its efficacy (and clogging heat exchangers and filters). The used quench oil must be replaced and the sludge, which can settle out in holding tanks, must be removed from tanks and disposed of. Liscic et al. (2003) state that "*cleaning and sludge disposal are*

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[8] May 19, 1989 County of Los Angeles Survey Report (Appendix I of "Request to Name Continental Heat Treating as Discharger", dated March 25, 2015)

[9] Liscic, B., H.M. Tensi, G.E. Totten, G.M. Webster (2003). Non-lubricating process fluids: Steel quenching technology. In: Fuels and Lubricants Handbook, G.E. Totten, Ed., ASTM Manual Series, MNL37WCD, p. 587-634.

growing problems for the heat treating industry". As discussed previously, CHT used large quantities of quench oils and their use, storage and disposal are documented in multiple CHT regulatory submittals (e.g., CHT's 1982 Applications to SCAQMD; CHT's 1969 Degreaser Application to LAC APCD; CHT's 1982 Electrostatic Precipitator Application to SCAQMD; CHT's LAC Fire Department Hazardous Material Contingency Plan).

Two of the neat mineral oils analyzed for this study were a fresh and used quench oil obtained from an out-of-state metal heat treating facility (unrelated to CHT). The GC/FID chromatograms for these quench oils are shown in Figure 5 along with that of the S-9-B32 soil, which was the most DRO-dominant petroleum component among 2016 soils studied. The overall comparability between the used quench oil and the petroleum in the S-9-B32 soil is evident.

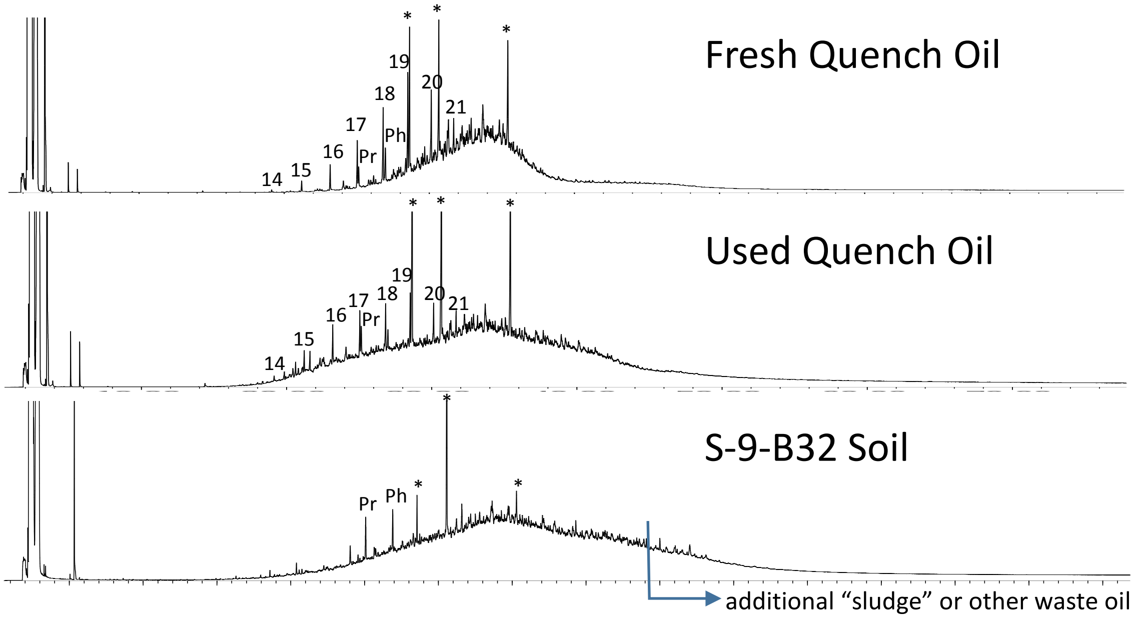

Figure 5: TPH fingerprints of fresh and used quench oil compared to the DRO-dominant petroleum in the S-9-B32 soil sample collected in 2016 (from Fig. 2). * = internal standards; # = n-alkane carbon number; Pr=pristane; Ph=phytane.

Fresh quench oil is a distilled petroleum that ranges from about C_{14} to C_{27} and reaches a maximum around C_{22} (Figure 5). Most of the mass of the fresh quench oil occurs within a UCM "hump" that exhibits the relatively smooth profile typical of a distilled petroleum product. Resolved peaks include selected n-alkanes (n-C_{14} to n-C_{22}) and isoprenoids (pristane and phytane). (These features suggest this particular quench oil is a paraffinic type of quench oil). The used quench oil ranges from about C_{13} to C_{35} as seen in its broader UCM "hump". The maximum at C_{22} is still evident, as are the resolved n-alkanes and isoprenoids (Figure 5). The broadening of the UCM in the used quench oil compared to the fresh quench oil is consistent with the presence of a sludge component within the used oil, which as noted above, is commonly formed over time with repeated use of the quench oil.

The chromatogram of the used quench oil exhibits a remarkable similarity to that of the DRO-dominant petroleum in the S-9-B32 soil sample (Figure 5). The soil's UCM is slightly broader (higher boiling) than the used quench oil but clearly still exhibits the maximum around C_{22} and isoprenoids. The n-alkanes are no longer present, which would be consistent with the loss of these susceptible compounds due to weathering (biodegradation) in the S-9-B32 soil. The comparability in TPH fingerprints indicates that the S-9-B32 soil contains a petroleum consistent with a weathered, used quench oil. The somewhat broader (higher boiling) UCM in the soil suggests that the used quench oil in this soil may have contained a somewhat greater amount of sludge compared to the used quench oil reference sample studied herein. Alternatively, the S-9-B32 soil sample may contain some additional, RRO-range waste oil component (e.g., high temperature mineral oil). For example, this type of RRO-range waste oil component may be represented by the RRO-dominant component found in the S-3-B35 soil (Figure 2). Thus, the continuum of petroleums found in the 2016 soils (Figure 2) likely represents varying mixtures of used quench oil containing varying amounts of used quench oil sludge and/or varying amounts of unspecific RRO-dominant waste oils.

In summary, based upon the TPH fingerprints the petroleum compounds present in the eight soils collected in 2016 (that contained measurable TPH; Table 3) is:

1) inconsistent with severely weathered crude oil (Figure 3),
2) inconsistent with weathered diesel fuel (Figure 4), and
3) consistent with used quench oil containing varying amounts of sludge and/or RRO-range waste oil (Figure 5).

PAH Character and Content in Soil Samples

The PAH data measured in the 2012 and 2016 soils, as well as the fresh and used quench oils, provide another line of evidence to support the conclusions evident from the TPH fingerprints (summarized above). This can be performed through a comparison of the concentration of PAHs present in the soils. However, *absolute* concentrations of PAHs, of course, depend upon the amount of petroleum present within a given soil sample (which varied, as evidenced by varying TPH concentrations; Tables 1 and 4). Therefore, the *relative* abundance of PAHs is a more useful means of comparing the PAHs in the soil samples to one another. The relative abundance of PAH can be obtained by normalizing the absolute concentration of TPAH to the absolute concentration of TPH in each soil (i.e., mg_{TPAH}/kg_{TPH}). This ratio is a measure of the concentration of TPAH in the oil found in the sample. This same normalization step can be applied to the TPAH and TPH concentrations in the neat quench oils, allowing for the direct comparison among all relevant samples. Note that that the mg_{TPAH}/kg_{TPH} concentrations for the 2012 and 2016 soils are provided in Tables 1 and 4.

Figure 6 shows a histogram comparing the TPH-normalized concentrations of TPAH in the shallow crude oil-impacted soil from 2012 (S-15-B10), the most DRO-dominant (S-9-B32) and RRO-dominant (S-3-B35) soils from 2016, and the used quench oil studied. Inspection shows that the crude oil, despite being severely weathered, had a relatively high concentration of PAHs, with the shallowest soil studied (S-15-B10) containing 11,500 mg_{TPAH}/kg_{TPH}. [Note that the deeper crude oil-impacted soils from 2012 also contained elevated TPAH/TPH concentrations (Table 1; Avg. 12,800 mg_{TPAH}/kg_{TPH}).]

This relatively high concentration of PAHs is not atypical of crude oil, but is clearly higher than the petroleums found in the 2016 soils studied (Table 4; Avg. 2,700 mg_{TPAH}/kg_{TPH}). For example, the most DRO-dominant and RRO-dominant “end-member” petroleums found in the 2016 soils contained only 940 mg_{TPAH}/kg_{TPH} and 2,700 mg_{TPAH}/kg_{TPH}, respectively (Figure 6). Additional weathering of the S-15-B10 type crude oil, which is already severely weathered, could not reasonably explain this large (~5- to 14-fold) disparity in relative PAH concentration. This disparity, thereby, provides another line of evidence that the hydrocarbons present within the 2016 soils studied did not stem from crude oil.

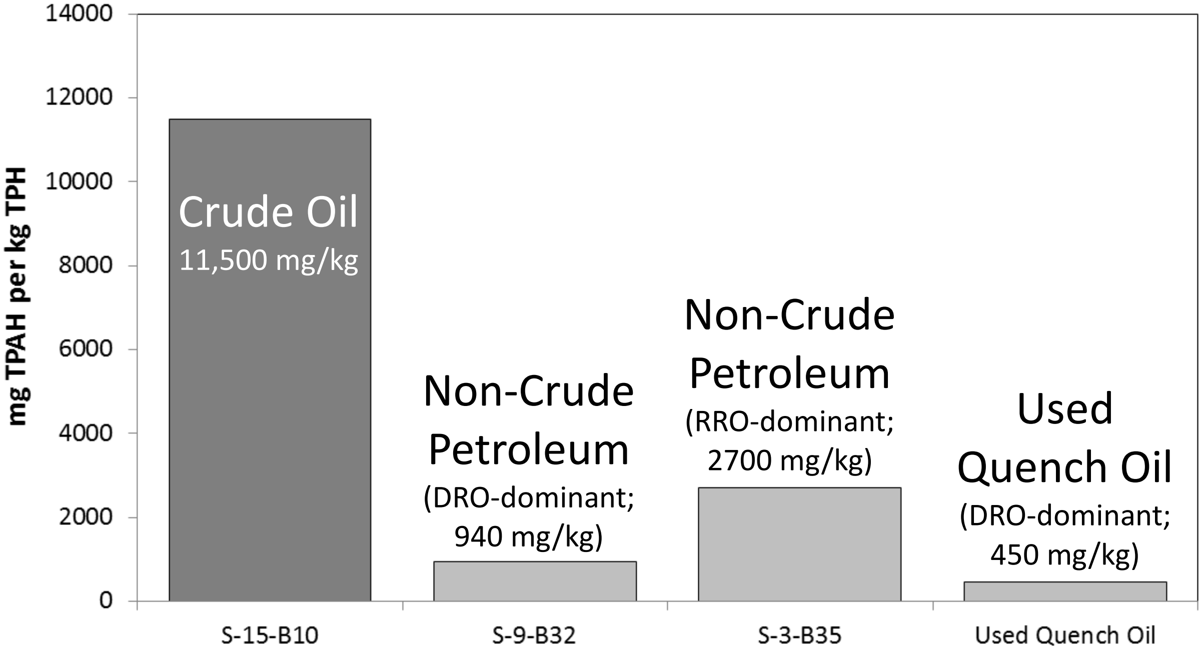

Figure 6: Comparison of the TPH-normalized concentrations of total PAHs (TPAH) in representative soils from the Site containing severely weathered crude oil (S-15-B10), non-crude petroleum enriched in DRO- and RRO- components, and used quench oil.

On the other hand, and as expected and owing to the fact quench oils are dearomatized during their refining, the used quench oils studied contained relatively low concentrations of PAHs (450 mg_{TPAH}/kg_{TPH}; Figure 6). The relative concentration of PAHs in the used quench oil is comparable to concentrations found in the three soils containing the greatest proportions of DRO-dominant petroleum (S-9-B32, S-14-B27, and S-5-B36), which ranged from 520 to 940 mg_{TPAH}/kg_{TPH} (Table 4). Thus, the comparably low relative concentrations of PAHs in these DRO-dominant soils and in used quench oil supports the conclusion evident from the TPH fingerprints: these 2016 soils contain petroleum consistent with used quench oil and inconsistent with crude oil.

The remaining increasingly RRO-dominant soils from 2016 contained somewhat higher relative concentrations of PAHs than used quench oil (Table 4), although these signatures do not simply represent an incremental blending of crude oil with used quench oil. Specifically, while the total PAH concentration in any of these samples (e.g., S-3-B35, Figure 6) may be “mathematically achieved” by mixing crude and quench oils, the presence of crude oil is not observed in the TPH fingerprints of any of these samples (Figures 2 and 3). [Similarly, the distributions of individual PAHs in severely weathered crude oil are clearly distinct from those present in these soils; data not shown.] Therefore, the higher relative abundance of PAHs in the RRO-dominant soils compared to the DRO-dominant soils requires another explanation.

We conclude that the RRO-dominant petroleum in these soils is explained by (1) the presence of a more PAH-rich form of used quench oil/sludge (than was available for this study; e.g. “pure” sludge as opposed to used quench oil containing sludge) or (2) some unspecific RRO-range waste oil. This conclusion would be consistent with the TPH fingerprints of these RRO-dominant soils’ petroleums (see discussion above; Figure 2). The second possibility has some support from the fact that waste oils (e.g., used vacuum and hydraulic pump oils) were reportedly generated by CHT and disposed of “onto ground and asphalt top at rear yard” of the CHT property[10] making the presence of other such RRO-range petroleums (i.e., not only used quench oil) in these soils not unexpected.

In summary, the petroleums present in the 2016 soils studied contain relatively low concentrations of PAH relative to the concentration of TPH. This feature is atypical of most petroleum, including crude oil and distillate fuels, but is a signature of petroleums that have been dearomatized (PAHs reduced during refining), such as quench oil and other mineral oils. As such, the low relative concentrations of PAHs in the 2016 soils indicates these soils contain petroleum that is 1) inconsistent with severely weathered crude oil and 2) consistent with used quench oil containing varying amounts of sludge and/or waste oil (Figure 6), which confirms the TPH fingerprinting results discussed above.

Petroleum Biomarkers in Soil Samples

As noted above, petroleum biomarkers provide a high degree of specificity among petroleums derived from different sources. This specificity varies among crude oils from different geologic sources and is (largely) transferred to “daughter” products refined from different “parent” crude oil feedstocks. Thus, in this study, petroleum biomarkers provide an additional means to compare the local Santa Fe Springs crude oil, as represented by the three soils studied in 2012, to the petroleums found in the eight soils containing petroleum from 2016. Because most biomarkers occur within the RRO-range, their comparison is particularly useful in assessing the specific character of the RRO-dominant petroleum components present in the 2016 soils studied.

While the TPH signatures and PAH content of the fresh and used quench oil bear some similarity to the 2016 soil samples as discussed above, there is no expectation that biomarkers in the fresh and used quench oils studied (which were sourced from an out-of-area heat treating facility) have any relevance to the quench oil/sludge found in the 2016 soil samples because these oils at the site would have been derived from completely different sources. Thus, the biomarker results for the quench oils are provided but have not been compared to those found in the 2016 soil samples. Because of their complexity, biomarker distributions in different petroleums are commonly compared using diagnostic ratios.[11] These are ratios between the concentrations of individual biomarkers that are, based on decades of study of petroleum geochemistry, known to reflect differences in the specific nature of petroleum and are stable upon weathering. Figure 7 shows cross-plots of three common diagnostic biomarker ratios for the soil samples studied. The *x*-axis on each plot is the same and reflects the relative abundance of 28,30-bisnorhopane (BNH) relative to hopane (HOP). The two *y*-axes show the relative abundances of

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[10] May 19, 1989 County of Los Angeles Survey Report (Appendix I of “Request to Name Continental Heat Treating as Discharger”, dated March 25, 2015)

[11] For example: Stout, S.A. and Wang, Z. (2008) Diagnostic compounds for fingerprinting petroleum in the environment. In: *Environmental Forensics*, R.E. Hester and R.M. Harrison, Eds., Royal Soc. Chem., Issues in Environmental Science and Technology Publ. No. 26, London, pp. 54-104.

oleanane to hopane (OL/HOP) and diacholestanes to 14α(H),17α(H) cholestanes (C27d/C27) in the soils studied.

Figure 7 shows that the three soil samples from 2012 appear highly consistent with one another as they form tight clusters on each of the plots. This consistency is anticipated since these three soils tested were each recognized to contain severely weathered crude oil (see above), which in each sample, is reasonably believed to represent the local crude oil from the Santa Fe Springs oil field. The eight soil samples from 2016, on the other hand, exhibit considerable scatter within each plot. This scatter indicates that the petroleums in these soils is heterogeneous and clearly is not comprised of Santa Fe Springs crude oil. Interestingly, the two 2016 soil samples that contained a higher proportion of DRO-dominant petroleum (S-9-B32 and S-14-B27; Figure 2) appear fairly comparable to one another (plotting close to one another; Figure 7), perhaps suggesting these two soils contain a highly similar used quench oil/sludge. Heterogeneity among the other six 2016 soil samples that had contained increasing proportions of RRO-dominant petroleums (Figure 2) suggests these soils contain a variety of different quench oil sludges and/or RRO-range waste oils (e.g., high boiling mineral oils).

Therefore the biomarker results, like the results based upon TPH fingerprints and PAH abundance, indicate that local crude oil is not present in any of these soils. Rather, a variety of different types and mixtures of quench oil/sludge and other waste oils are indicated, as would be consistent with the documented disposal practices of CHT.

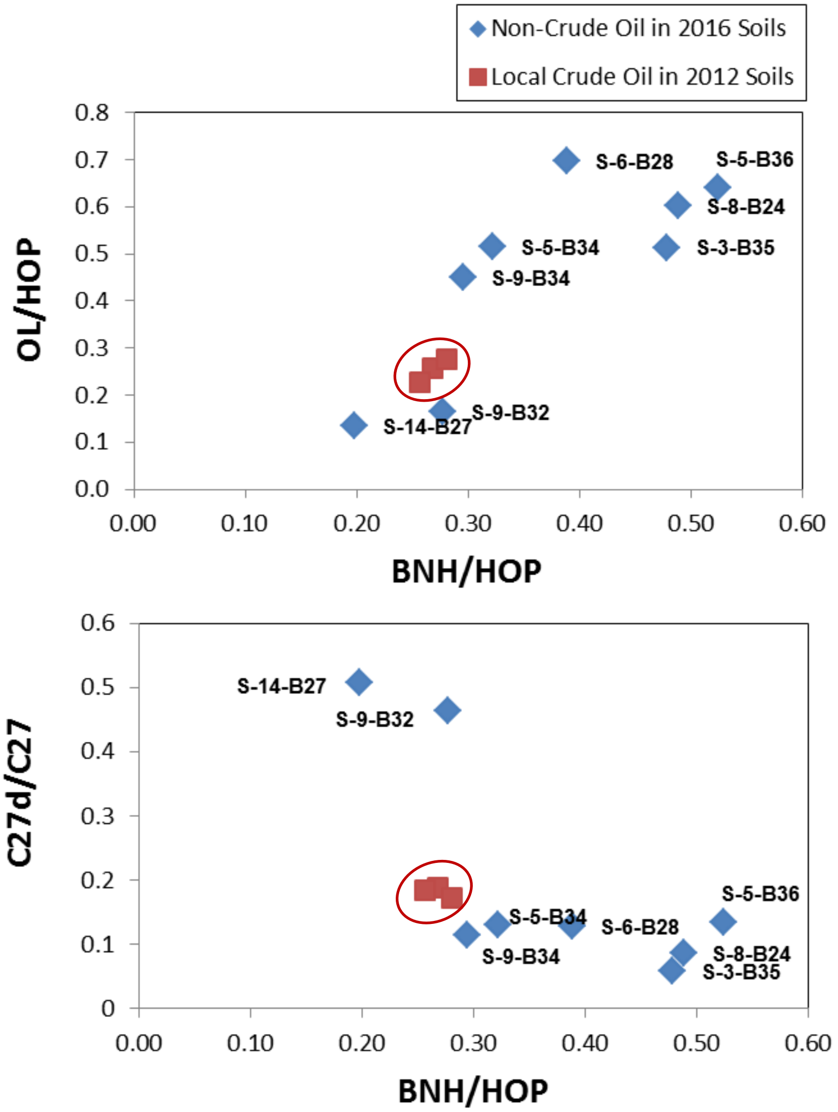

Figure 7: Cross-plots of petroleum biomarker diagnostic ratios showing the consistent character of the local (Santa Fe Springs) crude oil in the 2012 soils and heterogeneity among the diverse non-crude oil petroleums in the 2016 soils.

Other Data

Additional data that were collected as part of this effort but are not discussed in this report are included in Attachment B. These data include PIANO compounds, other volatile organics (Method 8260), and inorganics (including metals, mercury and cyanide). In many cases, compounds were not detected in soil samples, or were detected at concentrations similar to the reference (background) location site (e.g. metals), and therefore did not contribute to the interpretation of the forensic signature of contamination along the property boundary.

Conclusions

Chemical fingerprinting using isotopic and molecular methods was conducted on shallow soils collected from the area along Jalk Fee's property boundary with CHT that historically exhibited the highest PCE concentrations in shallow soil. These soils were compared to soils known to be impacted with local crude oil, and to other potential source materials such as diesel fuel and oils used in the heat treatment of metals. The results collectively show that the PCE and petroleum in these shallow soils along the property boundary with CHT are consistent with multiple discharges of chlorinated solvents (PCE) and quench oils with varying amounts of sludges and/or waste (mineral) oils such as would have been used or generated during the metal heat treating process, and discharged by CHT. Contamination in these soils is inconsistent with crude oil or diesel fuel and can not be associated with ExxonMobil's historic crude oil production operations on the property. PCE and quench oils were not used, handled or stored by ExxonMobil but were used, handled, and stored in large volumes by CHT. When coupled with the fact that there is a record of improper disposal of waste on the CHT property, the only reasonable conclusion to be drawn is that the source of both PCE and hydrocarbon contamination in soil along the southern property boundary at the Site resulted from spills and discharges by, and/or the disposal practices of CHT, which have migrated onto the Jalk Fee property.

Attachment 1 – Raw Data for Soil Samples Analyzed in 2012

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Method Blank
Lab ID	TS082212B15
Matrix	Soil
Reference Method	SHC
Batch ID	TS082212B15
Date Collected	N/A
Date Received	N/A
Date Prepped	08/22/2012
Date Analyzed	08/27/2012
Sample Size (wet)	20
% Solid	100.00
File ID	A919971.D
Units	mg/Kg
Final Volume	2
Dilution	1
Reporting Limit	3.30

Class	Abbrev	Analytes	Result		SSRL
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	0.122	J	3.30

Surrogates (% Recovery)	
ortho-Terphenyl	105
d50-Tetracosane	100

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Laboratory Control Sample
Lab ID	TS082212LCS06
Matrix	Soil
Reference Method	SHC
Batch ID	TS082212B15
Date Collected	N/A
Date Received	N/A
Date Prepped	08/22/2012
Date Analyzed	08/27/2012
Sample Size (wet)	20
% Solid	100.00
File ID	A919973.D
Units	mg/Kg
Final Volume	2
Dilution	1
Reporting Limit	3.30

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
SHC	C9	n-Nonane (C9)	0.791	S	0.100	79	1.00	50	130
SHC	C10	n-Decane (C10)	0.829	S	0.100	83	1.00	50	130
SHC	C12	n-Dodecane (C12)	0.827	S	0.100	83	1.00	50	130
SHC	C14	n-Tetradecane (C14)	0.888	S	0.100	89	1.00	50	130
SHC	C16	n-Hexadecane (C16)	0.956	S	0.100	96	1.00	50	130
SHC	C18	n-Octadecane (C18)	0.985	S	0.100	98	1.00	50	130
SHC	C19	n-Nonadecane (C19)	0.929	S	0.100	93	1.00	50	130
SHC	C20	n-Eicosane (C20)	0.955	S	0.100	96	1.00	50	130
SHC	C22	n-Docosane (C22)	0.958	S	0.100	96	1.00	50	130
SHC	C24	n-Tetracosane (C24)	0.972	S	0.100	97	1.00	50	130
SHC	C26	n-Hexacosane (C26)	0.971	S	0.100	97	1.00	50	130
SHC	C28	n-Octacosane (C28)	0.973	S	0.100	97	1.00	50	130
SHC	C30	n-Triacontane (C30)	0.977	S	0.100	98	1.00	50	130
SHC	C36	n-Hexatriacontane (C36)	0.934	S	0.100	93	1.00	50	130
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	13.6		3.30				

Surrogates (% Recovery)	
ortho-Terphenyl	102
d50-Tetracosane	95

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Laboratory Control Sample Dup
Lab ID	TS082212LCSD06
Matrix	Soil
Reference Method	SHC
Batch ID	TS082212B15
Date Collected	N/A
Date Received	N/A
Date Prepped	08/22/2012
Date Analyzed	08/27/2012
Sample Size (wet)	20
% Solid	100.00
File ID	A919975.D
Units	mg/Kg
Final Volume	2
Dilution	1
Reporting Limit	3.30

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit	RPD	RPD Limit
SHC	C9	n-Nonane (C9)	0.796	S	0.100	80	1.00	50	130	1	30
SHC	C10	n-Decane (C10)	0.829	S	0.100	83	1.00	50	130	0	30
SHC	C12	n-Dodecane (C12)	0.822	S	0.100	82	1.00	50	130	1	30
SHC	C14	n-Tetradecane (C14)	0.885	S	0.100	89	1.00	50	130	0	30
SHC	C16	n-Hexadecane (C16)	0.954	S	0.100	95	1.00	50	130	0	30
SHC	C18	n-Octadecane (C18)	0.983	S	0.100	98	1.00	50	130	0	30
SHC	C19	n-Nonadecane (C19)	0.929	S	0.100	93	1.00	50	130	0	30
SHC	C20	n-Eicosane (C20)	0.957	S	0.100	96	1.00	50	130	0	30
SHC	C22	n-Docosane (C22)	0.959	S	0.100	96	1.00	50	130	0	30
SHC	C24	n-Tetracosane (C24)	0.975	S	0.100	98	1.00	50	130	0	30
SHC	C26	n-Hexacosane (C26)	0.972	S	0.100	97	1.00	50	130	0	30
SHC	C28	n-Octacosane (C28)	0.976	S	0.100	98	1.00	50	130	0	30
SHC	C30	n-Triacontane (C30)	0.977	S	0.100	98	1.00	50	130	0	30
SHC	C36	n-Hexatriacontane (C36)	0.930	S	0.100	93	1.00	50	130	0	30
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	12.5		3.30						

Surrogates (% Recovery)	
ortho-Terphenyl	101
d50-Tetracosane	95

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	S-80-B10	S-80-B10
Lab ID	1208037-02	1208037-02D
Matrix	Soil	Soil
Reference Method	SHC	SHC
Batch ID	TS082212B15	TS082212B15
Date Collected	08/14/2012	08/14/2012
Date Received	08/21/2012	08/21/2012
Date Prepped	08/22/2012	08/22/2012
Date Analyzed	08/27/2012	08/28/2012
Sample Size (wet)	20.08	20.04
% Solid	96.58	96.58
File ID	A919981.D	A919983.D
Units	mg/Kg	mg/Kg
Final Volume	2	2
Dilution	1	1
Reporting Limit	3.40	3.41

Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	RPD	RPD Limit
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	145	3.40	140	3.41	4	30

Surrogates (% Recovery)		
ortho-Terphenyl	89	90
d50-Tetracosane	83	83

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Alaska North Slope Crude
Lab ID	TS051412ANS02
Matrix	Oil
Reference Method	SHC
Batch ID	N/A
Date Collected	N/A
Date Received	N/A
Date Prepped	N/A
Date Analyzed	05/09/2012
Sample Size (wet)	0.10058
% Solid	100.00
File ID	A917902.D
Units	mg/Kg
Final Volume	10
Dilution	1
Reporting Limit	3280

Class	Abbrev	Analytes	Result	SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	596000	3280	110	544000.00	65	135

Surrogates (% Recovery)
ortho-Terphenyl
d50-Tetracosane

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	S-15-B10	S-80-B10
Lab ID	1208037-01	1208037-02
Matrix	Soil	Soil
Reference Method	SHC	SHC
Batch ID	TS082212B15	TS082212B15
Date Collected	08/13/2012	08/14/2012
Date Received	08/21/2012	08/21/2012
Date Prepped	08/22/2012	08/22/2012
Date Analyzed	08/27/2012	08/27/2012
Sample Size (wet)	20.2	20.08
% Solid	80.24	96.58
File ID	A919979.D	A919981.D
Units	mg/Kg	mg/Kg
Final Volume	8	2
Dilution	1	1
Reporting Limit	16.3	3.40

Class	Abbrev	Analytes	Result	SSRL	Result	SSRL
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	2880	16.3	145	3.40

Surrogates (% Recovery)		
ortho-Terphenyl	86	89
d50-Tetracosane	82	83

U: The analyte was analyzed for but not detected at the sample specific level reported.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
E: Estimated value, exceeds the upper limit of calibration.
NA: Not Applicable
D: Secondary Dilution Performed
D1: Tertiary Dilution Performed
ª: Value outside of QC Limits.
§: Surrogate value outside of acceptable range.
X: It is not possible to calculate RPD, one result is below the detection limit, the other is above reporting limit.
G: Matrix Interference.
P: Greater than 40% RPD between the two columns, the higher value is reported according to the method.
I: Due to interference, the lower value is reported.
N: Spike recovery outside control limits.
E: Estimated due to Interference. (Metals)
¤: Duplicate outside control limits.
P: Spike compound. (Metals)
J: Below CRDL, Project DL, or RL but greater than or equal to MDL
C: Sample concentration is > 4 times the spike level, recovery limits do not apply. (Metals)
S: Spike Compound. (Organics)
§: RPD criteria not applicable to results less than 5 times the reporting limit. (Metals)
T: Tentatively identified corexit compound.
C: Co-elution.
Z: Result not surrogate corrected.

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Method Blank
Lab ID	TS090712B03
Matrix	Soil
Reference Method	SHC
Batch ID	TS090712B03
Date Collected	N/A
Date Received	N/A
Date Prepped	09/07/2012
Date Analyzed	09/10/2012
Sample Size (wet)	5
% Solid	100.00
File ID	C696450.D
Units	mg/Kg
Final Volume	2
Dilution	1
Reporting Limit	13.2

Class	Abbrev	Analytes	Result		SSRL
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	1.54	J	13.2

Surrogates (% Recovery)	
ortho-Terphenyl	93
d50-Tetracosane	91

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Laboratory Control Sample
Lab ID	TS090712LCS02
Matrix	Soil
Reference Method	SHC
Batch ID	TS090712B03
Date Collected	N/A
Date Received	N/A
Date Prepped	09/07/2012
Date Analyzed	09/10/2012
Sample Size (wet)	5
% Solid	100.00
File ID	C696452.D
Units	mg/Kg
Final Volume	2
Dilution	1
Reporting Limit	13.2

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
SHC	C9	n-Nonane (C9)	3.20	S	0.400	80	4.00	50	130
SHC	C10	n-Decane (C10)	3.38	S	0.400	85	4.00	50	130
SHC	C12	n-Dodecane (C12)	3.59	S	0.400	90	4.00	50	130
SHC	C14	n-Tetradecane (C14)	3.56	S	0.400	89	4.00	50	130
SHC	C16	n-Hexadecane (C16)	3.92	S	0.400	98	4.00	50	130
SHC	C18	n-Octadecane (C18)	3.89	S	0.400	97	4.00	50	130
SHC	C19	n-Nonadecane (C19)	3.64	S	0.400	91	4.00	50	130
SHC	C20	n-Eicosane (C20)	3.80	S	0.400	95	4.00	50	130
SHC	C22	n-Docosane (C22)	3.78	S	0.400	94	4.00	50	130
SHC	C24	n-Tetracosane (C24)	3.83	S	0.400	96	4.00	50	130
SHC	C26	n-Hexacosane (C26)	3.80	S	0.400	95	4.00	50	130
SHC	C28	n-Octacosane (C28)	3.78	S	0.400	94	4.00	50	130
SHC	C30	n-Triacontane (C30)	3.86	S	0.400	97	4.00	50	130
SHC	C36	n-Hexatriacontane (C36)	3.72	S	0.400	93	4.00	50	130
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	54.6		13.2				

Surrogates (% Recovery)	
ortho-Terphenyl	93
d50-Tetracosane	90

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Laboratory Control Sample Dup
Lab ID	TS090712LCSD02
Matrix	Soil
Reference Method	SHC
Batch ID	TS090712B03
Date Collected	N/A
Date Received	N/A
Date Prepped	09/07/2012
Date Analyzed	09/10/2012
Sample Size (wet)	5
% Solid	100.00
File ID	C696454.D
Units	mg/Kg
Final Volume	2
Dilution	1
Reporting Limit	13.2

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit	RPD	RPD Limit
SHC	C9	n-Nonane (C9)	3.17	S	0.400	79	4.00	50	130	1	30
SHC	C10	n-Decane (C10)	3.41	S	0.400	85	4.00	50	130	1	30
SHC	C12	n-Dodecane (C12)	3.61	S	0.400	90	4.00	50	130	0	30
SHC	C14	n-Tetradecane (C14)	3.62	S	0.400	91	4.00	50	130	2	30
SHC	C16	n-Hexadecane (C16)	3.98	S	0.400	99	4.00	50	130	2	30
SHC	C18	n-Octadecane (C18)	3.94	S	0.400	99	4.00	50	130	1	30
SHC	C19	n-Nonadecane (C19)	3.67	S	0.400	92	4.00	50	130	1	30
SHC	C20	n-Eicosane (C20)	3.86	S	0.400	97	4.00	50	130	2	30
SHC	C22	n-Docosane (C22)	3.84	S	0.400	96	4.00	50	130	2	30
SHC	C24	n-Tetracosane (C24)	3.89	S	0.400	97	4.00	50	130	1	30
SHC	C26	n-Hexacosane (C26)	3.86	S	0.400	97	4.00	50	130	2	30
SHC	C28	n-Octacosane (C28)	3.84	S	0.400	96	4.00	50	130	2	30
SHC	C30	n-Triacontane (C30)	3.92	S	0.400	98	4.00	50	130	2	30
SHC	C36	n-Hexatriacontane (C36)	3.79	S	0.400	95	4.00	50	130	2	30
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	50.3		13.2						

Surrogates (% Recovery)	
ortho-Terphenyl	94
d50-Tetracosane	91

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	S-80-B11	S-80-B11
Lab ID	1208051-01	1208051-01D
Matrix	Soil	Soil
Reference Method	SHC	SHC
Batch ID	TS090712B03	TS090712B03
Date Collected	08/21/2012	08/21/2012
Date Received	08/23/2012	08/23/2012
Date Prepped	09/07/2012	09/07/2012
Date Analyzed	09/11/2012	09/11/2012
Sample Size (wet)	5.2	5.77
% Solid	93.02	93.02
File ID	C696458.D	C696460.D
Units	mg/Kg	mg/Kg
Final Volume	2	2
Dilution	1	1
Reporting Limit	13.6	12.3

Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	RPD	RPD Limit
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	271	13.6	307	12.3	12	30

Surrogates (% Recovery)		
ortho-Terphenyl	89	90
d50-Tetracosane	86	87

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Alaska North Slope Crude
Lab ID	TS061312ANS01
Matrix	Oil
Reference Method	SHC
Batch ID	N/A
Date Collected	N/A
Date Received	N/A
Date Prepped	N/A
Date Analyzed	06/02/2012
Sample Size (wet)	0.10058
% Solid	100.00
File ID	C694108.D
Units	mg/Kg
Final Volume	10
Dilution	1
Reporting Limit	3280

Class	Abbrev	Analytes	Result	SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	581000	3280	107	544000	65	135

Surrogates (% Recovery)
ortho-Terphenyl
d50-Tetracosane

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	S-80-B11
Lab ID	1208051-01
Matrix	Soil
Reference Method	SHC
Batch ID	TS090712B03
Date Collected	08/21/2012
Date Received	08/23/2012
Date Prepped	09/07/2012
Date Analyzed	09/11/2012
Sample Size (wet)	5.2
% Solid	93.02
File ID	C696458.D
Units	mg/Kg
Final Volume	2
Dilution	1
Reporting Limit	13.6

Class	Abbrev	Analytes	Result	SSRL
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	271	13.6

Surrogates (% Recovery)	
ortho-Terphenyl	89
d50-Tetracosane	86

U: The analyte was analyzed for but not detected at the sample specific level reported.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
E: Estimated value, exceeds the upper limit of calibration.
NA: Not Applicable
D: Secondary Dilution Performed
D1: Tertiary Dilution Performed
ª: Value outside of QC Limits.
§: Surrogate value outside of acceptable range.
X: It is not possible to calculate RPD, one result is below the detection limit, the other is above reporting limit.
G: Matrix Interference.
P: Greater than 40% RPD between the two columns, the higher value is reported according to the method.
I: Due to interference, the lower value is reported.
N: Spike recovery outside control limits.
E: Estimated due to Interference. (Metals)
¤: Duplicate outside control limits.
P: Spike compound. (Metals)
J: Below CRDL, Project DL, or RL but greater than or equal to MDL
C: Sample concentration is > 4 times the spike level, recovery limits do not apply. (Metals)
S: Spike Compound. (Organics)
§: RPD criteria not applicable to results less than 5 times the reporting limit. (Metals)
T: Tentatively identified corexit compound.
C: Co-elution.
Z: Result not surrogate corrected.

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Method Blank
Lab ID	TS101012B01
Matrix	Soil
Reference Method	SHC
Batch ID	TS101012B01
Date Collected	N/A
Date Received	N/A
Date Prepped	10/10/2012
Date Analyzed	10/16/2012
Sample Size (wet)	30
% Solid	100.00
File ID	e28250.D
Units	mg/Kg
Final Volume	2
Dilution	1
Reporting Limit	2.20

Class	Abbrev	Analytes	Result		SSRL
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	0.589	J	2.20

Surrogates (% Recovery)	
ortho-Terphenyl	95
d50-Tetracosane	92

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Laboratory Control Sample
Lab ID	TS101012LCS01
Matrix	Soil
Reference Method	SHC
Batch ID	TS101012B01
Date Collected	N/A
Date Received	N/A
Date Prepped	10/10/2012
Date Analyzed	10/16/2012
Sample Size (wet)	30
% Solid	100.00
File ID	e28252.D
Units	mg/Kg
Final Volume	2
Dilution	1
Reporting Limit	2.20

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
SHC	C9	n-Nonane (C9)	0.439	S	0.0667	66	0.667	50	130
SHC	C10	n-Decane (C10)	0.517	S	0.0667	78	0.667	50	130
SHC	C12	n-Dodecane (C12)	0.539	S	0.0667	81	0.667	50	130
SHC	C14	n-Tetradecane (C14)	0.566	S	0.0667	85	0.667	50	130
SHC	C16	n-Hexadecane (C16)	0.634	S	0.0667	95	0.667	50	130
SHC	C18	n-Octadecane (C18)	0.637	S	0.0667	96	0.667	50	130
SHC	C19	n-Nonadecane (C19)	0.610	S	0.0667	91	0.667	50	130
SHC	C20	n-Eicosane (C20)	0.618	S	0.0667	93	0.667	50	130
SHC	C22	n-Docosane (C22)	0.627	S	0.0667	94	0.667	50	130
SHC	C24	n-Tetracosane (C24)	0.636	S	0.0667	95	0.667	50	130
SHC	C26	n-Hexacosane (C26)	0.636	S	0.0667	95	0.667	50	130
SHC	C28	n-Octacosane (C28)	0.632	S	0.0667	95	0.667	50	130
SHC	C30	n-Triacontane (C30)	0.645	S	0.0667	97	0.667	50	130
SHC	C36	n-Hexatriacontane (C36)	0.593	S	0.0667	89	0.667	50	130
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	9.35		2.20				

Surrogates (% Recovery)	
ortho-Terphenyl	93
d50-Tetracosane	92

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Laboratory Control Sample Dup
Lab ID	TS101012LCSD01
Matrix	Soil
Reference Method	SHC
Batch ID	TS101012B01
Date Collected	N/A
Date Received	N/A
Date Prepped	10/10/2012
Date Analyzed	10/16/2012
Sample Size (wet)	30
% Solid	100.00
File ID	e28254.D
Units	mg/Kg
Final Volume	2
Dilution	1
Reporting Limit	2.20

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit	RPD	RPD Limit
SHC	C9	n-Nonane (C9)	0.438	S	0.0667	66	0.667	50	130	0	30
SHC	C10	n-Decane (C10)	0.526	S	0.0667	79	0.667	50	130	2	30
SHC	C12	n-Dodecane (C12)	0.558	S	0.0667	84	0.667	50	130	4	30
SHC	C14	n-Tetradecane (C14)	0.584	S	0.0667	88	0.667	50	130	3	30
SHC	C16	n-Hexadecane (C16)	0.648	S	0.0667	97	0.667	50	130	2	30
SHC	C18	n-Octadecane (C18)	0.649	S	0.0667	97	0.667	50	130	2	30
SHC	C19	n-Nonadecane (C19)	0.622	S	0.0667	93	0.667	50	130	2	30
SHC	C20	n-Eicosane (C20)	0.631	S	0.0667	95	0.667	50	130	2	30
SHC	C22	n-Docosane (C22)	0.639	S	0.0667	96	0.667	50	130	2	30
SHC	C24	n-Tetracosane (C24)	0.648	S	0.0667	97	0.667	50	130	2	30
SHC	C26	n-Hexacosane (C26)	0.647	S	0.0667	97	0.667	50	130	2	30
SHC	C28	n-Octacosane (C28)	0.645	S	0.0667	97	0.667	50	130	2	30
SHC	C30	n-Triacontane (C30)	0.656	S	0.0667	98	0.667	50	130	2	30
SHC	C36	n-Hexatriacontane (C36)	0.605	S	0.0667	91	0.667	50	130	2	30
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	9.58		2.20						

Surrogates (% Recovery)	
ortho-Terphenyl	96
d50-Tetracosane	93

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	S-25-B19	S-25-B19
Lab ID	1210010-01	1210010-01D
Matrix	Soil	Soil
Reference Method	SHC	SHC
Batch ID	TS101012B01	TS101012B01
Date Collected	09/28/2012	09/28/2012
Date Received	10/02/2012	10/02/2012
Date Prepped	10/10/2012	10/10/2012
Date Analyzed	10/16/2012	10/16/2012
Sample Size (wet)	30.41	30.78
% Solid	81.04	81.04
File ID	e28258.D	e28260.D
Units	mg/Kg	mg/Kg
Final Volume	2	2
Dilution	1	1
Reporting Limit	2.68	2.65

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	RPD	RPD Limit
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	0.558	JB	2.68	0.602	JB	2.65	8	30

Surrogates (% Recovery)		
ortho-Terphenyl	93	92
d50-Tetracosane	89	87

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Alaska North Slope Crude
Lab ID	TW090712ANS01
Matrix	Oil
Reference Method	SHC
Batch ID	N/A
Date Collected	N/A
Date Received	N/A
Date Prepped	N/A
Date Analyzed	09/05/2012
Sample Size (wet)	0.10058
% Solid	100.00
File ID	E27116.D
Units	mg/Kg
Final Volume	10
Dilution	1
Reporting Limit	3280

Class	Abbrev	Analytes	Result	SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	590000	3280	109	544000.00	65	135

Surrogates (% Recovery)
ortho-Terphenyl
d50-Tetracosane

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	S-25-B19
Lab ID	1210010-01
Matrix	Soil
Reference Method	SHC
Batch ID	TS101012B01
Date Collected	09/28/2012
Date Received	10/02/2012
Date Prepped	10/10/2012
Date Analyzed	10/16/2012
Sample Size (wet)	30.41
% Solid	81.04
File ID	e28258.D
Units	mg/Kg
Final Volume	2
Dilution	1
Reporting Limit	2.68

Class	Abbrev	Analytes	Result		SSRL
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	0.558	JB	2.68

Surrogates (% Recovery)	
ortho-Terphenyl	93
d50-Tetracosane	89

U: The analyte was analyzed for but not detected at the sample specific level reported.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
E: Estimated value, exceeds the upper limit of calibration.
NA: Not Applicable
D: Secondary Dilution Performed
D1: Tertiary Dilution Performed
ª: Value outside of QC Limits.
§: Surrogate value outside of acceptable range.
X: It is not possible to calculate RPD, one result is below the detection limit, the other is above reporting limit.
G: Matrix Interference.
P: Greater than 40% RPD between the two columns, the higher value is reported according to the method.
I: Due to interference, the lower value is reported.
N: Spike recovery outside control limits.
E: Estimated due to Interference. (Metals)
¤: Duplicate outside control limits.
P: Spike compound. (Metals)
J: Below CRDL, Project DL, or RL but greater than or equal to MDL
C: Sample concentration is > 4 times the spike level, recovery limits do not apply. (Metals)
S: Spike Compound. (Organics)
§: RPD criteria not applicable to results less than 5 times the reporting limit. (Metals)
T: Tentatively identified corexit compound.
C: Co-elution.
Z: Result not surrogate corrected.
DL: Surrogate result diluted out of sample.

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Method Blank
Lab ID	TS082212B15
Matrix	Soil
Reference Method	Modified 8270D
Batch ID	TS082212B15
Date Collected	N/A
Date Received	N/A
Date Prepped	08/22/2012
Date Analyzed	09/26/2012
Sample Size (wet)	20
% Solid	100.00
File ID	A90008580.D
Units	µg/Kg
Final Volume	2
Dilution	1
Reporting Limit	1.00

Class	Abbrev	Analytes	Result		SSRL
2	D0	cis/trans-Decalin	0.215	J	1.00
2	D1	C1-Decalins		U	1.00
2	D2	C2-Decalins		U	1.00
2	D3	C3-Decalins		U	1.00
2	D4	C4-Decalins		U	1.00
2	BT0	Benzothiophene		U	1.00
2	BT1	C1-Benzo(b)thiophenes		U	1.00
2	BT2	C2-Benzo(b)thiophenes		U	1.00
2	BT3	C3-Benzo(b)thiophenes		U	1.00
2	BT4	C4-Benzo(b)thiophenes		U	1.00
2	N0	Naphthalene	0.0804	J	1.00
2	N1	C1-Naphthalenes	0.109	J	1.00
2	N2	C2-Naphthalenes		U	1.00
2	N3	C3-Naphthalenes		U	1.00
2	N4	C4-Naphthalenes		U	1.00
2	B	Biphenyl	0.0394	J	1.00
3	DF	Dibenzofuran		U	1.00
3	AY	Acenaphthylene		U	1.00
3	AE	Acenaphthene		U	1.00
3	F0	Fluorene	0.0404	J	1.00
3	F1	C1-Fluorenes		U	1.00
3	F2	C2-Fluorenes		U	1.00
3	F3	C3-Fluorenes		U	1.00
3	A0	Anthracene		U	1.00
3	P0	Phenanthrene	0.0486	J	1.00
3	PA1	C1-Phenanthrenes/Anthracenes		U	1.00
3	PA2	C2-Phenanthrenes/Anthracenes		U	1.00
3	PA3	C3-Phenanthrenes/Anthracenes		U	1.00
3	PA4	C4-Phenanthrenes/Anthracenes		U	1.00
3	RET	Retene		U	1.00
3	DBT0	Dibenzothiophene	0.0211	J	1.00
3	DBT1	C1-Dibenzothiophenes		U	1.00
3	DBT2	C2-Dibenzothiophenes		U	1.00
3	DBT3	C3-Dibenzothiophenes		U	1.00
3	DBT4	C4-Dibenzothiophenes		U	1.00
4	BF	Benzo(b)fluorene		U	1.00
4	FL0	Fluoranthene	0.0226	J	1.00
4	PY0	Pyrene	0.0193	J	1.00
4	FP1	C1-Fluoranthenes/Pyrenes		U	1.00
4	FP2	C2-Fluoranthenes/Pyrenes		U	1.00
4	FP3	C3-Fluoranthenes/Pyrenes		U	1.00
4	FP4	C4-Fluoranthenes/Pyrenes		U	1.00
4	NBT0	Naphthobenzothiophenes		U	1.00
4	NBT1	C1-Naphthobenzothiophenes		U	1.00
4	NBT2	C2-Naphthobenzothiophenes		U	1.00
4	NBT3	C3-Naphthobenzothiophenes		U	1.00
4	NBT4	C4-Naphthobenzothiophenes		U	1.00
4	BA0	Benz[a]anthracene		U	1.00
4	C0	Chrysene/Triphenylene		U	1.00
4	BC1	C1-Chrysenes		U	1.00
4	BC2	C2-Chrysenes		U	1.00
4	BC3	C3-Chrysenes		U	1.00
4	BC4	C4-Chrysenes		U	1.00
5	BBF	Benzo[b]fluoranthene		U	1.00
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene		U	1.00
5	BAF	Benzo[a]fluoranthene		U	1.00
5	BEP	Benzo[e]pyrene		U	1.00
5	BAP	Benzo[a]pyrene		U	1.00
5	PER	Perylene		U	1.00
6	IND	Indeno[1,2,3-cd]pyrene		U	1.00
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene		U	1.00
6	GHI	Benzo[g,h,i]perylene		U	1.00
	CAR	Carbazole		U	1.00

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Method Blank
Lab ID	TS082212B15
Matrix	Soil
Reference Method	Modified 8270D
Batch ID	TS082212B15
Date Collected	N/A
Date Received	N/A
Date Prepped	08/22/2012
Date Analyzed	09/26/2012
Sample Size (wet)	20
% Solid	100.00
File ID	A90008580.D
Units	µg/Kg
Final Volume	2
Dilution	1
Reporting Limit	1.00

Class	Abbrev	Analytes	Result	SSRL
3	4MDT	4-Methyldibenzothiophene	U	1.00
3	2MDT	2/3-Methyldibenzothiophene	U	1.00
3	1MDT	1-Methyldibenzothiophene	U	1.00
3	3MP	3-Methylphenanthrene	U	1.00
3	2MP	2-Methylphenanthrene	U	1.00
3	2MA	2-Methylanthracene	U	1.00
3	9MP	9/4-Methylphenanthrene	U	1.00
3	1MP	1-Methylphenanthrene	U	1.00
t23	T4	C23 Tricyclic Terpane	U	1.00
t24	T5	C24 Tricyclic Terpane	U	1.00
t25	T6	C25 Tricyclic Terpane	U	1.00
te24	T6a	C24 Tetracyclic Terpane	U	1.00
t26S	T6b	C26 Tricyclic Terpane-22S	U	1.00
t26R	T6c	C26 Tricyclic Terpane-22R	U	1.00
t28S	T7	C28 Tricyclic Terpane-22S	U	1.00
t28R	T8	C28 Tricyclic Terpane-22R	U	1.00
t29S	T9	C29 Tricyclic Terpane-22S	U	1.00
t29R	T10	C29 Tricyclic Terpane-22R	U	1.00
Ts	T11	18a-22,29,30-Trisnorneohopane-TS	U	1.00
t30S	T11a	C30 Tricyclic Terpane-22S	U	1.00
t30R	T11b	C30 Tricyclic Terpane-22R	U	1.00
Tm	T12	17a(H)-22,29,30-Trisnorhopane-TM	U	1.00
BNH	T14a	17a/b,21b/a 28,30-Bisnorhopane	U	1.00
25N	T14b	17a(H),21b(H)-25-Norhopane	U	1.00
H29	T15	30-Norhopane	U	1.00
C29Ts	T16	18a(H)-30-Norneohopane-C29Ts	U	1.00
X	X	17a(H)-Diahopane	U	1.00
M29	T17	30-Normoretane	U	1.00
OL	T18	18a(H)&18b(H)-Oleananes	U	1.00
H30	T19	Hopane	U	1.00
M30	T20	Moretane	U	1.00
H31S	T21	30-Homohopane-22S	U	1.00
H31R	T22	30-Homohopane-22R	U	1.00
T22A	T22A	T22a-Gammacerane/C32-diahopane	U	1.00
H32S	T26	30,31-Bishomohopane-22S	U	1.00
H32R	T27	30,31-Bishomohopane-22R	U	1.00
H33R	T30	30,31-Trishomohopane-22S	U	1.00
H33S	T31	30,31-Trishomohopane-22R	U	1.00
H34R	T32	Tetrakishomohopane-22S	U	1.00
H34S	T33	Tetrakishomohopane-22R	U	1.00
H35S	T34	Pentakishomohopane-22S	U	1.00
H35R	T35	Pentakishomohopane-22R	U	1.00
d27S	S4	13b(H),17a(H)-20S-Diacholestane	U	1.00
d27R	S5	13b(H),17a(H)-20R-Diacholestane	U	1.00
d28S	S8	13b,17a-20S-Methyldiacholestane	U	1.00
aa27S	S12	14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12)	U	1.00
aa27R	S17	14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17)	U	1.00
d29R	S18	Unknown Sterane (S18)	U	1.00
d29S	S19	13a,17b-20S-Ethyldiacholestane	U	1.00
aa28S	S20	14a,17a-20S-Methylcholestane	U	1.00
aa28R	S24	14a,17a-20R-Methylcholestane	U	1.00
aa29S	S25	14a(H),17a(H)-20S-Ethylcholestane	U	1.00
aa29R	S28	14a(H),17a(H)-20R-Ethylcholestane	U	1.00
bb27R	S14	14b(H),17b(H)-20R-Cholestane	U	1.00
bb27S	S15	14b(H),17b(H)-20S-Cholestane	U	1.00
bb28R	S22	14b,17b-20R-Methylcholestane	U	1.00
bb28S	S23	14b,17b-20S-Methylcholestane	U	1.00
bb29R	S26	14b(H),17b(H)-20R-Ethylcholestane	U	1.00
bb29S	S27	14b(H),17b(H)-20S-Ethylcholestane	U	1.00
RC26/SC27TA	RC26/SC27TA	C26,20R- +C27,20S- triaromatic steroid	U	1.00
SC28TA	SC28TA	C28,20S-triaromatic steroid	U	1.00
RC27TA	RC27TA	C27,20R-triaromatic steroid	U	1.00
RC28TA	RC28TA	C28,20R-triaromatic steroid	U	1.00

Surrogates (% Recovery)	
Naphthalene-d8	88
Phenanthrene-d10	108
Benzo[a]pyrene-d12	115
5B(H)Cholane	N/A

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Laboratory Control Sample
Lab ID	TS082212LCS06
Matrix	Soil
Reference Method	Modified 8270D
Batch ID	TS082212B15
Date Collected	N/A
Date Received	N/A
Date Prepped	08/22/2012
Date Analyzed	09/26/2012
Sample Size (wet)	20
% Solid	100.00
File ID	A90008581.D
Units	µg/Kg
Final Volume	2
Dilution	1
Reporting Limit	1.00

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
2	D0	cis/trans-Decalin		U	1.00				
2	D1	C1-Decalins		U	1.00				
2	D2	C2-Decalins		U	1.00				
2	D3	C3-Decalins		U	1.00				
2	D4	C4-Decalins		U	1.00				
2	BT0	Benzothiophene		U	1.00				
2	BT1	C1-Benzo(b)thiophenes		U	1.00				
2	BT2	C2-Benzo(b)thiophenes		U	1.00				
2	BT3	C3-Benzo(b)thiophenes		U	1.00				
2	BT4	C4-Benzo(b)thiophenes		U	1.00				
2	N0	Naphthalene	38.2	S	1.00	76	50.0	50	130
2	N1	C1-Naphthalenes		U	1.00				
2	N2	C2-Naphthalenes		U	1.00				
2	N3	C3-Naphthalenes		U	1.00				
2	N4	C4-Naphthalenes		U	1.00				
2	B	Biphenyl		U	1.00				
3	DF	Dibenzofuran		U	1.00				
3	AY	Acenaphthylene	43.0	S	1.00	86	50.0	50	130
3	AE	Acenaphthene	43.5	S	1.00	87	50.0	50	130
3	F0	Fluorene	45.5	S	1.00	91	50.0	50	130
3	F1	C1-Fluorenes		U	1.00				
3	F2	C2-Fluorenes		U	1.00				
3	F3	C3-Fluorenes		U	1.00				
3	A0	Anthracene	37.6	S	1.00	75	50.0	50	130
3	P0	Phenanthrene	47.7	S	1.00	95	50.0	50	130
3	PA1	C1-Phenanthrenes/Anthracenes		U	1.00				
3	PA2	C2-Phenanthrenes/Anthracenes		U	1.00				
3	PA3	C3-Phenanthrenes/Anthracenes		U	1.00				
3	PA4	C4-Phenanthrenes/Anthracenes		U	1.00				
3	RET	Retene		U	1.00				
3	DBT0	Dibenzothiophene		U	1.00				
3	DBT1	C1-Dibenzothiophenes		U	1.00				
3	DBT2	C2-Dibenzothiophenes		U	1.00				
3	DBT3	C3-Dibenzothiophenes		U	1.00				
3	DBT4	C4-Dibenzothiophenes		U	1.00				
4	BF	Benzo(b)fluorene		U	1.00				
4	FL0	Fluoranthene	50.7	S	1.00	101	50.0	50	130
4	PY0	Pyrene	53.3	S	1.00	107	50.0	50	130
4	FP1	C1-Fluoranthenes/Pyrenes		U	1.00				
4	FP2	C2-Fluoranthenes/Pyrenes		U	1.00				
4	FP3	C3-Fluoranthenes/Pyrenes		U	1.00				
4	FP4	C4-Fluoranthenes/Pyrenes		U	1.00				
4	NBT0	Naphthobenzothiophenes		U	1.00				
4	NBT1	C1-Naphthobenzothiophenes		U	1.00				
4	NBT2	C2-Naphthobenzothiophenes		U	1.00				
4	NBT3	C3-Naphthobenzothiophenes		U	1.00				
4	NBT4	C4-Naphthobenzothiophenes		U	1.00				
4	BA0	Benz[a]anthracene	46.3	S	1.00	93	50.0	50	130
4	C0	Chrysene/Triphenylene	46.5	S	1.00	93	50.0	50	130
4	BC1	C1-Chrysenes		U	1.00				
4	BC2	C2-Chrysenes		U	1.00				
4	BC3	C3-Chrysenes		U	1.00				
4	BC4	C4-Chrysenes		U	1.00				
5	BBF	Benzo[b]fluoranthene	48.2	S	1.00	96	50.0	50	130
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	51.5	S	1.00	103	50.0	50	130
5	BAF	Benzo[a]fluoranthene		U	1.00				
5	BEP	Benzo[e]pyrene		U	1.00				
5	BAP	Benzo[a]pyrene	48.1	S	1.00	96	50.0	50	130
5	PER	Perylene		U	1.00				
6	IND	Indeno[1,2,3-cd]pyrene	50.3	S	1.00	101	50.0	50	130
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	48.9	S	1.00	98	50.0	50	130
6	GHI	Benzo[g,h,i]perylene	47.4	S	1.00	95	50.0	50	130
	CAR	Carbazole		U	1.00				

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Laboratory Control Sample
Lab ID	TS082212LCS06
Matrix	Soil
Reference Method	Modified 8270D
Batch ID	TS082212B15
Date Collected	N/A
Date Received	N/A
Date Prepped	08/22/2012
Date Analyzed	09/26/2012
Sample Size (wet)	20
% Solid	100.00
File ID	A90008581.D
Units	µg/Kg
Final Volume	2
Dilution	1
Reporting Limit	1.00

Class	Abbrev	Analytes	Result	SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
3	4MDT	4-Methyldibenzothiophene	U	1.00				
3	2MDT	2/3-Methyldibenzothiophene	U	1.00				
3	1MDT	1-Methyldibenzothiophene	U	1.00				
3	3MP	3-Methylphenanthrene	U	1.00				
3	2MP	2-Methylphenanthrene	U	1.00				
3	2MA	2-Methylanthracene	U	1.00				
3	9MP	9/4-Methylphenanthrene	U	1.00				
3	1MP	1-Methylphenanthrene	U	1.00				
t23	T4	C23 Tricyclic Terpane	U	1.00				
t24	T5	C24 Tricyclic Terpane	U	1.00				
t25	T6	C25 Tricyclic Terpane	U	1.00				
te24	T6a	C24 Tetracyclic Terpane	U	1.00				
t26S	T6b	C26 Tricyclic Terpane-22S	U	1.00				
t26R	T6c	C26 Tricyclic Terpane-22R	U	1.00				
t28S	T7	C28 Tricyclic Terpane-22S	U	1.00				
t28R	T8	C28 Tricyclic Terpane-22R	U	1.00				
t29S	T9	C29 Tricyclic Terpane-22S	U	1.00				
t29R	T10	C29 Tricyclic Terpane-22R	U	1.00				
Ts	T11	18a-22,29,30-Trisnorneohopane-TS	U	1.00				
t30S	T11a	C30 Tricyclic Terpane-22S	U	1.00				
t30R	T11b	C30 Tricyclic Terpane-22R	U	1.00				
Tm	T12	17a(H)-22,29,30-Trisnorhopane-TM	U	1.00				
BNH	T14a	17a/b,21b/a 28,30-Bisnorhopane	U	1.00				
25N	T14b	17a(H),21b(H)-25-Norhopane	U	1.00				
H29	T15	30-Norhopane	U	1.00				
C29Ts	T16	18a(H)-30-Norneohopane-C29Ts	U	1.00				
X	X	17a(H)-Diahopane	U	1.00				
M29	T17	30-Normoretane	U	1.00				
OL	T18	18a(H)&18b(H)-Oleananes	U	1.00				
H30	T19	Hopane	U	1.00				
M30	T20	Moretane	U	1.00				
H31S	T21	30-Homohopane-22S	U	1.00				
H31R	T22	30-Homohopane-22R	U	1.00				
T22A	T22A	T22a-Gammacerane/C32-diahopane	U	1.00				
H32S	T26	30,31-Bishomohopane-22S	U	1.00				
H32R	T27	30,31-Bishomohopane-22R	U	1.00				
H33R	T30	30,31-Trishomohopane-22S	U	1.00				
H33S	T31	30,31-Trishomohopane-22R	U	1.00				
H34R	T32	Tetrakishomohopane-22S	U	1.00				
H34S	T33	Tetrakishomohopane-22R	U	1.00				
H35S	T34	Pentakishomohopane-22S	U	1.00				
H35R	T35	Pentakishomohopane-22R	U	1.00				
d27S	S4	13b(H),17a(H)-20S-Diacholestane	U	1.00				
d27R	S5	13b(H),17a(H)-20R-Diacholestane	U	1.00				
d28S	S8	13b,17a-20S-Methyldiacholestane	U	1.00				
aa27S	S12	14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12)	U	1.00				
aa27R	S17	14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17)	U	1.00				
d29R	S18	Unknown Sterane (S18)	U	1.00				
d29S	S19	13a,17b-20S-Ethyldiacholestane	U	1.00				
aa28S	S20	14a,17a-20S-Methylcholestane	U	1.00				
aa28R	S24	14a,17a-20R-Methylcholestane	U	1.00				
aa29S	S25	14a(H),17a(H)-20S-Ethylcholestane	U	1.00				
aa29R	S28	14a(H),17a(H)-20R-Ethylcholestane	U	1.00				
bb27R	S14	14b(H),17b(H)-20R-Cholestane	U	1.00				
bb27S	S15	14b(H),17b(H)-20S-Cholestane	U	1.00				
bb28R	S22	14b,17b-20R-Methylcholestane	U	1.00				
bb28S	S23	14b,17b-20S-Methylcholestane	U	1.00				
bb29R	S26	14b(H),17b(H)-20R-Ethylcholestane	U	1.00				
bb29S	S27	14b(H),17b(H)-20S-Ethylcholestane	U	1.00				
RC26/SC27TA	RC26/SC27TA	C26,20R- +C27,20S- triaromatic steroid	U	1.00				
SC28TA	SC28TA	C28,20S-triaromatic steroid	U	1.00				
RC27TA	RC27TA	C27,20R-triaromatic steroid	U	1.00				
RC28TA	RC28TA	C28,20R-triaromatic steroid	U	1.00				

Surrogates (% Recovery)	
Naphthalene-d8	86
Phenanthrene-d10	108
Benzo[a]pyrene-d12	108
5B(H)Cholane	N/A

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Laboratory Control Sample Dup
Lab ID	TS082212LCSD06
Matrix	Soil
Reference Method	Modified 8270D
Batch ID	TS082212B15
Date Collected	N/A
Date Received	N/A
Date Prepped	08/22/2012
Date Analyzed	09/26/2012
Sample Size (wet)	20
% Solid	100.00
File ID	A90008582.D
Units	µg/Kg
Final Volume	2
Dilution	1
Reporting Limit	1.00

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit	RPD	RPD Limit
2	D0	cis/trans-Decalin		U	1.00						
2	D1	C1-Decalins		U	1.00						
2	D2	C2-Decalins		U	1.00						
2	D3	C3-Decalins		U	1.00						
2	D4	C4-Decalins		U	1.00						
2	BT0	Benzothiophene		U	1.00						
2	BT1	C1-Benzo(b)thiophenes		U	1.00						
2	BT2	C2-Benzo(b)thiophenes		U	1.00						
2	BT3	C3-Benzo(b)thiophenes		U	1.00						
2	BT4	C4-Benzo(b)thiophenes		U	1.00						
2	N0	Naphthalene	38.1	S	1.00	76	50.0	50	130	0	30
2	N1	C1-Naphthalenes		U	1.00						
2	N2	C2-Naphthalenes		U	1.00						
2	N3	C3-Naphthalenes		U	1.00						
2	N4	C4-Naphthalenes		U	1.00						
2	B	Biphenyl		U	1.00						
3	DF	Dibenzofuran		U	1.00						
3	AY	Acenaphthylene	42.7	S	1.00	85	50.0	50	130	1	30
3	AE	Acenaphthene	43.4	S	1.00	87	50.0	50	130	0	30
3	F0	Fluorene	45.6	S	1.00	91	50.0	50	130	0	30
3	F1	C1-Fluorenes		U	1.00						
3	F2	C2-Fluorenes		U	1.00						
3	F3	C3-Fluorenes		U	1.00						
3	A0	Anthracene	37.7	S	1.00	75	50.0	50	130	0	30
3	P0	Phenanthrene	48.2	S	1.00	96	50.0	50	130	1	30
3	PA1	C1-Phenanthrenes/Anthracenes		U	1.00						
3	PA2	C2-Phenanthrenes/Anthracenes		U	1.00						
3	PA3	C3-Phenanthrenes/Anthracenes		U	1.00						
3	PA4	C4-Phenanthrenes/Anthracenes		U	1.00						
3	RET	Retene		U	1.00						
3	DBT0	Dibenzothiophene		U	1.00						
3	DBT1	C1-Dibenzothiophenes		U	1.00						
3	DBT2	C2-Dibenzothiophenes		U	1.00						
3	DBT3	C3-Dibenzothiophenes		U	1.00						
3	DBT4	C4-Dibenzothiophenes		U	1.00						
4	BF	Benzo(b)fluorene		U	1.00						
4	FL0	Fluoranthene	51.3	S	1.00	103	50.0	50	130	1	30
4	PY0	Pyrene	53.7	S	1.00	107	50.0	50	130	1	30
4	FP1	C1-Fluoranthenes/Pyrenes		U	1.00						
4	FP2	C2-Fluoranthenes/Pyrenes		U	1.00						
4	FP3	C3-Fluoranthenes/Pyrenes		U	1.00						
4	FP4	C4-Fluoranthenes/Pyrenes		U	1.00						
4	NBT0	Naphthobenzothiophenes		U	1.00						
4	NBT1	C1-Naphthobenzothiophenes		U	1.00						
4	NBT2	C2-Naphthobenzothiophenes		U	1.00						
4	NBT3	C3-Naphthobenzothiophenes		U	1.00						
4	NBT4	C4-Naphthobenzothiophenes		U	1.00						
4	BA0	Benz[a]anthracene	45.9	S	1.00	92	50.0	50	130	1	30
4	C0	Chrysene/Triphenylene	46.4	S	1.00	93	50.0	50	130	0	30
4	BC1	C1-Chrysenes		U	1.00						
4	BC2	C2-Chrysenes		U	1.00						
4	BC3	C3-Chrysenes		U	1.00						
4	BC4	C4-Chrysenes		U	1.00						
5	BBF	Benzo[b]fluoranthene	47.8	S	1.00	96	50.0	50	130	1	30
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	51.1	S	1.00	102	50.0	50	130	1	30
5	BAF	Benzo[a]fluoranthene		U	1.00						
5	BEP	Benzo[e]pyrene		U	1.00						
5	BAP	Benzo[a]pyrene	48.0	S	1.00	96	50.0	50	130	0	30
5	PER	Perylene		U	1.00						
6	IND	Indeno[1,2,3-cd]pyrene	47.2	S	1.00	94	50.0	50	130	6	30
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	47.7	S	1.00	95	50.0	50	130	2	30
6	GHI	Benzo[g,h,i]perylene	46.4	S	1.00	93	50.0	50	130	2	30
	CAR	Carbazole		U	1.00						

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Laboratory Control Sample Dup
Lab ID	TS082212LCSD06
Matrix	Soil
Reference Method	Modified 8270D
Batch ID	TS082212B15
Date Collected	N/A
Date Received	N/A
Date Prepped	08/22/2012
Date Analyzed	09/26/2012
Sample Size (wet)	20
% Solid	100.00
File ID	A90008582.D
Units	µg/Kg
Final Volume	2
Dilution	1
Reporting Limit	1.00

Class	Abbrev	Analytes	Result	SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit	RPD	RPD Limit
3	4MDT	4-Methyldibenzothiophene	U	1.00						
3	2MDT	2/3-Methyldibenzothiophene	U	1.00						
3	1MDT	1-Methyldibenzothiophene	U	1.00						
3	3MP	3-Methylphenanthrene	U	1.00						
3	2MP	2-Methylphenanthrene	U	1.00						
3	2MA	2-Methylanthracene	U	1.00						
3	9MP	9/4-Methylphenanthrene	U	1.00						
3	1MP	1-Methylphenanthrene	U	1.00						
t23	T4	C23 Tricyclic Terpane	U	1.00						
t24	T5	C24 Tricyclic Terpane	U	1.00						
t25	T6	C25 Tricyclic Terpane	U	1.00						
te24	T6a	C24 Tetracyclic Terpane	U	1.00						
t26S	T6b	C26 Tricyclic Terpane-22S	U	1.00						
t26R	T6c	C26 Tricyclic Terpane-22R	U	1.00						
t28S	T7	C28 Tricyclic Terpane-22S	U	1.00						
t28R	T8	C28 Tricyclic Terpane-22R	U	1.00						
t29S	T9	C29 Tricyclic Terpane-22S	U	1.00						
t29R	T10	C29 Tricyclic Terpane-22R	U	1.00						
Ts	T11	18a-22,29,30-Trisnorneohopane-TS	U	1.00						
t30S	T11a	C30 Tricyclic Terpane-22S	U	1.00						
t30R	T11b	C30 Tricyclic Terpane-22R	U	1.00						
Tm	T12	17a(H)-22,29,30-Trisnorhopane-TM	U	1.00						
BNH	T14a	17a/b,21b/a 28,30-Bisnorhopane	U	1.00						
25N	T14b	17a(H),21b(H)-25-Norhopane	U	1.00						
H29	T15	30-Norhopane	U	1.00						
C29Ts	T16	18a(H)-30-Norneohopane-C29Ts	U	1.00						
X	X	17a(H)-Diahopane	U	1.00						
M29	T17	30-Normoretane	U	1.00						
OL	T18	18a(H)&18b(H)-Oleananes	U	1.00						
H30	T19	Hopane	U	1.00						
M30	T20	Moretane	U	1.00						
H31S	T21	30-Homohopane-22S	U	1.00						
H31R	T22	30-Homohopane-22R	U	1.00						
T22A	T22A	T22a-Gammacerane/C32-diahopane	U	1.00						
H32S	T26	30,31-Bishomohopane-22S	U	1.00						
H32R	T27	30,31-Bishomohopane-22R	U	1.00						
H33R	T30	30,31-Trishomohopane-22S	U	1.00						
H33S	T31	30,31-Trishomohopane-22R	U	1.00						
H34R	T32	Tetrakishomohopane-22S	U	1.00						
H34S	T33	Tetrakishomohopane-22R	U	1.00						
H35S	T34	Pentakishomohopane-22S	U	1.00						
H35R	T35	Pentakishomohopane-22R	U	1.00						
d27S	S4	13b(H),17a(H)-20S-Diacholestane	U	1.00						
d27R	S5	13b(H),17a(H)-20R-Diacholestane	U	1.00						
d28S	S8	13b,17a-20S-Methyldiacholestane	U	1.00						
aa27S	S12	14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12)	U	1.00						
aa27R	S17	14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17)	U	1.00						
d29R	S18	Unknown Sterane (S18)	U	1.00						
d29S	S19	13a,17b-20S-Ethyldiacholestane	U	1.00						
aa28S	S20	14a,17a-20S-Methylcholestane	U	1.00						
aa28R	S24	14a,17a-20R-Methylcholestane	U	1.00						
aa29S	S25	14a(H),17a(H)-20S-Ethylcholestane	U	1.00						
aa29R	S28	14a(H),17a(H)-20R-Ethylcholestane	U	1.00						
bb27R	S14	14b(H),17b(H)-20R-Cholestane	U	1.00						
bb27S	S15	14b(H),17b(H)-20S-Cholestane	U	1.00						
bb28R	S22	14b,17b-20R-Methylcholestane	U	1.00						
bb28S	S23	14b,17b-20S-Methylcholestane	U	1.00						
bb29R	S26	14b(H),17b(H)-20R-Ethylcholestane	U	1.00						
bb29S	S27	14b(H),17b(H)-20S-Ethylcholestane	U	1.00						
RC26/SC27TA	RC26/SC27TA	C26,20R- +C27,20S- triaromatic steroid	U	1.00						
SC28TA	SC28TA	C28,20S-triaromatic steroid	U	1.00						
RC27TA	RC27TA	C27,20R-triaromatic steroid	U	1.00						
RC28TA	RC28TA	C28,20R-triaromatic steroid	U	1.00						

Surrogates (% Recovery)	
Naphthalene-d8	84
Phenanthrene-d10	108
Benzo[a]pyrene-d12	105
5B(H)Cholane	N/A

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	S-80-B10	S-80-B10
Lab ID	1208037-02	1208037-02D
Matrix	Soil	Soil
Reference Method	Modified 8270D	Modified 8270D
Batch ID	TS082212B15	TS082212B15
Date Collected	08/14/2012	08/14/2012
Date Received	08/21/2012	08/21/2012
Date Prepped	08/22/2012	08/22/2012
Date Analyzed	09/26/2012	09/27/2012
Sample Size (wet)	20.08	20.04
% Solid	96.58	96.58
File ID	A90008584.D	A90008585.D
Units	µg/Kg	µg/Kg
Final Volume	2	2
Dilution	1	1
Reporting Limit	1.03	1.03

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	RPD	RPD Limit	
2	D0	cis/trans-Decalin	45.1		1.03	38.5		1.03	16	30	
2	D1	C1-Decalins	208		1.03	187		1.03	11	30	
2	D2	C2-Decalins	298		1.03	283		1.03	5	30	
2	D3	C3-Decalins	186		1.03	184		1.03	1	30	
2	D4	C4-Decalins	182		1.03	190		1.03	4	30	
2	BT0	Benzothiophene		U	1.03		U	1.03		30	N/A
2	BT1	C1-Benzo(b)thiophenes	8.06		1.03	8.48		1.03	5	30	
2	BT2	C2-Benzo(b)thiophenes	12.7		1.03	12.9		1.03	2	30	
2	BT3	C3-Benzo(b)thiophenes	27.7		1.03	28.2		1.03	1	30	
2	BT4	C4-Benzo(b)thiophenes	23.3		1.03	25.2		1.03	8	30	
2	N0	Naphthalene	10.0		1.03	11.2		1.03	11	30	
2	N1	C1-Naphthalenes	221		1.03	218		1.03	1	30	
2	N2	C2-Naphthalenes	491		1.03	498		1.03	1	30	
2	N3	C3-Naphthalenes	360		1.03	372		1.03	3	30	
2	N4	C4-Naphthalenes	199		1.03	206		1.03	3	30	
2	B	Biphenyl	1.95		1.03	3.14		1.03	47	30	¤
3	DF	Dibenzofuran	4.43		1.03	4.42		1.03	0	30	
3	AY	Acenaphthylene	2.04		1.03	2.23		1.03	9	30	
3	AE	Acenaphthene	8.77		1.03	9.09		1.03	4	30	
3	F0	Fluorene	29.8		1.03	30.6		1.03	3	30	
3	F1	C1-Fluorenes	71.0		1.03	72.8		1.03	3	30	
3	F2	C2-Fluorenes	95.9		1.03	99.7		1.03	4	30	
3	F3	C3-Fluorenes	77.4		1.03	80.1		1.03	4	30	
3	A0	Anthracene		U	1.03		U	1.03		30	N/A
3	P0	Phenanthrene	55.0		1.03	56.9		1.03	3	30	
3	PA1	C1-Phenanthrenes/Anthracenes	132		1.03	137		1.03	4	30	
3	PA2	C2-Phenanthrenes/Anthracenes	149		1.03	152		1.03	2	30	
3	PA3	C3-Phenanthrenes/Anthracenes	106		1.03	107		1.03	2	30	
3	PA4	C4-Phenanthrenes/Anthracenes	42.5		1.03	44.4		1.03	4	30	
3	RET	Retene		U	1.03		U	1.03		30	N/A
3	DBT0	Dibenzothiophene	9.07		1.03	9.29		1.03	2	30	
3	DBT1	C1-Dibenzothiophenes	31.4		1.03	32.1		1.03	2	30	
3	DBT2	C2-Dibenzothiophenes	44.4		1.03	45.3		1.03	2	30	
3	DBT3	C3-Dibenzothiophenes	35.5		1.03	37.2		1.03	5	30	
3	DBT4	C4-Dibenzothiophenes	16.5		1.03	16.3		1.03	1	30	
4	BF	Benzo(b)fluorene	3.35		1.03	3.45		1.03	3	30	
4	FL0	Fluoranthene	2.08		1.03	2.08		1.03	0	30	
4	PY0	Pyrene	4.90		1.03	5.11		1.03	4	30	
4	FP1	C1-Fluoranthenes/Pyrenes	21.2		1.03	21.5		1.03	2	30	
4	FP2	C2-Fluoranthenes/Pyrenes	30.8		1.03	32.1		1.03	4	30	
4	FP3	C3-Fluoranthenes/Pyrenes	34.1		1.03	35.0		1.03	2	30	
4	FP4	C4-Fluoranthenes/Pyrenes	29.1		1.03	29.3		1.03	1	30	
4	NBT0	Naphthobenzothiophenes	2.88		1.03	2.94		1.03	2	30	
4	NBT1	C1-Naphthobenzothiophenes	9.57		1.03	9.66		1.03	1	30	
4	NBT2	C2-Naphthobenzothiophenes	14.4		1.03	13.9		1.03	3	30	
4	NBT3	C3-Naphthobenzothiophenes	11.7		1.03	11.1		1.03	5	30	
4	NBT4	C4-Naphthobenzothiophenes	11.8		1.03	12.0		1.03	2	30	
4	BA0	Benz[a]anthracene	1.51		1.03	1.49		1.03	1	30	
4	C0	Chrysene/Triphenylene	6.27		1.03	6.46		1.03	3	30	
4	BC1	C1-Chrysenes	17.0		1.03	17.6		1.03	3	30	
4	BC2	C2-Chrysenes	24.0		1.03	23.8		1.03	1	30	
4	BC3	C3-Chrysenes	31.2		1.03	31.3		1.03	0	30	
4	BC4	C4-Chrysenes	18.4		1.03	18.3		1.03	0	30	
5	BBF	Benzo[b]fluoranthene	1.00	J	1.03	1.04		1.03	4	30	
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene		U	1.03		U	1.03		30	N/A
5	BAF	Benzo[a]fluoranthene		U	1.03		U	1.03		30	N/A
5	BEP	Benzo[e]pyrene	1.28		1.03	1.25		1.03	2	30	
5	BAP	Benzo[a]pyrene	0.493	J	1.03	0.499	J	1.03	1	30	
5	PER	Perylene	6.80		1.03	7.01		1.03	3	30	
6	IND	Indeno[1,2,3-cd]pyrene	0.124	J	1.03	0.113	J	1.03	10	30	
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	0.237	J	1.03	0.231	J	1.03	3	30	
6	GHI	Benzo[g,h,i]perylene	0.335	J	1.03	0.368	J	1.03	9	30	
	CAR	Carbazole	1.58		1.03	1.71		1.03	8	30	

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	S-80-B10	S-80-B10
Lab ID	1208037-02	1208037-02D
Matrix	Soil	Soil
Reference Method	Modified 8270D	Modified 8270D
Batch ID	TS082212B15	TS082212B15
Date Collected	08/14/2012	08/14/2012
Date Received	08/21/2012	08/21/2012
Date Prepped	08/22/2012	08/22/2012
Date Analyzed	09/26/2012	09/27/2012
Sample Size (wet)	20.08	20.04
% Solid	96.58	96.58
File ID	A90008584.D	A90008585.D
Units	µg/Kg	µg/Kg
Final Volume	2	2
Dilution	1	1
Reporting Limit	1.03	1.03

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	RPD	RPD Limit	
3	4MDT	4-Methyldibenzothiophene	14.8		1.03	14.9		1.03	1	30	
3	2MDT	2/3-Methyldibenzothiophene	11.8		1.03	12.2		1.03	3	30	
3	1MDT	1-Methyldibenzothiophene	4.07		1.03	4.26		1.03	5	30	
3	3MP	3-Methylphenanthrene	37.9		1.03	38.4		1.03	1	30	
3	2MP	2-Methylphenanthrene	41.8		1.03	42.4		1.03	1	30	
3	2MA	2-Methylanthracene	2.56		1.03	2.65		1.03	4	30	
3	9MP	9/4-Methylphenanthrene	27.7		1.03	28.8		1.03	4	30	
3	1MP	1-Methylphenanthrene	20.8		1.03	21.2		1.03	2	30	
t23	T4	C23 Tricyclic Terpane	12.9		1.03	12.7		1.03	1	30	
t24	T5	C24 Tricyclic Terpane	10.0		1.03	10.6		1.03	5	30	
t25	T6	C25 Tricyclic Terpane	10.9		1.03	10.8		1.03	1	30	
te24	T6a	C24 Tetracyclic Terpane	1.04		1.03	1.16		1.03	10	30	
t26S	T6b	C26 Tricyclic Terpane-22S	5.33		1.03	5.34		1.03	0	30	
t26R	T6c	C26 Tricyclic Terpane-22R	4.81		1.03	5.04		1.03	5	30	
t28S	T7	C28 Tricyclic Terpane-22S	6.76		1.03	7.03		1.03	4	30	
t28R	T8	C28 Tricyclic Terpane-22R	7.15		1.03	6.90		1.03	4	30	
t29S	T9	C29 Tricyclic Terpane-22S	7.80		1.03	8.16		1.03	5	30	
t29R	T10	C29 Tricyclic Terpane-22R	7.71		1.03	7.74		1.03	0	30	
Ts	T11	18a-22,29,30-Trisnorneohopane-TS	4.03		1.03	4.41		1.03	9	30	
t30S	T11a	C30 Tricyclic Terpane-22S	7.68	G	1.03	8.25	G	1.03	7	30	
t30R	T11b	C30 Tricyclic Terpane-22R	6.37	G	1.03	6.42	G	1.03	1	30	
Tm	T12	17a(H)-22,29,30-Trisnorhopane-TM	5.66		1.03	5.81		1.03	3	30	
BNH	T14a	17a/b,21b/a 28,30-Bisnorhopane	13.3		1.03	13.3		1.03	0	30	
25N	T14b	17a(H),21b(H)-25-Norhopane	5.14		1.03	4.84		1.03	6	30	
H29	T15	30-Norhopane	21.1		1.03	20.8		1.03	1	30	
C29Ts	T16	18a(H)-30-Norneohopane-C29Ts	4.06		1.03	4.74		1.03	15	30	
X	X	17a(H)-Diahopane		U	1.03		U	1.03		30	N/A
M29	T17	30-Normoretane	6.54		1.03	5.69		1.03	14	30	
OL	T18	18a(H)&18b(H)-Oleananes	13.1		1.03	12.2		1.03	7	30	
H30	T19	Hopane	47.3		1.03	48.0		1.03	2	30	
M30	T20	Moretane	7.51		1.03	7.33		1.03	2	30	
H31S	T21	30-Homohopane-22S	12.6		1.03	11.7		1.03	8	30	
H31R	T22	30-Homohopane-22R	16.8	G	1.03	16.0	G	1.03	5	30	
T22A	T22A	T22a-Gammacerane/C32-diahopane	4.39		1.03	3.46		1.03	24	30	
H32S	T26	30,31-Bishomohopane-22S	8.41		1.03	8.47		1.03	1	30	
H32R	T27	30,31-Bishomohopane-22R	7.22		1.03	6.52		1.03	10	30	
H33R	T30	30,31-Trishomohopane-22S	6.98		1.03	7.49		1.03	7	30	
H33S	T31	30,31-Trishomohopane-22R	5.39		1.03	5.28		1.03	2	30	
H34R	T32	Tetrakishomohopane-22S	4.55		1.03	3.94		1.03	14	30	
H34S	T33	Tetrakishomohopane-22R	2.84		1.03	3.05		1.03	7	30	
H35S	T34	Pentakishomohopane-22S	3.21		1.03	3.17		1.03	1	30	
H35R	T35	Pentakishomohopane-22R	5.89	G	1.03	6.25	G	1.03	6	30	
d27S	S4	13b(H),17a(H)-20S-Diacholestane	13.8		1.03	14.2		1.03	3	30	
d27R	S5	13b(H),17a(H)-20R-Diacholestane	6.62		1.03	7.24		1.03	9	30	
d28S	S8	13b,17a-20S-Methyldiacholestane	13.5		1.03	13.9		1.03	3	30	
aa27S	S12	14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12)	44.7		1.03	44.1		1.03	1	30	
aa27R	S17	14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17)	74.1		1.03	74.3		1.03	0	30	
d29R	S18	Unknown Sterane (S18)	3.07		1.03	3.11		1.03	2	30	
d29S	S19	13a,17b-20S-Ethyldiacholestane	1.84		1.03	1.82		1.03	1	30	
aa28S	S20	14a,17a-20S-Methylcholestane	37.1		1.03	37.8		1.03	2	30	
aa28R	S24	14a,17a-20R-Methylcholestane	65.2		1.03	67.5		1.03	3	30	
aa29S	S25	14a(H),17a(H)-20S-Ethylcholestane	31.6		1.03	32.2		1.03	2	30	
aa29R	S28	14a(H),17a(H)-20R-Ethylcholestane	42.1		1.03	43.0		1.03	2	30	
bb27R	S14	14b(H),17b(H)-20R-Cholestane	36.0		1.03	36.3		1.03	1	30	
bb27S	S15	14b(H),17b(H)-20S-Cholestane	33.5		1.03	34.4		1.03	3	30	
bb28R	S22	14b,17b-20R-Methylcholestane	49.0		1.03	49.9		1.03	2	30	
bb28S	S23	14b,17b-20S-Methylcholestane	48.9		1.03	48.7		1.03	0	30	
bb29R	S26	14b(H),17b(H)-20R-Ethylcholestane	36.1		1.03	37.3		1.03	3	30	
bb29S	S27	14b(H),17b(H)-20S-Ethylcholestane	17.8		1.03	17.3		1.03	3	30	
RC26/SC27TA	RC26/SC27TA	C26,20R- +C27,20S- triaromatic steroid	152		1.03	155		1.03	2	30	
SC28TA	SC28TA	C28,20S-triaromatic steroid	52.4		1.03	54.0		1.03	3	30	
RC27TA	RC27TA	C27,20R-triaromatic steroid	84.3		1.03	85.7		1.03	2	30	
RC28TA	RC28TA	C28,20R-triaromatic steroid	44.7		1.03	45.3		1.03	1	30	

Surrogates (% Recovery)		
Naphthalene-d8	71	75
Phenanthrene-d10	95	97
Benzo[a]pyrene-d12	104	105
5B(H)Cholane	N/A	N/A

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Alaska North Slope Crude
Lab ID	SS091812ANS01
Matrix	Oil
Reference Method	Modified 8270D
Batch ID	N/A
Date Collected	N/A
Date Received	N/A
Date Prepped	N/A
Date Analyzed	09/18/2012
Sample Size (wet)	0.05076
% Solid	100.00
File ID	A90008487.D
Units	mg/Kg
Final Volume	10
Dilution	1
Reporting Limit	1.97

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
2	D0	cis/trans-Decalin	459		1.97	90	508.70	65	135
2	D1	C1-Decalins	772		1.97	101	761.10	65	135
2	D2	C2-Decalins	682		1.97	106	641.90	65	135
2	D3	C3-Decalins	415		1.97	123	338.20	65	135
2	D4	C4-Decalins	386		1.97	128	300.90	65	135
2	BT0	Benzothiophene	5.63		1.97	106	5.30	65	135
2	BT1	C1-Benzo(b)thiophenes	30.3		1.97	102	29.80	65	135
2	BT2	C2-Benzo(b)thiophenes	52.6		1.97	105	50.10	65	135
2	BT3	C3-Benzo(b)thiophenes	110		1.97	107	103.30	65	135
2	BT4	C4-Benzo(b)thiophenes	103		1.97	121	84.90	65	135
2	N0	Naphthalene	502		1.97	87	577.60	65	135
2	N1	C1-Naphthalenes	1160		1.97	94	1242.00	65	135
2	N2	C2-Naphthalenes	1440		1.97	98	1472.00	65	135
2	N3	C3-Naphthalenes	1080		1.97	102	1053.40	65	135
2	N4	C4-Naphthalenes	647		1.97	117	552.70	65	135
2	B	Biphenyl	135		1.97	89	152.50	65	135
3	DF	Dibenzofuran	50.4		1.97	94	53.50	65	135
3	AY	Acenaphthylene	6.46		1.97	91	7.10	65	135
3	AE	Acenaphthene	24.2		1.97	129	18.70	65	135
3	F0	Fluorene	74.3		1.97	94	79.40	65	135
3	F1	C1-Fluorenes	184		1.97	105	175.10	65	135
3	F2	C2-Fluorenes	283		1.97	110	256.50	65	135
3	F3	C3-Fluorenes	271		1.97	113	238.70	65	135
3	A0	Anthracene		U	1.97				
3	P0	Phenanthrene	207		1.97	93	222.00	65	135
3	PA1	C1-Phenanthrenes/Anthracenes	471		1.97	107	440.50	65	135
3	PA2	C2-Phenanthrenes/Anthracenes	516		1.97	111	464.90	65	135
3	PA3	C3-Phenanthrenes/Anthracenes	363		1.97	118	307.70	65	135
3	PA4	C4-Phenanthrenes/Anthracenes	141		1.97	115	122.90	65	135
3	RET	Retene		U	1.97				
3	DBT0	Dibenzothiophene	139		1.97	95	146.10	65	135
3	DBT1	C1-Dibenzothiophenes	288		1.97	96	299.00	65	135
3	DBT2	C2-Dibenzothiophenes	432		1.97	110	392.90	65	135
3	DBT3	C3-Dibenzothiophenes	372		1.97	106	350.50	65	135
3	DBT4	C4-Dibenzothiophenes	180		1.97	95	189.20	65	135
4	BF	Benzo(b)fluorene	7.08		1.97				
4	FL0	Fluoranthene	4.28		1.97	104	4.10	65	135
4	PY0	Pyrene	14.6		1.97	110	13.30	65	135
4	FP1	C1-Fluoranthenes/Pyrenes	66.0		1.97	100	66.10	65	135
4	FP2	C2-Fluoranthenes/Pyrenes	92.3		1.97	91	100.90	65	135
4	FP3	C3-Fluoranthenes/Pyrenes	106		1.97	87	120.80	65	135
4	FP4	C4-Fluoranthenes/Pyrenes	86.5		1.97	82	105.60	65	135
4	NBT0	Naphthobenzothiophenes	42.6		1.97	94	45.10	65	135
4	NBT1	C1-Naphthobenzothiophenes	112		1.97	90	124.10	65	135
4	NBT2	C2-Naphthobenzothiophenes	143		1.97	85	168.90	65	135
4	NBT3	C3-Naphthobenzothiophenes	104		1.97	77	136.10	65	135
4	NBT4	C4-Naphthobenzothiophenes	66.3		1.97	71	93.90	65	135
4	BA0	Benz[a]anthracene	2.44		1.97	122	2.00	65	135
4	C0	Chrysene/Triphenylene	39.2		1.97	105	37.40	65	135
4	BC1	C1-Chrysenes	62.0		1.97	97	63.90	65	135
4	BC2	C2-Chrysenes	77.0		1.97	89	86.60	65	135
4	BC3	C3-Chrysenes	86.7		1.97	87	99.60	65	135
4	BC4	C4-Chrysenes	41.6		1.97	67	62.20	65	135
5	BBF	Benzo[b]fluoranthene	5.87		1.97	111	5.30	65	135
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene		U	1.97				
5	BAF	Benzo[a]fluoranthene		U	1.97				
5	BEP	Benzo[e]pyrene	10.6		1.97	110	9.60	65	135
5	BAP	Benzo[a]pyrene	1.80	J	1.97	90	2.00	65	135
5	PER	Perylene	2.67		1.97	99	2.70	65	135
6	IND	Indeno[1,2,3-cd]pyrene	0.627	J	1.97				
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	1.07	J	1.97				
6	GHI	Benzo[g,h,i]perylene	3.30		1.97	107	3.10	65	135
	CAR	Carbazole	7.84		1.97	121	6.50	65	135

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Alaska North Slope Crude
Lab ID	SS091812ANS01
Matrix	Oil
Reference Method	Modified 8270D
Batch ID	N/A
Date Collected	N/A
Date Received	N/A
Date Prepped	N/A
Date Analyzed	09/18/2012
Sample Size (wet)	0.05076
% Solid	100.00
File ID	A90008487.D
Units	mg/Kg
Final Volume	10
Dilution	1
Reporting Limit	1.97

Class	Abbrev	Analytes	Result	SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
3	4MDT	4-Methyldibenzothiophene	140	1.97	97	143.50	65	135
3	2MDT	2/3-Methyldibenzothiophene	102	1.97	99	103.10	65	135
3	1MDT	1-Methyldibenzothiophene	45.6	1.97	97	46.80	65	135
3	3MP	3-Methylphenanthrene	99.0	1.97	108	91.80	65	135
3	2MP	2-Methylphenanthrene	108	1.97	108	99.60	65	135
3	2MA	2-Methylanthracene	3.07	1.97	99	3.10	65	135
3	9MP	9/4-Methylphenanthrene	154	1.97	106	145.90	65	135
3	1MP	1-Methylphenanthrene	106	1.97	109	97.60	65	135
t23	T4	C23 Tricyclic Terpane	58.8	1.97	88	67.10	65	135
t24	T5	C24 Tricyclic Terpane	37.2	1.97	88	42.30	65	135
t25	T6	C25 Tricyclic Terpane	37.7	1.97	92	40.90	65	135
te24	T6a	C24 Tetracyclic Terpane	13.2	1.97	92	14.30	65	135
t26S	T6b	C26 Tricyclic Terpane-22S	15.9	1.97	94	17.00	65	135
t26R	T6c	C26 Tricyclic Terpane-22R	14.4	1.97	96	15.00	65	135
t28S	T7	C28 Tricyclic Terpane-22S	16.5	1.97	101	16.30	65	135
t28R	T8	C28 Tricyclic Terpane-22R	16.6	1.97	94	17.70	65	135
t29S	T9	C29 Tricyclic Terpane-22S	19.1	1.97	92	20.70	65	135
t29R	T10	C29 Tricyclic Terpane-22R	19.6	1.97	93	21.10	65	135
Ts	T11	18a-22,29,30-Trisnorneohopane-TS	27.5	1.97	90	30.60	65	135
t30S	T11a	C30 Tricyclic Terpane-22S	15.2	1.97	96	15.80	65	135
t30R	T11b	C30 Tricyclic Terpane-22R	13.6	1.97	86	15.80	65	135
Tm	T12	17a(H)-22,29,30-Trisnorhopane-TM	33.8	1.97	92	36.70	65	135
BNH	T14a	17a/b,21b/a 28,30-Bisnorhopane	7.94	1.97	110	7.20	65	135
25N	T14b	17a(H),21b(H)-25-Norhopane	8.53	1.97	99	8.60	65	135
H29	T15	30-Norhopane	92.5	1.97	95	97.50	65	135
C29Ts	T16	18a(H)-30-Norneohopane-C29Ts	23.5	1.97	96	24.40	65	135
X	X	17a(H)-Diahopane	13.5	1.97	94	14.30	65	135
M29	T17	30-Normoretane	9.77	1.97	85	11.50	65	135
OL	T18	18a(H)&18b(H)-Oleananes	U	1.97				
H30	T19	Hopane	160	1.97	94	171.10	65	135
M30	T20	Moretane	16.8	1.97	101	16.60	65	135
H31S	T21	30-Homohopane-22S	68.7	1.97	93	73.80	65	135
H31R	T22	30-Homohopane-22R	58.1	1.97	92	63.40	65	135
T22A	T22A	T22a-Gammacerane/C32-diahopane	12.6	1.97				
H32S	T26	30,31-Bishomohopane-22S	48.4	1.97	92	52.50	65	135
H32R	T27	30,31-Bishomohopane-22R	34.7	1.97	90	38.40	65	135
H33R	T30	30,31-Trishomohopane-22S	36.4	1.97	88	41.10	65	135
H33S	T31	30,31-Trishomohopane-22R	27.3	1.97	100	27.40	65	135
H34R	T32	Tetrakishomohopane-22S	26.9	1.97	90	30.00	65	135
H34S	T33	Tetrakishomohopane-22R	19.9	1.97	96	20.70	65	135
H35S	T34	Pentakishomohopane-22S	27.8	1.97	92	30.20	65	135
H35R	T35	Pentakishomohopane-22R	25.2	1.97	109	23.20	65	135
d27S	S4	13b(H),17a(H)-20S-Diacholestane	55.3	1.97	112	49.20	65	135
d27R	S5	13b(H),17a(H)-20R-Diacholestane	28.3	1.97	112	25.30	65	135
d28S	S8	13b,17a-20S-Methyldiacholestane	25.9	1.97	111	23.30	65	135
aa27S	S12	14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12)	73.4	1.97	114	64.20	65	135
aa27R	S17	14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17)	82.0	1.97	109	75.50	65	135
d29R	S18	Unknown Sterane (S18)	24.3	1.97	117	20.70	65	135
d29S	S19	13a,17b-20S-Ethyldiacholestane	4.52	1.97	108	4.20	65	135
aa28S	S20	14a,17a-20S-Methylcholestane	37.1	1.97	101	36.70	65	135
aa28R	S24	14a,17a-20R-Methylcholestane	35.2	1.97	107	33.00	65	135
aa29S	S25	14a(H),17a(H)-20S-Ethylcholestane	45.1	1.97	87	51.90	65	135
aa29R	S28	14a(H),17a(H)-20R-Ethylcholestane	42.0	1.97	106	39.70	65	135
bb27R	S14	14b(H),17b(H)-20R-Cholestane	43.0	1.97	107	40.10	65	135
bb27S	S15	14b(H),17b(H)-20S-Cholestane	43.8	1.97	108	40.70	65	135
bb28R	S22	14b,17b-20R-Methylcholestane	47.8	1.97	107	44.80	65	135
bb28S	S23	14b,17b-20S-Methylcholestane	62.2	1.97	115	54.00	65	135
bb29R	S26	14b(H),17b(H)-20R-Ethylcholestane	67.3	1.97	114	59.20	65	135
bb29S	S27	14b(H),17b(H)-20S-Ethylcholestane	40.1	1.97	99	40.60	65	135
RC26/SC27TA	RC26/SC27TA	C26,20R- +C27,20S- triaromatic steroid	265	1.97	87	304.20	65	135
SC28TA	SC28TA	C28,20S-triaromatic steroid	168	1.97	88	191.80	65	135
RC27TA	RC27TA	C27,20R-triaromatic steroid	161	1.97	86	186.40	65	135
RC28TA	RC28TA	C28,20R-triaromatic steroid	136	1.97	86	158.30	65	135

Surrogates (% Recovery)
Naphthalene-d8
Phenanthrene-d10
Benzo[a]pyrene-d12
5B(H)Cholane

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	S-15-B10	S-80-B10
Lab ID	1208037-01	1208037-02
Matrix	Soil	Soil
Reference Method	Modified 8270D	Modified 8270D
Batch ID	TS082212B15	TS082212B15
Date Collected	08/13/2012	08/14/2012
Date Received	08/21/2012	08/21/2012
Date Prepped	08/22/2012	08/22/2012
Date Analyzed	09/26/2012	09/26/2012
Sample Size (wet)	20.2	20.08
% Solid	80.24	96.58
File ID	A90008583.D	A90008584.D
Units	µg/Kg	µg/Kg
Final Volume	8	2
Dilution	1	1
Reporting Limit	4.94	1.03

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL
2	D0	cis/trans-Decalin	3240		4.94	45.1		1.03
2	D1	C1-Decalins	8920		4.94	208		1.03
2	D2	C2-Decalins	9470		4.94	298		1.03
2	D3	C3-Decalins	5210		4.94	186		1.03
2	D4	C4-Decalins	4930		4.94	182		1.03
2	BT0	Benzothiophene		U	4.94		U	1.03
2	BT1	C1-Benzo(b)thiophenes	125		4.94	8.06		1.03
2	BT2	C2-Benzo(b)thiophenes	171		4.94	12.7		1.03
2	BT3	C3-Benzo(b)thiophenes	526		4.94	27.7		1.03
2	BT4	C4-Benzo(b)thiophenes	581		4.94	23.3		1.03
2	N0	Naphthalene	51.8		4.94	10.0		1.03
2	N1	C1-Naphthalenes	40.9	G	4.94	221		1.03
2	N2	C2-Naphthalenes	951		4.94	491		1.03
2	N3	C3-Naphthalenes	2050		4.94	360		1.03
2	N4	C4-Naphthalenes	3960		4.94	199		1.03
2	B	Biphenyl	9.56		4.94	1.95		1.03
3	DF	Dibenzofuran	113		4.94	4.43		1.03
3	AY	Acenaphthylene	7.01		4.94	2.04		1.03
3	AE	Acenaphthene	192		4.94	8.77		1.03
3	F0	Fluorene	162		4.94	29.8		1.03
3	F1	C1-Fluorenes	1860		4.94	71.0		1.03
3	F2	C2-Fluorenes	2980		4.94	95.9		1.03
3	F3	C3-Fluorenes	2280		4.94	77.4		1.03
3	A0	Anthracene	71.4		4.94		U	1.03
3	P0	Phenanthrene		U	4.94	55.0		1.03
3	PA1	C1-Phenanthrenes/Anthracenes	228		4.94	132		1.03
3	PA2	C2-Phenanthrenes/Anthracenes	2600		4.94	149		1.03
3	PA3	C3-Phenanthrenes/Anthracenes	2990		4.94	106		1.03
3	PA4	C4-Phenanthrenes/Anthracenes	1220		4.94	42.5		1.03
3	RET	Retene		U	4.94		U	1.03
3	DBT0	Dibenzothiophene	39.3		4.94	9.07		1.03
3	DBT1	C1-Dibenzothiophenes	687		4.94	31.4		1.03
3	DBT2	C2-Dibenzothiophenes	1330		4.94	44.4		1.03
3	DBT3	C3-Dibenzothiophenes	1020		4.94	35.5		1.03
3	DBT4	C4-Dibenzothiophenes	476		4.94	16.5		1.03
4	BF	Benzo(b)fluorene	102		4.94	3.35		1.03
4	FL0	Fluoranthene	50.2		4.94	2.08		1.03
4	PY0	Pyrene	138		4.94	4.90		1.03
4	FP1	C1-Fluoranthenes/Pyrenes	598		4.94	21.2		1.03
4	FP2	C2-Fluoranthenes/Pyrenes	936		4.94	30.8		1.03
4	FP3	C3-Fluoranthenes/Pyrenes	994		4.94	34.1		1.03
4	FP4	C4-Fluoranthenes/Pyrenes	804		4.94	29.1		1.03
4	NBT0	Naphthobenzothiophenes	94.9		4.94	2.88		1.03
4	NBT1	C1-Naphthobenzothiophenes	291		4.94	9.57		1.03
4	NBT2	C2-Naphthobenzothiophenes	405		4.94	14.4		1.03
4	NBT3	C3-Naphthobenzothiophenes	315		4.94	11.7		1.03
4	NBT4	C4-Naphthobenzothiophenes	319		4.94	11.8		1.03
4	BA0	Benz[a]anthracene	45.1		4.94	1.51		1.03
4	C0	Chrysene/Triphenylene	186		4.94	6.27		1.03
4	BC1	C1-Chrysenes	493		4.94	17.0		1.03
4	BC2	C2-Chrysenes	724		4.94	24.0		1.03
4	BC3	C3-Chrysenes	751		4.94	31.2		1.03
4	BC4	C4-Chrysenes	437		4.94	18.4		1.03
5	BBF	Benzo[b]fluoranthene	24.3		4.94	1.00	J	1.03
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	4.43	J	4.94		U	1.03
5	BAF	Benzo[a]fluoranthene		U	4.94		U	1.03
5	BEP	Benzo[e]pyrene	32.2		4.94	1.28		1.03
5	BAP	Benzo[a]pyrene	10.3		4.94	0.493	J	1.03
5	PER	Perylene	88.4		4.94	6.80		1.03
6	IND	Indeno[1,2,3-cd]pyrene	3.29	J	4.94	0.124	J	1.03
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	4.85	J	4.94	0.237	J	1.03
6	GHI	Benzo[g,h,i]perylene	8.82		4.94	0.335	J	1.03
	CAR	Carbazole	43.9		4.94	1.58		1.03

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	S-15-B10	S-80-B10
Lab ID	1208037-01	1208037-02
Matrix	Soil	Soil
Reference Method	Modified 8270D	Modified 8270D
Batch ID	TS082212B15	TS082212B15
Date Collected	08/13/2012	08/14/2012
Date Received	08/21/2012	08/21/2012
Date Prepped	08/22/2012	08/22/2012
Date Analyzed	09/26/2012	09/26/2012
Sample Size (wet)	20.2	20.08
% Solid	80.24	96.58
File ID	A90008583.D	A90008584.D
Units	µg/Kg	µg/Kg
Final Volume	8	2
Dilution	1	1
Reporting Limit	4.94	1.03

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL
3	4MDT	4-Methyldibenzothiophene	413		4.94	14.8		1.03
3	2MDT	2/3-Methyldibenzothiophene	137		4.94	11.8		1.03
3	1MDT	1-Methyldibenzothiophene	122		4.94	4.07		1.03
3	3MP	3-Methylphenanthrene	13.0		4.94	37.9		1.03
3	2MP	2-Methylphenanthrene	6.20		4.94	41.8		1.03
3	2MA	2-Methylanthracene	93.7		4.94	2.56		1.03
3	9MP	9/4-Methylphenanthrene	96.2		4.94	27.7		1.03
3	1MP	1-Methylphenanthrene	23.8		4.94	20.8		1.03
t23	T4	C23 Tricyclic Terpane	310		4.94	12.9		1.03
t24	T5	C24 Tricyclic Terpane	268		4.94	10.0		1.03
t25	T6	C25 Tricyclic Terpane	282		4.94	10.9		1.03
te24	T6a	C24 Tetracyclic Terpane	24.4		4.94	1.04		1.03
t26S	T6b	C26 Tricyclic Terpane-22S	140		4.94	5.33		1.03
t26R	T6c	C26 Tricyclic Terpane-22R	126		4.94	4.81		1.03
t28S	T7	C28 Tricyclic Terpane-22S	186		4.94	6.76		1.03
t28R	T8	C28 Tricyclic Terpane-22R	176		4.94	7.15		1.03
t29S	T9	C29 Tricyclic Terpane-22S	199		4.94	7.80		1.03
t29R	T10	C29 Tricyclic Terpane-22R	188		4.94	7.71		1.03
Ts	T11	18a-22,29,30-Trisnorneohopane-TS	97.8		4.94	4.03		1.03
t30S	T11a	C30 Tricyclic Terpane-22S	205	G	4.94	7.68	G	1.03
t30R	T11b	C30 Tricyclic Terpane-22R	159	G	4.94	6.37	G	1.03
Tm	T12	17a(H)-22,29,30-Trisnorhopane-TM	131		4.94	5.66		1.03
BNH	T14a	17a/b,21b/a 28,30-Bisnorhopane	309		4.94	13.3		1.03
25N	T14b	17a(H),21b(H)-25-Norhopane	120		4.94	5.14		1.03
H29	T15	30-Norhopane	507		4.94	21.1		1.03
C29Ts	T16	18a(H)-30-Norneohopane-C29Ts	126		4.94	4.06		1.03
X	X	17a(H)-Diahopane	39.4		4.94		U	1.03
M29	T17	30-Normoretane	126		4.94	6.54		1.03
OL	T18	18a(H)&18b(H)-Oleananes	296		4.94	13.1		1.03
H30	T19	Hopane	1150		4.94	47.3		1.03
M30	T20	Moretane	193		4.94	7.51		1.03
H31S	T21	30-Homohopane-22S	274		4.94	12.6		1.03
H31R	T22	30-Homohopane-22R	384	G	4.94	16.8	G	1.03
T22A	T22A	T22a-Gammacerane/C32-diahopane	73.7		4.94	4.39		1.03
H32S	T26	30,31-Bishomohopane-22S	197		4.94	8.41		1.03
H32R	T27	30,31-Bishomohopane-22R	146		4.94	7.22		1.03
H33R	T30	30,31-Trishomohopane-22S	170		4.94	6.98		1.03
H33S	T31	30,31-Trishomohopane-22R	118		4.94	5.39		1.03
H34R	T32	Tetrakishomohopane-22S	104		4.94	4.55		1.03
H34S	T33	Tetrakishomohopane-22R	69.7		4.94	2.84		1.03
H35S	T34	Pentakishomohopane-22S	73.9		4.94	3.21		1.03
H35R	T35	Pentakishomohopane-22R	191	G	4.94	5.89	G	1.03
d27S	S4	13b(H),17a(H)-20S-Diacholestane	372		4.94	13.8		1.03
d27R	S5	13b(H),17a(H)-20R-Diacholestane	173		4.94	6.62		1.03
d28S	S8	13b,17a-20S-Methyldiacholestane	368		4.94	13.5		1.03
aa27S	S12	14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12)	1120		4.94	44.7		1.03
aa27R	S17	14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17)	1780		4.94	74.1		1.03
d29R	S18	Unknown Sterane (S18)	77.1		4.94	3.07		1.03
d29S	S19	13a,17b-20S-Ethyldiacholestane	36.0		4.94	1.84		1.03
aa28S	S20	14a,17a-20S-Methylcholestane	917		4.94	37.1		1.03
aa28R	S24	14a,17a-20R-Methylcholestane	1610		4.94	65.2		1.03
aa29S	S25	14a(H),17a(H)-20S-Ethylcholestane	801		4.94	31.6		1.03
aa29R	S28	14a(H),17a(H)-20R-Ethylcholestane	1040		4.94	42.1		1.03
bb27R	S14	14b(H),17b(H)-20R-Cholestane	905		4.94	36.0		1.03
bb27S	S15	14b(H),17b(H)-20S-Cholestane	860		4.94	33.5		1.03
bb28R	S22	14b,17b-20R-Methylcholestane	1280		4.94	49.0		1.03
bb28S	S23	14b,17b-20S-Methylcholestane	1190		4.94	48.9		1.03
bb29R	S26	14b(H),17b(H)-20R-Ethylcholestane	807		4.94	36.1		1.03
bb29S	S27	14b(H),17b(H)-20S-Ethylcholestane	566		4.94	17.8		1.03
RC26/SC27TA	RC26/SC27TA	C26,20R- +C27,20S- triaromatic steroid	3720		4.94	152		1.03
SC28TA	SC28TA	C28,20S-triaromatic steroid	1260		4.94	52.4		1.03
RC27TA	RC27TA	C27,20R-triaromatic steroid	2060		4.94	84.3		1.03
RC28TA	RC28TA	C28,20R-triaromatic steroid	1090		4.94	44.7		1.03

Surrogates (% Recovery)		
Naphthalene-d8	72	71
Phenanthrene-d10	93	95
Benzo[a]pyrene-d12	98	104
5B(H)Cholane	N/A	N/A

U: The analyte was analyzed for but not detected at the sample specific level reported.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
E: Estimated value, exceeds the upper limit of calibration.
NA: Not Applicable
D: Secondary Dilution Performed
D1: Tertiary Dilution Performed
ª: Value outside of QC Limits.
§: Surrogate value outside of acceptable range.
X: It is not possible to calculate RPD, one result is below the detection limit, the other is above reporting limit.
G: Matrix Interference.
P: Greater than 40% RPD between the two columns, the higher value is reported according to the method.
I: Due to interference, the lower value is reported.
N: Spike recovery outside control limits.
E: Estimated due to Interference. (Metals)
¤: Duplicate outside control limits.
P: Spike compound. (Metals)
J: Below CRDL, Project DL, or RL but greater than or equal to MDL
C: Sample concentration is > 4 times the spike level, recovery limits do not apply. (Metals)
S: Spike Compound. (Organics)
§: RPD criteria not applicable to results less than 5 times the reporting limit. (Metals)
T: Tentatively identified corexit compound.
C: Co-elution.
Z: Result not surrogate corrected.

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Method Blank
Lab ID	TS090712B03
Matrix	Soil
Reference Method	Modified 8270D
Batch ID	TS090712B03
Date Collected	N/A
Date Received	N/A
Date Prepped	09/07/2012
Date Analyzed	09/27/2012
Sample Size (wet)	5
% Solid	100.00
File ID	A90008589.D
Units	µg/Kg
Final Volume	2
Dilution	1
Reporting Limit	4.00

Class	Abbrev	Analytes	Result		SSRL
2	D0	cis/trans-Decalin	0.709	J	4.00
2	D1	C1-Decalins		U	4.00
2	D2	C2-Decalins		U	4.00
2	D3	C3-Decalins		U	4.00
2	D4	C4-Decalins		U	4.00
2	BT0	Benzothiophene		U	4.00
2	BT1	C1-Benzo(b)thiophenes		U	4.00
2	BT2	C2-Benzo(b)thiophenes		U	4.00
2	BT3	C3-Benzo(b)thiophenes		U	4.00
2	BT4	C4-Benzo(b)thiophenes		U	4.00
2	N0	Naphthalene	0.295	J	4.00
2	N1	C1-Naphthalenes	0.596	J	4.00
2	N2	C2-Naphthalenes	1.33	J	4.00
2	N3	C3-Naphthalenes	1.52	J	4.00
2	N4	C4-Naphthalenes		U	4.00
2	B	Biphenyl	0.298	J	4.00
3	DF	Dibenzofuran		U	4.00
3	AY	Acenaphthylene	0.190	J	4.00
3	AE	Acenaphthene		U	4.00
3	F0	Fluorene	0.297	J	4.00
3	F1	C1-Fluorenes		U	4.00
3	F2	C2-Fluorenes		U	4.00
3	F3	C3-Fluorenes		U	4.00
3	A0	Anthracene		U	4.00
3	P0	Phenanthrene	0.398	J	4.00
3	PA1	C1-Phenanthrenes/Anthracenes	0.650	J	4.00
3	PA2	C2-Phenanthrenes/Anthracenes		U	4.00
3	PA3	C3-Phenanthrenes/Anthracenes		U	4.00
3	PA4	C4-Phenanthrenes/Anthracenes		U	4.00
3	RET	Retene		U	4.00
3	DBT0	Dibenzothiophene	0.155	J	4.00
3	DBT1	C1-Dibenzothiophenes	0.371	J	4.00
3	DBT2	C2-Dibenzothiophenes	1.60	J	4.00
3	DBT3	C3-Dibenzothiophenes		U	4.00
3	DBT4	C4-Dibenzothiophenes		U	4.00
4	BF	Benzo(b)fluorene		U	4.00
4	FL0	Fluoranthene	0.0932	J	4.00
4	PY0	Pyrene	0.120	J	4.00
4	FP1	C1-Fluoranthenes/Pyrenes		U	4.00
4	FP2	C2-Fluoranthenes/Pyrenes		U	4.00
4	FP3	C3-Fluoranthenes/Pyrenes		U	4.00
4	FP4	C4-Fluoranthenes/Pyrenes		U	4.00
4	NBT0	Naphthobenzothiophenes		U	4.00
4	NBT1	C1-Naphthobenzothiophenes		U	4.00
4	NBT2	C2-Naphthobenzothiophenes		U	4.00
4	NBT3	C3-Naphthobenzothiophenes		U	4.00
4	NBT4	C4-Naphthobenzothiophenes		U	4.00
4	BA0	Benz[a]anthracene		U	4.00
4	C0	Chrysene/Triphenylene		U	4.00
4	BC1	C1-Chrysenes		U	4.00
4	BC2	C2-Chrysenes		U	4.00
4	BC3	C3-Chrysenes		U	4.00
4	BC4	C4-Chrysenes		U	4.00
5	BBF	Benzo[b]fluoranthene		U	4.00
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene		U	4.00
5	BAF	Benzo[a]fluoranthene		U	4.00
5	BEP	Benzo[e]pyrene		U	4.00
5	BAP	Benzo[a]pyrene		U	4.00
5	PER	Perylene		U	4.00
6	IND	Indeno[1,2,3-cd]pyrene		U	4.00
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene		U	4.00
6	GHI	Benzo[g,h,i]perylene		U	4.00
	CAR	Carbazole		U	4.00

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Method Blank
Lab ID	TS090712B03
Matrix	Soil
Reference Method	Modified 8270D
Batch ID	TS090712B03
Date Collected	N/A
Date Received	N/A
Date Prepped	09/07/2012
Date Analyzed	09/27/2012
Sample Size (wet)	5
% Solid	100.00
File ID	A90008589.D
Units	µg/Kg
Final Volume	2
Dilution	1
Reporting Limit	4.00

Class	Abbrev	Analytes	Result		SSRL
3	4MDT	4-Methyldibenzothiophene	0.103	J	4.00
3	2MDT	2/3-Methyldibenzothiophene		U	4.00
3	1MDT	1-Methyldibenzothiophene	0.102	J	4.00
3	3MP	3-Methylphenanthrene	0.134	J	4.00
3	2MP	2-Methylphenanthrene	0.0848	J	4.00
3	2MA	2-Methylanthracene		U	4.00
3	9MP	9/4-Methylphenanthrene	0.158	J	4.00
3	1MP	1-Methylphenanthrene	0.101	J	4.00
t23	T4	C23 Tricyclic Terpane		U	4.00
t24	T5	C24 Tricyclic Terpane		U	4.00
t25	T6	C25 Tricyclic Terpane		U	4.00
te24	T6a	C24 Tetracyclic Terpane		U	4.00
t26S	T6b	C26 Tricyclic Terpane-22S		U	4.00
t26R	T6c	C26 Tricyclic Terpane-22R		U	4.00
t28S	T7	C28 Tricyclic Terpane-22S		U	4.00
t28R	T8	C28 Tricyclic Terpane-22R		U	4.00
t29S	T9	C29 Tricyclic Terpane-22S		U	4.00
t29R	T10	C29 Tricyclic Terpane-22R		U	4.00
Ts	T11	18a-22,29,30-Trisnorneohopane-TS		U	4.00
t30S	T11a	C30 Tricyclic Terpane-22S		U	4.00
t30R	T11b	C30 Tricyclic Terpane-22R		U	4.00
Tm	T12	17a(H)-22,29,30-Trisnorhopane-TM		U	4.00
BNH	T14a	17a/b,21b/a 28,30-Bisnorhopane		U	4.00
25N	T14b	17a(H),21b(H)-25-Norhopane		U	4.00
H29	T15	30-Norhopane		U	4.00
C29Ts	T16	18a(H)-30-Norneohopane-C29Ts		U	4.00
X	X	17a(H)-Diahopane		U	4.00
M29	T17	30-Normoretane		U	4.00
OL	T18	18a(H)&18b(H)-Oleananes		U	4.00
H30	T19	Hopane		U	4.00
M30	T20	Moretane		U	4.00
H31S	T21	30-Homohopane-22S		U	4.00
H31R	T22	30-Homohopane-22R		U	4.00
T22A	T22A	T22a-Gammacerane/C32-diahopane		U	4.00
H32S	T26	30,31-Bishomohopane-22S		U	4.00
H32R	T27	30,31-Bishomohopane-22R		U	4.00
H33R	T30	30,31-Trishomohopane-22S		U	4.00
H33S	T31	30,31-Trishomohopane-22R		U	4.00
H34R	T32	Tetrakishomohopane-22S		U	4.00
H34S	T33	Tetrakishomohopane-22R		U	4.00
H35S	T34	Pentakishomohopane-22S		U	4.00
H35R	T35	Pentakishomohopane-22R		U	4.00
d27S	S4	13b(H),17a(H)-20S-Diacholestane		U	4.00
d27R	S5	13b(H),17a(H)-20R-Diacholestane		U	4.00
d28S	S8	13b,17a-20S-Methyldiacholestane		U	4.00
aa27S	S12	14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12)		U	4.00
aa27R	S17	14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17)		U	4.00
d29R	S18	Unknown Sterane (S18)		U	4.00
d29S	S19	13a,17b-20S-Ethyldiacholestane		U	4.00
aa28S	S20	14a,17a-20S-Methylcholestane		U	4.00
aa28R	S24	14a,17a-20R-Methylcholestane		U	4.00
aa29S	S25	14a(H),17a(H)-20S-Ethylcholestane		U	4.00
aa29R	S28	14a(H),17a(H)-20R-Ethylcholestane		U	4.00
bb27R	S14	14b(H),17b(H)-20R-Cholestane		U	4.00
bb27S	S15	14b(H),17b(H)-20S-Cholestane		U	4.00
bb28R	S22	14b,17b-20R-Methylcholestane		U	4.00
bb28S	S23	14b,17b-20S-Methylcholestane		U	4.00
bb29R	S26	14b(H),17b(H)-20R-Ethylcholestane		U	4.00
bb29S	S27	14b(H),17b(H)-20S-Ethylcholestane		U	4.00
RC26/SC27TA	RC26/SC27TA	C26,20R- +C27,20S- triaromatic steroid		U	4.00
SC28TA	SC28TA	C28,20S-triaromatic steroid		U	4.00
RC27TA	RC27TA	C27,20R-triaromatic steroid		U	4.00
RC28TA	RC28TA	C28,20R-triaromatic steroid		U	4.00

Surrogates (% Recovery)	
Naphthalene-d8	77
Phenanthrene-d10	98
Benzo[a]pyrene-d12	103
5B(H)Cholane	N/A

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Laboratory Control Sample
Lab ID	TS090712LCS02
Matrix	Soil
Reference Method	Modified 8270D
Batch ID	TS090712B03
Date Collected	N/A
Date Received	N/A
Date Prepped	09/07/2012
Date Analyzed	09/27/2012
Sample Size (wet)	5
% Solid	100.00
File ID	A90008590.D
Units	µg/Kg
Final Volume	2
Dilution	1
Reporting Limit	4.00

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
2	D0	cis/trans-Decalin		U	4.00				
2	D1	C1-Decalins		U	4.00				
2	D2	C2-Decalins		U	4.00				
2	D3	C3-Decalins		U	4.00				
2	D4	C4-Decalins		U	4.00				
2	BT0	Benzothiophene		U	4.00				
2	BT1	C1-Benzo(b)thiophenes		U	4.00				
2	BT2	C2-Benzo(b)thiophenes		U	4.00				
2	BT3	C3-Benzo(b)thiophenes		U	4.00				
2	BT4	C4-Benzo(b)thiophenes		U	4.00				
2	N0	Naphthalene	158	S	4.00	79	200	50	130
2	N1	C1-Naphthalenes		U	4.00				
2	N2	C2-Naphthalenes		U	4.00				
2	N3	C3-Naphthalenes		U	4.00				
2	N4	C4-Naphthalenes		U	4.00				
2	B	Biphenyl		U	4.00				
3	DF	Dibenzofuran		U	4.00				
3	AY	Acenaphthylene	186	S	4.00	93	200	50	130
3	AE	Acenaphthene	184	S	4.00	92	200	50	130
3	F0	Fluorene	192	S	4.00	96	200	50	130
3	F1	C1-Fluorenes		U	4.00				
3	F2	C2-Fluorenes		U	4.00				
3	F3	C3-Fluorenes		U	4.00				
3	A0	Anthracene	205	S	4.00	102	200	50	130
3	P0	Phenanthrene	194	S	4.00	97	200	50	130
3	PA1	C1-Phenanthrenes/Anthracenes		U	4.00				
3	PA2	C2-Phenanthrenes/Anthracenes		U	4.00				
3	PA3	C3-Phenanthrenes/Anthracenes		U	4.00				
3	PA4	C4-Phenanthrenes/Anthracenes		U	4.00				
3	RET	Retene		U	4.00				
3	DBT0	Dibenzothiophene		U	4.00				
3	DBT1	C1-Dibenzothiophenes		U	4.00				
3	DBT2	C2-Dibenzothiophenes		U	4.00				
3	DBT3	C3-Dibenzothiophenes		U	4.00				
3	DBT4	C4-Dibenzothiophenes		U	4.00				
4	BF	Benzo(b)fluorene		U	4.00				
4	FL0	Fluoranthene	215	S	4.00	108	200	50	130
4	PY0	Pyrene	219	S	4.00	110	200	50	130
4	FP1	C1-Fluoranthenes/Pyrenes		U	4.00				
4	FP2	C2-Fluoranthenes/Pyrenes		U	4.00				
4	FP3	C3-Fluoranthenes/Pyrenes		U	4.00				
4	FP4	C4-Fluoranthenes/Pyrenes		U	4.00				
4	NBT0	Naphthobenzothiophenes		U	4.00				
4	NBT1	C1-Naphthobenzothiophenes		U	4.00				
4	NBT2	C2-Naphthobenzothiophenes		U	4.00				
4	NBT3	C3-Naphthobenzothiophenes		U	4.00				
4	NBT4	C4-Naphthobenzothiophenes		U	4.00				
4	BA0	Benz[a]anthracene	194	S	4.00	97	200	50	130
4	C0	Chrysene/Triphenylene	189	S	4.00	95	200	50	130
4	BC1	C1-Chrysenes		U	4.00				
4	BC2	C2-Chrysenes		U	4.00				
4	BC3	C3-Chrysenes		U	4.00				
4	BC4	C4-Chrysenes		U	4.00				
5	BBF	Benzo[b]fluoranthene	202	S	4.00	101	200	50	130
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	204	S	4.00	102	200	50	130
5	BAF	Benzo[a]fluoranthene		U	4.00				
5	BEP	Benzo[e]pyrene		U	4.00				
5	BAP	Benzo[a]pyrene	214	S	4.00	107	200	50	130
5	PER	Perylene		U	4.00				
6	IND	Indeno[1,2,3-cd]pyrene	198	S	4.00	99	200	50	130
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	201	S	4.00	101	200	50	130
6	GHI	Benzo[g,h,i]perylene	194	S	4.00	97	200	50	130
	CAR	Carbazole		U	4.00				

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Laboratory Control Sample
Lab ID	TS090712LCS02
Matrix	Soil
Reference Method	Modified 8270D
Batch ID	TS090712B03
Date Collected	N/A
Date Received	N/A
Date Prepped	09/07/2012
Date Analyzed	09/27/2012
Sample Size (wet)	5
% Solid	100.00
File ID	A90008590.D
Units	µg/Kg
Final Volume	2
Dilution	1
Reporting Limit	4.00

Class	Abbrev	Analytes	Result	SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
3	4MDT	4-Methyldibenzothiophene	U	4.00				
3	2MDT	2/3-Methyldibenzothiophene	U	4.00				
3	1MDT	1-Methyldibenzothiophene	U	4.00				
3	3MP	3-Methylphenanthrene	U	4.00				
3	2MP	2-Methylphenanthrene	U	4.00				
3	2MA	2-Methylanthracene	U	4.00				
3	9MP	9/4-Methylphenanthrene	U	4.00				
3	1MP	1-Methylphenanthrene	U	4.00				
t23	T4	C23 Tricyclic Terpane	U	4.00				
t24	T5	C24 Tricyclic Terpane	U	4.00				
t25	T6	C25 Tricyclic Terpane	U	4.00				
te24	T6a	C24 Tetracyclic Terpane	U	4.00				
t26S	T6b	C26 Tricyclic Terpane-22S	U	4.00				
t26R	T6c	C26 Tricyclic Terpane-22R	U	4.00				
t28S	T7	C28 Tricyclic Terpane-22S	U	4.00				
t28R	T8	C28 Tricyclic Terpane-22R	U	4.00				
t29S	T9	C29 Tricyclic Terpane-22S	U	4.00				
t29R	T10	C29 Tricyclic Terpane-22R	U	4.00				
Ts	T11	18a-22,29,30-Trisnorneohopane-TS	U	4.00				
t30S	T11a	C30 Tricyclic Terpane-22S	U	4.00				
t30R	T11b	C30 Tricyclic Terpane-22R	U	4.00				
Tm	T12	17a(H)-22,29,30-Trisnorhopane-TM	U	4.00				
BNH	T14a	17a/b,21b/a 28,30-Bisnorhopane	U	4.00				
25N	T14b	17a(H),21b(H)-25-Norhopane	U	4.00				
H29	T15	30-Norhopane	U	4.00				
C29Ts	T16	18a(H)-30-Norneohopane-C29Ts	U	4.00				
X	X	17a(H)-Diahopane	U	4.00				
M29	T17	30-Normoretane	U	4.00				
OL	T18	18a(H)&18b(H)-Oleananes	U	4.00				
H30	T19	Hopane	U	4.00				
M30	T20	Moretane	U	4.00				
H31S	T21	30-Homohopane-22S	U	4.00				
H31R	T22	30-Homohopane-22R	U	4.00				
T22A	T22A	T22a-Gammacerane/C32-diahopane	U	4.00				
H32S	T26	30,31-Bishomohopane-22S	U	4.00				
H32R	T27	30,31-Bishomohopane-22R	U	4.00				
H33R	T30	30,31-Trishomohopane-22S	U	4.00				
H33S	T31	30,31-Trishomohopane-22R	U	4.00				
H34R	T32	Tetrakishomohopane-22S	U	4.00				
H34S	T33	Tetrakishomohopane-22R	U	4.00				
H35S	T34	Pentakishomohopane-22S	U	4.00				
H35R	T35	Pentakishomohopane-22R	U	4.00				
d27S	S4	13b(H),17a(H)-20S-Diacholestane	U	4.00				
d27R	S5	13b(H),17a(H)-20R-Diacholestane	U	4.00				
d28S	S8	13b,17a-20S-Methyldiacholestane	U	4.00				
aa27S	S12	14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12)	U	4.00				
aa27R	S17	14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17)	U	4.00				
d29R	S18	Unknown Sterane (S18)	U	4.00				
d29S	S19	13a,17b-20S-Ethyldiacholestane	U	4.00				
aa28S	S20	14a,17a-20S-Methylcholestane	U	4.00				
aa28R	S24	14a,17a-20R-Methylcholestane	U	4.00				
aa29S	S25	14a(H),17a(H)-20S-Ethylcholestane	U	4.00				
aa29R	S28	14a(H),17a(H)-20R-Ethylcholestane	U	4.00				
bb27R	S14	14b(H),17b(H)-20R-Cholestane	U	4.00				
bb27S	S15	14b(H),17b(H)-20S-Cholestane	U	4.00				
bb28R	S22	14b,17b-20R-Methylcholestane	U	4.00				
bb28S	S23	14b,17b-20S-Methylcholestane	U	4.00				
bb29R	S26	14b(H),17b(H)-20R-Ethylcholestane	U	4.00				
bb29S	S27	14b(H),17b(H)-20S-Ethylcholestane	U	4.00				
RC26/SC27TA	RC26/SC27TA	C26,20R- +C27,20S- triaromatic steroid	U	4.00				
SC28TA	SC28TA	C28,20S-triaromatic steroid	U	4.00				
RC27TA	RC27TA	C27,20R-triaromatic steroid	U	4.00				
RC28TA	RC28TA	C28,20R-triaromatic steroid	U	4.00				

Surrogates (% Recovery)	
Naphthalene-d8	81
Phenanthrene-d10	102
Benzo[a]pyrene-d12	100
5B(H)Cholane	N/A

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Laboratory Control Sample Dup
Lab ID	TS090712LCSD02
Matrix	Soil
Reference Method	Modified 8270D
Batch ID	TS090712B03
Date Collected	N/A
Date Received	N/A
Date Prepped	09/07/2012
Date Analyzed	09/27/2012
Sample Size (wet)	5
% Solid	100.00
File ID	A90008591.D
Units	µg/Kg
Final Volume	2
Dilution	1
Reporting Limit	4.00

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit	RPD	RPD Limit
2	D0	cis/trans-Decalin		U	4.00						
2	D1	C1-Decalins		U	4.00						
2	D2	C2-Decalins		U	4.00						
2	D3	C3-Decalins		U	4.00						
2	D4	C4-Decalins		U	4.00						
2	BT0	Benzothiophene		U	4.00						
2	BT1	C1-Benzo(b)thiophenes		U	4.00						
2	BT2	C2-Benzo(b)thiophenes		U	4.00						
2	BT3	C3-Benzo(b)thiophenes		U	4.00						
2	BT4	C4-Benzo(b)thiophenes		U	4.00						
2	N0	Naphthalene	161	S	4.00	80	200	50	130	2	30
2	N1	C1-Naphthalenes		U	4.00						
2	N2	C2-Naphthalenes		U	4.00						
2	N3	C3-Naphthalenes		U	4.00						
2	N4	C4-Naphthalenes		U	4.00						
2	B	Biphenyl		U	4.00						
3	DF	Dibenzofuran		U	4.00						
3	AY	Acenaphthylene	189	S	4.00	94	200	50	130	2	30
3	AE	Acenaphthene	187	S	4.00	93	200	50	130	1	30
3	F0	Fluorene	193	S	4.00	97	200	50	130	1	30
3	F1	C1-Fluorenes		U	4.00						
3	F2	C2-Fluorenes		U	4.00						
3	F3	C3-Fluorenes		U	4.00						
3	A0	Anthracene	206	S	4.00	103	200	50	130	1	30
3	P0	Phenanthrene	196	S	4.00	98	200	50	130	1	30
3	PA1	C1-Phenanthrenes/Anthracenes		U	4.00						
3	PA2	C2-Phenanthrenes/Anthracenes		U	4.00						
3	PA3	C3-Phenanthrenes/Anthracenes		U	4.00						
3	PA4	C4-Phenanthrenes/Anthracenes		U	4.00						
3	RET	Retene		U	4.00						
3	DBT0	Dibenzothiophene		U	4.00						
3	DBT1	C1-Dibenzothiophenes		U	4.00						
3	DBT2	C2-Dibenzothiophenes		U	4.00						
3	DBT3	C3-Dibenzothiophenes		U	4.00						
3	DBT4	C4-Dibenzothiophenes		U	4.00						
4	BF	Benzo(b)fluorene		U	4.00						
4	FL0	Fluoranthene	217	S	4.00	108	200	50	130	1	30
4	PY0	Pyrene	222	S	4.00	111	200	50	130	1	30
4	FP1	C1-Fluoranthenes/Pyrenes		U	4.00						
4	FP2	C2-Fluoranthenes/Pyrenes		U	4.00						
4	FP3	C3-Fluoranthenes/Pyrenes		U	4.00						
4	FP4	C4-Fluoranthenes/Pyrenes		U	4.00						
4	NBT0	Naphthobenzothiophenes		U	4.00						
4	NBT1	C1-Naphthobenzothiophenes		U	4.00						
4	NBT2	C2-Naphthobenzothiophenes		U	4.00						
4	NBT3	C3-Naphthobenzothiophenes		U	4.00						
4	NBT4	C4-Naphthobenzothiophenes		U	4.00						
4	BA0	Benz[a]anthracene	195	S	4.00	97	200	50	130	0	30
4	C0	Chrysene/Triphenylene	193	S	4.00	96	200	50	130	2	30
4	BC1	C1-Chrysenes		U	4.00						
4	BC2	C2-Chrysenes		U	4.00						
4	BC3	C3-Chrysenes		U	4.00						
4	BC4	C4-Chrysenes		U	4.00						
5	BBF	Benzo[b]fluoranthene	204	S	4.00	102	200	50	130	1	30
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	207	S	4.00	103	200	50	130	1	30
5	BAF	Benzo[a]fluoranthene		U	4.00						
5	BEP	Benzo[e]pyrene		U	4.00						
5	BAP	Benzo[a]pyrene	215	S	4.00	108	200	50	130	0	30
5	PER	Perylene		U	4.00						
6	IND	Indeno[1,2,3-cd]pyrene	196	S	4.00	98	200	50	130	1	30
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	201	S	4.00	101	200	50	130	0	30
6	GHI	Benzo[g,h,i]perylene	193	S	4.00	97	200	50	130	0	30
	CAR	Carbazole		U	4.00						

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Laboratory Control Sample Dup
Lab ID	TS090712LCSD02
Matrix	Soil
Reference Method	Modified 8270D
Batch ID	TS090712B03
Date Collected	N/A
Date Received	N/A
Date Prepped	09/07/2012
Date Analyzed	09/27/2012
Sample Size (wet)	5
% Solid	100.00
File ID	A90008591.D
Units	µg/Kg
Final Volume	2
Dilution	1
Reporting Limit	4.00

Class	Abbrev	Analytes	Result	SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit	RPD	RPD Limit
3	4MDT	4-Methyldibenzothiophene	U	4.00						
3	2MDT	2/3-Methyldibenzothiophene	U	4.00						
3	1MDT	1-Methyldibenzothiophene	U	4.00						
3	3MP	3-Methylphenanthrene	U	4.00						
3	2MP	2-Methylphenanthrene	U	4.00						
3	2MA	2-Methylanthracene	U	4.00						
3	9MP	9/4-Methylphenanthrene	U	4.00						
3	1MP	1-Methylphenanthrene	U	4.00						
t23	T4	C23 Tricyclic Terpane	U	4.00						
t24	T5	C24 Tricyclic Terpane	U	4.00						
t25	T6	C25 Tricyclic Terpane	U	4.00						
te24	T6a	C24 Tetracyclic Terpane	U	4.00						
t26S	T6b	C26 Tricyclic Terpane-22S	U	4.00						
t26R	T6c	C26 Tricyclic Terpane-22R	U	4.00						
t28S	T7	C28 Tricyclic Terpane-22S	U	4.00						
t28R	T8	C28 Tricyclic Terpane-22R	U	4.00						
t29S	T9	C29 Tricyclic Terpane-22S	U	4.00						
t29R	T10	C29 Tricyclic Terpane-22R	U	4.00						
Ts	T11	18a-22,29,30-Trisnorneohopane-TS	U	4.00						
t30S	T11a	C30 Tricyclic Terpane-22S	U	4.00						
t30R	T11b	C30 Tricyclic Terpane-22R	U	4.00						
Tm	T12	17a(H)-22,29,30-Trisnorhopane-TM	U	4.00						
BNH	T14a	17a/b,21b/a 28,30-Bisnorhopane	U	4.00						
25N	T14b	17a(H),21b(H)-25-Norhopane	U	4.00						
H29	T15	30-Norhopane	U	4.00						
C29Ts	T16	18a(H)-30-Norneohopane-C29Ts	U	4.00						
X	X	17a(H)-Diahopane	U	4.00						
M29	T17	30-Normoretane	U	4.00						
OL	T18	18a(H)&18b(H)-Oleananes	U	4.00						
H30	T19	Hopane	U	4.00						
M30	T20	Moretane	U	4.00						
H31S	T21	30-Homohopane-22S	U	4.00						
H31R	T22	30-Homohopane-22R	U	4.00						
T22A	T22A	T22a-Gammacerane/C32-diahopane	U	4.00						
H32S	T26	30,31-Bishomohopane-22S	U	4.00						
H32R	T27	30,31-Bishomohopane-22R	U	4.00						
H33R	T30	30,31-Trishomohopane-22S	U	4.00						
H33S	T31	30,31-Trishomohopane-22R	U	4.00						
H34R	T32	Tetrakishomohopane-22S	U	4.00						
H34S	T33	Tetrakishomohopane-22R	U	4.00						
H35S	T34	Pentakishomohopane-22S	U	4.00						
H35R	T35	Pentakishomohopane-22R	U	4.00						
d27S	S4	13b(H),17a(H)-20S-Diacholestane	U	4.00						
d27R	S5	13b(H),17a(H)-20R-Diacholestane	U	4.00						
d28S	S8	13b,17a-20S-Methyldiacholestane	U	4.00						
aa27S	S12	14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12)	U	4.00						
aa27R	S17	14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17)	U	4.00						
d29R	S18	Unknown Sterane (S18)	U	4.00						
d29S	S19	13a,17b-20S-Ethyldiacholestane	U	4.00						
aa28S	S20	14a,17a-20S-Methylcholestane	U	4.00						
aa28R	S24	14a,17a-20R-Methylcholestane	U	4.00						
aa29S	S25	14a(H),17a(H)-20S-Ethylcholestane	U	4.00						
aa29R	S28	14a(H),17a(H)-20R-Ethylcholestane	U	4.00						
bb27R	S14	14b(H),17b(H)-20R-Cholestane	U	4.00						
bb27S	S15	14b(H),17b(H)-20S-Cholestane	U	4.00						
bb28R	S22	14b,17b-20R-Methylcholestane	U	4.00						
bb28S	S23	14b,17b-20S-Methylcholestane	U	4.00						
bb29R	S26	14b(H),17b(H)-20R-Ethylcholestane	U	4.00						
bb29S	S27	14b(H),17b(H)-20S-Ethylcholestane	U	4.00						
RC26/SC27TA	RC26/SC27TA	C26,20R- +C27,20S- triaromatic steroid	U	4.00						
SC28TA	SC28TA	C28,20S-triaromatic steroid	U	4.00						
RC27TA	RC27TA	C27,20R-triaromatic steroid	U	4.00						
RC28TA	RC28TA	C28,20R-triaromatic steroid	U	4.00						

Surrogates (% Recovery)	
Naphthalene-d8	81
Phenanthrene-d10	102
Benzo[a]pyrene-d12	98
5B(H)Cholane	N/A

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	S-80-B11	S-80-B11
Lab ID	1208051-01	1208051-01D
Matrix	Soil	Soil
Reference Method	Modified 8270D	Modified 8270D
Batch ID	TS090712B03	TS090712B03
Date Collected	08/21/2012	08/21/2012
Date Received	08/23/2012	08/23/2012
Date Prepped	09/07/2012	09/07/2012
Date Analyzed	09/27/2012	09/27/2012
Sample Size (wet)	5.2	5.77
% Solid	93.02	93.02
File ID	A90008592.D	A90008593.D
Units	µg/Kg	µg/Kg
Final Volume	2	2
Dilution	1	1
Reporting Limit	4.14	3.73

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	RPD	RPD Limit	
2	D0	cis/trans-Decalin	96.0		4.14	120		3.73	23	30	
2	D1	C1-Decalins	317		4.14	382		3.73	18	30	
2	D2	C2-Decalins	529		4.14	624		3.73	17	30	
2	D3	C3-Decalins	342		4.14	394		3.73	14	30	
2	D4	C4-Decalins	353		4.14	401		3.73	13	30	
2	BT0	Benzothiophene		U	4.14		U	3.73		30	N/A
2	BT1	C1-Benzo(b)thiophenes	15.1		4.14	15.0		3.73	0	30	
2	BT2	C2-Benzo(b)thiophenes	13.6		4.14	14.9		3.73	9	30	
2	BT3	C3-Benzo(b)thiophenes	50.1		4.14	54.2		3.73	8	30	
2	BT4	C4-Benzo(b)thiophenes	49.5		4.14	56.0		3.73	12	30	
2	N0	Naphthalene	3.84	J	4.14	4.30		3.73	11	30	
2	N1	C1-Naphthalenes	4.30	G	4.14	4.74	G	3.73	10	30	
2	N2	C2-Naphthalenes	66.2		4.14	75.5		3.73	13	30	
2	N3	C3-Naphthalenes	260		4.14	292		3.73	11	30	
2	N4	C4-Naphthalenes	369		4.14	409		3.73	10	30	
2	B	Biphenyl	0.945	JB	4.14	1.03	JB	3.73	9	30	
3	DF	Dibenzofuran	6.83		4.14	7.64		3.73	11	30	
3	AY	Acenaphthylene	4.05	J	4.14	4.85		3.73	18	30	
3	AE	Acenaphthene	13.2		4.14	14.4		3.73	9	30	
3	F0	Fluorene	54.3		4.14	61.3		3.73	12	30	
3	F1	C1-Fluorenes	125		4.14	139		3.73	11	30	
3	F2	C2-Fluorenes	197		4.14	213		3.73	8	30	
3	F3	C3-Fluorenes	165		4.14	174		3.73	5	30	
3	A0	Anthracene		U	4.14		U	3.73		30	N/A
3	P0	Phenanthrene	1.41	JB	4.14	1.69	JB	3.73	18	30	
3	PA1	C1-Phenanthrenes/Anthracenes	21.2		4.14	22.5		3.73	6	30	
3	PA2	C2-Phenanthrenes/Anthracenes	191		4.14	199		3.73	4	30	
3	PA3	C3-Phenanthrenes/Anthracenes	215		4.14	224		3.73	4	30	
3	PA4	C4-Phenanthrenes/Anthracenes	85.8		4.14	96.1		3.73	11	30	
3	RET	Retene		U	4.14		U	3.73		30	N/A
3	DBT0	Dibenzothiophene	20.0		4.14	21.7		3.73	8	30	
3	DBT1	C1-Dibenzothiophenes	46.8		4.14	51.1		3.73	9	30	
3	DBT2	C2-Dibenzothiophenes	98.3		4.14	104		3.73	5	30	
3	DBT3	C3-Dibenzothiophenes	77.9		4.14	84.0		3.73	8	30	
3	DBT4	C4-Dibenzothiophenes	37.9		4.14	39.0		3.73	3	30	
4	BF	Benzo(b)fluorene	6.64		4.14	6.20		3.73	7	30	
4	FL0	Fluoranthene	5.26		4.14	5.56		3.73	6	30	
4	PY0	Pyrene	10.7		4.14	11.5		3.73	7	30	
4	FP1	C1-Fluoranthenes/Pyrenes	43.8		4.14	45.6		3.73	4	30	
4	FP2	C2-Fluoranthenes/Pyrenes	64.5		4.14	68.8		3.73	6	30	
4	FP3	C3-Fluoranthenes/Pyrenes	69.4		4.14	73.6		3.73	6	30	
4	FP4	C4-Fluoranthenes/Pyrenes	59.7		4.14	64.4		3.73	8	30	
4	NBT0	Naphthobenzothiophenes	7.27		4.14	6.69		3.73	8	30	
4	NBT1	C1-Naphthobenzothiophenes	22.4		4.14	22.4		3.73	0	30	
4	NBT2	C2-Naphthobenzothiophenes	36.6		4.14	38.4		3.73	5	30	
4	NBT3	C3-Naphthobenzothiophenes	28.2		4.14	33.0		3.73	16	30	
4	NBT4	C4-Naphthobenzothiophenes	29.0		4.14	31.3		3.73	8	30	
4	BA0	Benz[a]anthracene	3.26	J	4.14	3.79		3.73	15	30	
4	C0	Chrysene/Triphenylene	11.7		4.14	12.7		3.73	9	30	
4	BC1	C1-Chrysenes	32.5		4.14	34.6		3.73	6	30	
4	BC2	C2-Chrysenes	47.1		4.14	52.0		3.73	10	30	
4	BC3	C3-Chrysenes	67.0		4.14	69.7		3.73	4	30	
4	BC4	C4-Chrysenes	41.7		4.14	46.7		3.73	11	30	
5	BBF	Benzo[b]fluoranthene	2.70	J	4.14	2.79	J	3.73	3	30	
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	1.39	J	4.14	1.27	J	3.73	8	30	
5	BAF	Benzo[a]fluoranthene		U	4.14		U	3.73		30	N/A
5	BEP	Benzo[e]pyrene	3.41	J	4.14	3.73		3.73	9	30	
5	BAP	Benzo[a]pyrene	1.86	J	4.14	2.30	J	3.73	21	30	
5	PER	Perylene	13.3		4.14	13.6		3.73	2	30	
6	IND	Indeno[1,2,3-cd]pyrene	1.59	J	4.14	1.92	J	3.73	19	30	
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	0.710	J	4.14	1.09	J	3.73	42	30	¤
6	GHI	Benzo[g,h,i]perylene	2.35	J	4.14	2.95	J	3.73	22	30	
	CAR	Carbazole	3.22	J	4.14	3.27	J	3.73	2	30	

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	S-80-B11	S-80-B11
Lab ID	1208051-01	1208051-01D
Matrix	Soil	Soil
Reference Method	Modified 8270D	Modified 8270D
Batch ID	TS090712B03	TS090712B03
Date Collected	08/21/2012	08/21/2012
Date Received	08/23/2012	08/23/2012
Date Prepped	09/07/2012	09/07/2012
Date Analyzed	09/27/2012	09/27/2012
Sample Size (wet)	5.2	5.77
% Solid	93.02	93.02
File ID	A90008592.D	A90008593.D
Units	µg/Kg	µg/Kg
Final Volume	2	2
Dilution	1	1
Reporting Limit	4.14	3.73

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	RPD	RPD Limit
3	4MDT	4-Methyldibenzothiophene	29.9		4.14	32.3		3.73	8	30
3	2MDT	2/3-Methyldibenzothiophene	6.06		4.14	6.62		3.73	9	30
3	1MDT	1-Methyldibenzothiophene	9.05		4.14	9.88		3.73	9	30
3	3MP	3-Methylphenanthrene	3.36	J	4.14	3.77		3.73	12	30
3	2MP	2-Methylphenanthrene	1.66	J	4.14	1.86	J	3.73	11	30
3	2MA	2-Methylanthracene	4.78		4.14	5.15		3.73	8	30
3	9MP	9/4-Methylphenanthrene	5.81		4.14	6.96		3.73	18	30
3	1MP	1-Methylphenanthrene	5.39		4.14	5.09		3.73	6	30
t23	T4	C23 Tricyclic Terpane	28.1		4.14	30.6		3.73	9	30
t24	T5	C24 Tricyclic Terpane	22.3		4.14	23.5		3.73	5	30
t25	T6	C25 Tricyclic Terpane	22.9		4.14	24.9		3.73	8	30
te24	T6a	C24 Tetracyclic Terpane	3.83	J	4.14	3.77		3.73	2	30
t26S	T6b	C26 Tricyclic Terpane-22S	10.7		4.14	11.5		3.73	7	30
t26R	T6c	C26 Tricyclic Terpane-22R	9.81		4.14	11.0		3.73	12	30
t28S	T7	C28 Tricyclic Terpane-22S	14.2		4.14	15.8		3.73	11	30
t28R	T8	C28 Tricyclic Terpane-22R	15.5		4.14	15.6		3.73	0	30
t29S	T9	C29 Tricyclic Terpane-22S	17.8		4.14	18.6		3.73	4	30
t29R	T10	C29 Tricyclic Terpane-22R	16.1		4.14	17.3		3.73	7	30
Ts	T11	18a-22,29,30-Trisnorneohopane-TS	11.5		4.14	14.1		3.73	20	30
t30S	T11a	C30 Tricyclic Terpane-22S	16.9		4.14	18.4		3.73	8	30
t30R	T11b	C30 Tricyclic Terpane-22R	14.9		4.14	15.1		3.73	1	30
Tm	T12	17a(H)-22,29,30-Trisnorhopane-TM	17.3		4.14	16.9		3.73	2	30
BNH	T14a	17a/b,21b/a 28,30-Bisnorhopane	29.8		4.14	31.6		3.73	6	30
25N	T14b	17a(H),21b(H)-25-Norhopane	10.7		4.14	11.4		3.73	6	30
H29	T15	30-Norhopane	58.1		4.14	59.4		3.73	2	30
C29Ts	T16	18a(H)-30-Norneohopane-C29Ts	12.8		4.14	12.8		3.73	0	30
X	X	17a(H)-Diahopane	4.27		4.14	4.37		3.73	2	30
M29	T17	30-Normoretane	12.1		4.14	13.6		3.73	12	30
OL	T18	18a(H)&18b(H)-Oleananes	26.3		4.14	30.4		3.73	14	30
H30	T19	Hopane	116		4.14	121		3.73	4	30
M30	T20	Moretane	17.0		4.14	18.7		3.73	9	30
H31S	T21	30-Homohopane-22S	30.8		4.14	34.5		3.73	12	30
H31R	T22	30-Homohopane-22R	37.4	G	4.14	41.6	G	3.73	11	30
T22A	T22A	T22a-Gammacerane/C32-diahopane	9.44		4.14	12.6		3.73	29	30
H32S	T26	30,31-Bishomohopane-22S	21.9		4.14	21.8		3.73	0	30
H32R	T27	30,31-Bishomohopane-22R	17.2		4.14	16.7		3.73	3	30
H33R	T30	30,31-Trishomohopane-22S	20.6		4.14	19.9		3.73	4	30
H33S	T31	30,31-Trishomohopane-22R	15.2		4.14	12.6		3.73	19	30
H34R	T32	Tetrakishomohopane-22S	12.6		4.14	12.6		3.73	1	30
H34S	T33	Tetrakishomohopane-22R	8.27		4.14	9.22		3.73	11	30
H35S	T34	Pentakishomohopane-22S	10.6		4.14	10.6		3.73	0	30
H35R	T35	Pentakishomohopane-22R	16.5	G	4.14	16.1	G	3.73	3	30
d27S	S4	13b(H),17a(H)-20S-Diacholestane	31.0		4.14	34.7		3.73	11	30
d27R	S5	13b(H),17a(H)-20R-Diacholestane	16.0		4.14	16.8		3.73	5	30
d28S	S8	13b,17a-20S-Methyldiacholestane	34.1		4.14	35.9		3.73	5	30
aa27S	S12	14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12)	99.8		4.14	102		3.73	3	30
aa27R	S17	14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17)	156		4.14	173		3.73	11	30
d29R	S18	Unknown Sterane (S18)	8.01		4.14	9.89		3.73	21	30
d29S	S19	13a,17b-20S-Ethyldiacholestane	3.30	J	4.14	4.01		3.73	19	30
aa28S	S20	14a,17a-20S-Methylcholestane	76.8		4.14	90.9		3.73	17	30
aa28R	S24	14a,17a-20R-Methylcholestane	137		4.14	153		3.73	11	30
aa29S	S25	14a(H),17a(H)-20S-Ethylcholestane	71.2		4.14	85.2		3.73	18	30
aa29R	S28	14a(H),17a(H)-20R-Ethylcholestane	92.4		4.14	110		3.73	17	30
bb27R	S14	14b(H),17b(H)-20R-Cholestane	74.1		4.14	80.9		3.73	9	30
bb27S	S15	14b(H),17b(H)-20S-Cholestane	69.9		4.14	76.2		3.73	9	30
bb28R	S22	14b,17b-20R-Methylcholestane	103		4.14	111		3.73	8	30
bb28S	S23	14b,17b-20S-Methylcholestane	102		4.14	115		3.73	11	30
bb29R	S26	14b(H),17b(H)-20R-Ethylcholestane	71.4		4.14	80.6		3.73	12	30
bb29S	S27	14b(H),17b(H)-20S-Ethylcholestane	50.7		4.14	60.1		3.73	17	30
RC26/SC27TA	RC26/SC27TA	C26,20R- +C27,20S- triaromatic steroid	329		4.14	372		3.73	12	30
SC28TA	SC28TA	C28,20S-triaromatic steroid	121		4.14	143		3.73	17	30
RC27TA	RC27TA	C27,20R-triaromatic steroid	187		4.14	206		3.73	10	30
RC28TA	RC28TA	C28,20R-triaromatic steroid	101		4.14	127		3.73	22	30

Surrogates (% Recovery)		
Naphthalene-d8	75	73
Phenanthrene-d10	97	98
Benzo[a]pyrene-d12	99	101
5B(H)Cholane	N/A	N/A

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Alaska North Slope Crude
Lab ID	SS091812ANS01
Matrix	Oil
Reference Method	Modified 8270D
Batch ID	N/A
Date Collected	N/A
Date Received	N/A
Date Prepped	N/A
Date Analyzed	09/18/2012
Sample Size (wet)	0.05076
% Solid	100.00
File ID	A90008487.D
Units	mg/Kg
Final Volume	10
Dilution	1
Reporting Limit	1.97

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
2	D0	cis/trans-Decalin	459		1.97	90	508.70	65	135
2	D1	C1-Decalins	772		1.97	101	761.10	65	135
2	D2	C2-Decalins	682		1.97	106	641.90	65	135
2	D3	C3-Decalins	415		1.97	123	338.20	65	135
2	D4	C4-Decalins	386		1.97	128	300.90	65	135
2	BT0	Benzothiophene	5.63		1.97	106	5.30	65	135
2	BT1	C1-Benzo(b)thiophenes	30.3		1.97	102	29.80	65	135
2	BT2	C2-Benzo(b)thiophenes	52.6		1.97	105	50.10	65	135
2	BT3	C3-Benzo(b)thiophenes	110		1.97	107	103.30	65	135
2	BT4	C4-Benzo(b)thiophenes	103		1.97	121	84.90	65	135
2	N0	Naphthalene	502		1.97	87	577.60	65	135
2	N1	C1-Naphthalenes	1160		1.97	94	1242.00	65	135
2	N2	C2-Naphthalenes	1440		1.97	98	1472.00	65	135
2	N3	C3-Naphthalenes	1080		1.97	102	1053.40	65	135
2	N4	C4-Naphthalenes	647		1.97	117	552.70	65	135
2	B	Biphenyl	135		1.97	89	152.50	65	135
3	DF	Dibenzofuran	50.4		1.97	94	53.50	65	135
3	AY	Acenaphthylene	6.46		1.97	91	7.10	65	135
3	AE	Acenaphthene	24.2		1.97	129	18.70	65	135
3	F0	Fluorene	74.3		1.97	94	79.40	65	135
3	F1	C1-Fluorenes	184		1.97	105	175.10	65	135
3	F2	C2-Fluorenes	283		1.97	110	256.50	65	135
3	F3	C3-Fluorenes	271		1.97	113	238.70	65	135
3	A0	Anthracene		U	1.97				
3	P0	Phenanthrene	207		1.97	93	222.00	65	135
3	PA1	C1-Phenanthrenes/Anthracenes	471		1.97	107	440.50	65	135
3	PA2	C2-Phenanthrenes/Anthracenes	516		1.97	111	464.90	65	135
3	PA3	C3-Phenanthrenes/Anthracenes	363		1.97	118	307.70	65	135
3	PA4	C4-Phenanthrenes/Anthracenes	141		1.97	115	122.90	65	135
3	RET	Retene		U	1.97				
3	DBT0	Dibenzothiophene	139		1.97	95	146.10	65	135
3	DBT1	C1-Dibenzothiophenes	288		1.97	96	299.00	65	135
3	DBT2	C2-Dibenzothiophenes	432		1.97	110	392.90	65	135
3	DBT3	C3-Dibenzothiophenes	372		1.97	106	350.50	65	135
3	DBT4	C4-Dibenzothiophenes	180		1.97	95	189.20	65	135
4	BF	Benzo(b)fluorene	7.08		1.97				
4	FL0	Fluoranthene	4.28		1.97	104	4.10	65	135
4	PY0	Pyrene	14.6		1.97	110	13.30	65	135
4	FP1	C1-Fluoranthenes/Pyrenes	66.0		1.97	100	66.10	65	135
4	FP2	C2-Fluoranthenes/Pyrenes	92.3		1.97	91	100.90	65	135
4	FP3	C3-Fluoranthenes/Pyrenes	106		1.97	87	120.80	65	135
4	FP4	C4-Fluoranthenes/Pyrenes	86.5		1.97	82	105.60	65	135
4	NBT0	Naphthobenzothiophenes	42.6		1.97	94	45.10	65	135
4	NBT1	C1-Naphthobenzothiophenes	112		1.97	90	124.10	65	135
4	NBT2	C2-Naphthobenzothiophenes	143		1.97	85	168.90	65	135
4	NBT3	C3-Naphthobenzothiophenes	104		1.97	77	136.10	65	135
4	NBT4	C4-Naphthobenzothiophenes	66.3		1.97	71	93.90	65	135
4	BA0	Benz[a]anthracene	2.44		1.97	122	2.00	65	135
4	C0	Chrysene/Triphenylene	39.2		1.97	105	37.40	65	135
4	BC1	C1-Chrysenes	62.0		1.97	97	63.90	65	135
4	BC2	C2-Chrysenes	77.0		1.97	89	86.60	65	135
4	BC3	C3-Chrysenes	86.7		1.97	87	99.60	65	135
4	BC4	C4-Chrysenes	41.6		1.97	67	62.20	65	135
5	BBF	Benzo[b]fluoranthene	5.87		1.97	111	5.30	65	135
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene		U	1.97				
5	BAF	Benzo[a]fluoranthene		U	1.97				
5	BEP	Benzo[e]pyrene	10.6		1.97	110	9.60	65	135
5	BAP	Benzo[a]pyrene	1.80	J	1.97	90	2.00	65	135
5	PER	Perylene	2.67		1.97	99	2.70	65	135
6	IND	Indeno[1,2,3-cd]pyrene	0.627	J	1.97				
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	1.07	J	1.97				
6	GHI	Benzo[g,h,i]perylene	3.30		1.97	107	3.10	65	135
	CAR	Carbazole	7.84		1.97	121	6.50	65	135

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Alaska North Slope Crude
Lab ID	SS091812ANS01
Matrix	Oil
Reference Method	Modified 8270D
Batch ID	N/A
Date Collected	N/A
Date Received	N/A
Date Prepped	N/A
Date Analyzed	09/18/2012
Sample Size (wet)	0.05076
% Solid	100.00
File ID	A90008487.D
Units	mg/Kg
Final Volume	10
Dilution	1
Reporting Limit	1.97

Class	Abbrev	Analytes	Result	SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
3	4MDT	4-Methyldibenzothiophene	140	1.97	97	143.50	65	135
3	2MDT	2/3-Methyldibenzothiophene	102	1.97	99	103.10	65	135
3	1MDT	1-Methyldibenzothiophene	45.6	1.97	97	46.80	65	135
3	3MP	3-Methylphenanthrene	99.0	1.97	108	91.80	65	135
3	2MP	2-Methylphenanthrene	108	1.97	108	99.60	65	135
3	2MA	2-Methylanthracene	3.07	1.97	99	3.10	65	135
3	9MP	9/4-Methylphenanthrene	154	1.97	106	145.90	65	135
3	1MP	1-Methylphenanthrene	106	1.97	109	97.60	65	135
t23	T4	C23 Tricyclic Terpane	58.8	1.97	88	67.10	65	135
t24	T5	C24 Tricyclic Terpane	37.2	1.97	88	42.30	65	135
t25	T6	C25 Tricyclic Terpane	37.7	1.97	92	40.90	65	135
te24	T6a	C24 Tetracyclic Terpane	13.2	1.97	92	14.30	65	135
t26S	T6b	C26 Tricyclic Terpane-22S	15.9	1.97	94	17.00	65	135
t26R	T6c	C26 Tricyclic Terpane-22R	14.4	1.97	96	15.00	65	135
t28S	T7	C28 Tricyclic Terpane-22S	16.5	1.97	101	16.30	65	135
t28R	T8	C28 Tricyclic Terpane-22R	16.6	1.97	94	17.70	65	135
t29S	T9	C29 Tricyclic Terpane-22S	19.1	1.97	92	20.70	65	135
t29R	T10	C29 Tricyclic Terpane-22R	19.6	1.97	93	21.10	65	135
Ts	T11	18a-22,29,30-Trisnorneohopane-TS	27.5	1.97	90	30.60	65	135
t30S	T11a	C30 Tricyclic Terpane-22S	15.2	1.97	96	15.80	65	135
t30R	T11b	C30 Tricyclic Terpane-22R	13.6	1.97	86	15.80	65	135
Tm	T12	17a(H)-22,29,30-Trisnorhopane-TM	33.8	1.97	92	36.70	65	135
BNH	T14a	17a/b,21b/a 28,30-Bisnorhopane	7.94	1.97	110	7.20	65	135
25N	T14b	17a(H),21b(H)-25-Norhopane	8.53	1.97	99	8.60	65	135
H29	T15	30-Norhopane	92.5	1.97	95	97.50	65	135
C29Ts	T16	18a(H)-30-Norneohopane-C29Ts	23.5	1.97	96	24.40	65	135
X	X	17a(H)-Diahopane	13.5	1.97	94	14.30	65	135
M29	T17	30-Normoretane	9.77	1.97	85	11.50	65	135
OL	T18	18a(H)&18b(H)-Oleananes	U	1.97				
H30	T19	Hopane	160	1.97	94	171.10	65	135
M30	T20	Moretane	16.8	1.97	101	16.60	65	135
H31S	T21	30-Homohopane-22S	68.7	1.97	93	73.80	65	135
H31R	T22	30-Homohopane-22R	58.1	1.97	92	63.40	65	135
T22A	T22A	T22a-Gammacerane/C32-diahopane	12.6	1.97				
H32S	T26	30,31-Bishomohopane-22S	48.4	1.97	92	52.50	65	135
H32R	T27	30,31-Bishomohopane-22R	34.7	1.97	90	38.40	65	135
H33R	T30	30,31-Trishomohopane-22S	36.4	1.97	88	41.10	65	135
H33S	T31	30,31-Trishomohopane-22R	27.3	1.97	100	27.40	65	135
H34R	T32	Tetrakishomohopane-22S	26.9	1.97	90	30.00	65	135
H34S	T33	Tetrakishomohopane-22R	19.9	1.97	96	20.70	65	135
H35S	T34	Pentakishomohopane-22S	27.8	1.97	92	30.20	65	135
H35R	T35	Pentakishomohopane-22R	25.2	1.97	109	23.20	65	135
d27S	S4	13b(H),17a(H)-20S-Diacholestane	55.3	1.97	112	49.20	65	135
d27R	S5	13b(H),17a(H)-20R-Diacholestane	28.3	1.97	112	25.30	65	135
d28S	S8	13b,17a-20S-Methyldiacholestane	25.9	1.97	111	23.30	65	135
aa27S	S12	14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12)	73.4	1.97	114	64.20	65	135
aa27R	S17	14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17)	82.0	1.97	109	75.50	65	135
d29R	S18	Unknown Sterane (S18)	24.3	1.97	117	20.70	65	135
d29S	S19	13a,17b-20S-Ethyldiacholestane	4.52	1.97	108	4.20	65	135
aa28S	S20	14a,17a-20S-Methylcholestane	37.1	1.97	101	36.70	65	135
aa28R	S24	14a,17a-20R-Methylcholestane	35.2	1.97	107	33.00	65	135
aa29S	S25	14a(H),17a(H)-20S-Ethylcholestane	45.1	1.97	87	51.90	65	135
aa29R	S28	14a(H),17a(H)-20R-Ethylcholestane	42.0	1.97	106	39.70	65	135
bb27R	S14	14b(H),17b(H)-20R-Cholestane	43.0	1.97	107	40.10	65	135
bb27S	S15	14b(H),17b(H)-20S-Cholestane	43.8	1.97	108	40.70	65	135
bb28R	S22	14b,17b-20R-Methylcholestane	47.8	1.97	107	44.80	65	135
bb28S	S23	14b,17b-20S-Methylcholestane	62.2	1.97	115	54.00	65	135
bb29R	S26	14b(H),17b(H)-20R-Ethylcholestane	67.3	1.97	114	59.20	65	135
bb29S	S27	14b(H),17b(H)-20S-Ethylcholestane	40.1	1.97	99	40.60	65	135
RC26/SC27TA	RC26/SC27TA	C26,20R- +C27,20S- triaromatic steroid	265	1.97	87	304.20	65	135
SC28TA	SC28TA	C28,20S-triaromatic steroid	168	1.97	88	191.80	65	135
RC27TA	RC27TA	C27,20R-triaromatic steroid	161	1.97	86	186.40	65	135
RC28TA	RC28TA	C28,20R-triaromatic steroid	136	1.97	86	158.30	65	135

Surrogates (% Recovery)
Naphthalene-d8
Phenanthrene-d10
Benzo[a]pyrene-d12
5B(H)Cholane

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	S-80-B11
Lab ID	1208051-01
Matrix	Soil
Reference Method	Modified 8270D
Batch ID	TS090712B03
Date Collected	08/21/2012
Date Received	08/23/2012
Date Prepped	09/07/2012
Date Analyzed	09/27/2012
Sample Size (wet)	5.2
% Solid	93.02
File ID	A90008592.D
Units	µg/Kg
Final Volume	2
Dilution	1
Reporting Limit	4.14

Class	Abbrev	Analytes	Result		SSRL
2	D0	cis/trans-Decalin	96.0		4.14
2	D1	C1-Decalins	317		4.14
2	D2	C2-Decalins	529		4.14
2	D3	C3-Decalins	342		4.14
2	D4	C4-Decalins	353		4.14
2	BT0	Benzothiophene		U	4.14
2	BT1	C1-Benzo(b)thiophenes	15.1		4.14
2	BT2	C2-Benzo(b)thiophenes	13.6		4.14
2	BT3	C3-Benzo(b)thiophenes	50.1		4.14
2	BT4	C4-Benzo(b)thiophenes	49.5		4.14
2	N0	Naphthalene	3.84	J	4.14
2	N1	C1-Naphthalenes	4.30	G	4.14
2	N2	C2-Naphthalenes	66.2		4.14
2	N3	C3-Naphthalenes	260		4.14
2	N4	C4-Naphthalenes	369		4.14
2	B	Biphenyl	0.945	JB	4.14
3	DF	Dibenzofuran	6.83		4.14
3	AY	Acenaphthylene	4.05	J	4.14
3	AE	Acenaphthene	13.2		4.14
3	F0	Fluorene	54.3		4.14
3	F1	C1-Fluorenes	125		4.14
3	F2	C2-Fluorenes	197		4.14
3	F3	C3-Fluorenes	165		4.14
3	A0	Anthracene		U	4.14
3	P0	Phenanthrene	1.41	JB	4.14
3	PA1	C1-Phenanthrenes/Anthracenes	21.2		4.14
3	PA2	C2-Phenanthrenes/Anthracenes	191		4.14
3	PA3	C3-Phenanthrenes/Anthracenes	215		4.14
3	PA4	C4-Phenanthrenes/Anthracenes	85.8		4.14
3	RET	Retene		U	4.14
3	DBT0	Dibenzothiophene	20.0		4.14
3	DBT1	C1-Dibenzothiophenes	46.8		4.14
3	DBT2	C2-Dibenzothiophenes	98.3		4.14
3	DBT3	C3-Dibenzothiophenes	77.9		4.14
3	DBT4	C4-Dibenzothiophenes	37.9		4.14
4	BF	Benzo(b)fluorene	6.64		4.14
4	FL0	Fluoranthene	5.26		4.14
4	PY0	Pyrene	10.7		4.14
4	FP1	C1-Fluoranthenes/Pyrenes	43.8		4.14
4	FP2	C2-Fluoranthenes/Pyrenes	64.5		4.14
4	FP3	C3-Fluoranthenes/Pyrenes	69.4		4.14
4	FP4	C4-Fluoranthenes/Pyrenes	59.7		4.14
4	NBT0	Naphthobenzothiophenes	7.27		4.14
4	NBT1	C1-Naphthobenzothiophenes	22.4		4.14
4	NBT2	C2-Naphthobenzothiophenes	36.6		4.14
4	NBT3	C3-Naphthobenzothiophenes	28.2		4.14
4	NBT4	C4-Naphthobenzothiophenes	29.0		4.14
4	BA0	Benz[a]anthracene	3.26	J	4.14
4	C0	Chrysene/Triphenylene	11.7		4.14
4	BC1	C1-Chrysenes	32.5		4.14
4	BC2	C2-Chrysenes	47.1		4.14
4	BC3	C3-Chrysenes	67.0		4.14
4	BC4	C4-Chrysenes	41.7		4.14
5	BBF	Benzo[b]fluoranthene	2.70	J	4.14
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	1.39	J	4.14
5	BAF	Benzo[a]fluoranthene		U	4.14
5	BEP	Benzo[e]pyrene	3.41	J	4.14
5	BAP	Benzo[a]pyrene	1.86	J	4.14
5	PER	Perylene	13.3		4.14
6	IND	Indeno[1,2,3-cd]pyrene	1.59	J	4.14
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	0.710	J	4.14
6	GHI	Benzo[g,h,i]perylene	2.35	J	4.14
	CAR	Carbazole	3.22	J	4.14

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	S-80-B11
Lab ID	1208051-01
Matrix	Soil
Reference Method	Modified 8270D
Batch ID	TS090712B03
Date Collected	08/21/2012
Date Received	08/23/2012
Date Prepped	09/07/2012
Date Analyzed	09/27/2012
Sample Size (wet)	5.2
% Solid	93.02
File ID	A90008592.D
Units	µg/Kg
Final Volume	2
Dilution	1
Reporting Limit	4.14

Class	Abbrev	Analytes	Result		SSRL
3	4MDT	4-Methyldibenzothiophene	29.9		4.14
3	2MDT	2/3-Methyldibenzothiophene	6.06		4.14
3	1MDT	1-Methyldibenzothiophene	9.05		4.14
3	3MP	3-Methylphenanthrene	3.36	J	4.14
3	2MP	2-Methylphenanthrene	1.66	J	4.14
3	2MA	2-Methylanthracene	4.78		4.14
3	9MP	9/4-Methylphenanthrene	5.81		4.14
3	1MP	1-Methylphenanthrene	5.39		4.14
t23	T4	C23 Tricyclic Terpane	28.1		4.14
t24	T5	C24 Tricyclic Terpane	22.3		4.14
t25	T6	C25 Tricyclic Terpane	22.9		4.14
te24	T6a	C24 Tetracyclic Terpane	3.83	J	4.14
t26S	T6b	C26 Tricyclic Terpane-22S	10.7		4.14
t26R	T6c	C26 Tricyclic Terpane-22R	9.81		4.14
t28S	T7	C28 Tricyclic Terpane-22S	14.2		4.14
t28R	T8	C28 Tricyclic Terpane-22R	15.5		4.14
t29S	T9	C29 Tricyclic Terpane-22S	17.8		4.14
t29R	T10	C29 Tricyclic Terpane-22R	16.1		4.14
Ts	T11	18a-22,29,30-Trisnorneohopane-TS	11.5		4.14
t30S	T11a	C30 Tricyclic Terpane-22S	16.9		4.14
t30R	T11b	C30 Tricyclic Terpane-22R	14.9		4.14
Tm	T12	17a(H)-22,29,30-Trisnorhopane-TM	17.3		4.14
BNH	T14a	17a/b,21b/a 28,30-Bisnorhopane	29.8		4.14
25N	T14b	17a(H),21b(H)-25-Norhopane	10.7		4.14
H29	T15	30-Norhopane	58.1		4.14
C29Ts	T16	18a(H)-30-Norneohopane-C29Ts	12.8		4.14
X	X	17a(H)-Diahopane	4.27		4.14
M29	T17	30-Normoretane	12.1		4.14
OL	T18	18a(H)&18b(H)-Oleananes	26.3		4.14
H30	T19	Hopane	116		4.14
M30	T20	Moretane	17.0		4.14
H31S	T21	30-Homohopane-22S	30.8		4.14
H31R	T22	30-Homohopane-22R	37.4	G	4.14
T22A	T22A	T22a-Gammacerane/C32-diahopane	9.44		4.14
H32S	T26	30,31-Bishomohopane-22S	21.9		4.14
H32R	T27	30,31-Bishomohopane-22R	17.2		4.14
H33R	T30	30,31-Trishomohopane-22S	20.6		4.14
H33S	T31	30,31-Trishomohopane-22R	15.2		4.14
H34R	T32	Tetrakishomohopane-22S	12.6		4.14
H34S	T33	Tetrakishomohopane-22R	8.27		4.14
H35S	T34	Pentakishomohopane-22S	10.6		4.14
H35R	T35	Pentakishomohopane-22R	16.5	G	4.14
d27S	S4	13b(H),17a(H)-20S-Diacholestane	31.0		4.14
d27R	S5	13b(H),17a(H)-20R-Diacholestane	16.0		4.14
d28S	S8	13b,17a-20S-Methyldiacholestane	34.1		4.14
aa27S	S12	14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12)	99.8		4.14
aa27R	S17	14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17)	156		4.14
d29R	S18	Unknown Sterane (S18)	8.01		4.14
d29S	S19	13a,17b-20S-Ethyldiacholestane	3.30	J	4.14
aa28S	S20	14a,17a-20S-Methylcholestane	76.8		4.14
aa28R	S24	14a,17a-20R-Methylcholestane	137		4.14
aa29S	S25	14a(H),17a(H)-20S-Ethylcholestane	71.2		4.14
aa29R	S28	14a(H),17a(H)-20R-Ethylcholestane	92.4		4.14
bb27R	S14	14b(H),17b(H)-20R-Cholestane	74.1		4.14
bb27S	S15	14b(H),17b(H)-20S-Cholestane	69.9		4.14
bb28R	S22	14b,17b-20R-Methylcholestane	103		4.14
bb28S	S23	14b,17b-20S-Methylcholestane	102		4.14
bb29R	S26	14b(H),17b(H)-20R-Ethylcholestane	71.4		4.14
bb29S	S27	14b(H),17b(H)-20S-Ethylcholestane	50.7		4.14
RC26/SC27TA	RC26/SC27TA	C26,20R- +C27,20S- triaromatic steroid	329		4.14
SC28TA	SC28TA	C28,20S-triaromatic steroid	121		4.14
RC27TA	RC27TA	C27,20R-triaromatic steroid	187		4.14
RC28TA	RC28TA	C28,20R-triaromatic steroid	101		4.14

Surrogates (% Recovery)	
Naphthalene-d8	75
Phenanthrene-d10	97
Benzo[a]pyrene-d12	99
5B(H)Cholane	N/A

U: The analyte was analyzed for but not detected at the sample specific level reported.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
E: Estimated value, exceeds the upper limit of calibration.
NA: Not Applicable
D: Secondary Dilution Performed
D1: Tertiary Dilution Performed
ª: Value outside of QC Limits.
§: Surrogate value outside of acceptable range.
X: It is not possible to calculate RPD, one result is below the detection limit, the other is above reporting limit.
G: Matrix Interference.
P: Greater than 40% RPD between the two columns, the higher value is reported according to the method.
I: Due to interference, the lower value is reported.
N: Spike recovery outside control limits.
E: Estimated due to Interference. (Metals)
¤: Duplicate outside control limits.
P: Spike compound. (Metals)
J: Below CRDL, Project DL, or RL but greater than or equal to MDL
C: Sample concentration is > 4 times the spike level, recovery limits do not apply. (Metals)
S: Spike Compound. (Organics)
§: RPD criteria not applicable to results less than 5 times the reporting limit. (Metals)
T: Tentatively identified corexit compound.
C: Co-elution.
Z: Result not surrogate corrected.

Project Name: FORMER XOM JALK FEE PROPERTY
Project Number: CARDNO ERI

Client ID	Laboratory Method Bl
Lab ID	WG557459-3
Matrix	SOIL
Matrix Description	
Reference Method	8260C
Batch ID	WG557459
Date Collected	NA
Date Received	8/28/2012
Date Prepped	8/27/2012
Date Analyzed	8/27/2012
Sample Size(wet)	15 g
% Solid	100
File ID	0827A04.D
Units	ug/kg
Final Volume	0.1
Dilution	1
Reporting Limit	50

Class	Abbrev	Analytes	Result		SSRL
C	DCM	METHYLENE CHLORIDE		U	500
C	11DCA	1,1-DICHLOROETHANE		U	75
C	CF	CHLOROFORM		U	75
C	CT	CARBON TETRACHLORIDE		U	50
C	12DCP	1,2-DICHLOROPROPANE		U	180
B	DBCM	DIBROMOCHLOROMETHANE		U	50
C	112TCA	1,1,2-TRICHLOROETHANE		U	75
C	PCE	TETRACHLOROETHENE		U	50
C	CB	CHLOROBENZENE		U	50
F	TCTFM	TRICHLOROFLUOROMETHANE		U	250
ADD	12DCA	1,2-DICHLOROETHANE		U	50
C	111TCA	1,1,1-TRICHLOROETHANE		U	50
B	BDCM	BROMODICHLOROMETHANE		U	50
C	T13DCP	TRANS-1,3-DICHLOROPROPENE		U	50
C	C13DCP	CIS-1,3-DICHLOROPROPENE		U	50
B	BF	BROMOFORM		U	200
C	1122PCA	1,1,2,2-TETRACHLOROETHANE		U	50
A	B	BENZENE		U	50
A	T	TOLUENE		U	75
A	EB	ETHYLBENZENE		U	50
B	BM	BROMOMETHANE		U	100
C	VC	VINYL CHLORIDE		U	100
C	CE	CHLOROETHANE		U	100
C	11DCE	1,1-DICHLOROETHENE		U	50
C	T12DCE	TRANS-1,2-DICHLOROETHENE		U	75
C	TCE	TRICHLOROETHENE		U	50
C	12DCB	1,2-DICHLOROBENZENE		U	250
C	13DCB	1,3-DICHLOROBENZENE		U	250
C	14DCB	1,4-DICHLOROBENZENE		U	250
OX	MTBE	METHYL TERT BUTYL ETHER		U	100
A	MPX	P/M-XYLENE		U	100
A	OX	O-XYLENE		U	100
C	C12DCE	CIS-1,2-DICHLOROETHENE		U	50
C	123TCP	1,2,3-TRICHLOROPROPANE		U	500
A	STY	STYRENE		U	100
F	DCFM	DICHLORODIFLUOROMETHANE		U	500
O	ACE	ACETONE		U	1800
O	MEK	2-BUTANONE		U	500
O	MIBK	4-METHYL-2-PENTANONE		U	500
O	THF	TETRAHYDROFURAN		U	1000
ADD	12DBE	1,2-DIBROMOETHANE		U	200
C	1112PCA	1,1,1,2-TETRACHLOROETHANE		U	50
A	BUTB	N-BUTYLBENZENE		U	50
A	TBB	TERT-BUTYLBENZENE		U	250
C	2CT	O-CHLOROTOLUENE		U	250
C	HCB	HEXACHLOROBUTADIENE		U	250
A	IPB	ISOPROPYLBENZENE		U	50
		P-ISOPROPYLTOLUENE		U	50
2	N0	NAPHTHALENE		U	250
A	PROPB	N-PROPYLBENZENE		U	50
C	124TCB	1,2,4-TRICHLOROBENZENE		U	250
A	135TMB	1,3,5-TRIMETHYLBENZENE		U	250
A	124TMB	1,2,4-TRIMETHYLBENZENE		U	250
O	DIE	ETHYL ETHER		U	250

Surrogates (% Recovery)	
1,2-DICHLOROETHANE-D4	100
TOLUENE-D8	98
4-BROMOFLUOROBENZENE	98
DIBROMOFLUOROMETHANE	102

Project Name: FORMER XOM JALK FEE PROPERTY
Project Number: CARDNO ERI

Client ID	Laboratory Control S
Lab ID	WG557459-1
Matrix	SOIL
Matrix Description	
Reference Method	8260C
Batch ID	WG557459
Date Collected	NA
Date Received	8/28/2012
Date Prepped	8/27/2012
Date Analyzed	8/27/2012
Sample Size(wet)	15 g
% Solid	100
File ID	0827A02.D
Units	%
Final Volume	0.1
Dilution	1
Reporting Limit	50

Class	Abbrev	Analytes	Result	SSRL	% REC	Spike Conc.	Lower Limit	Upper Limit
C	DCM	METHYLENE CHLORIDE	1110	500	111	1000	70	130
C	11DCA	1,1-DICHLOROETHANE	1000	75	100	1000	70	130
C	CF	CHLOROFORM	1020	75	102	1000	70	130
C	CT	CARBON TETRACHLORIDE	1010	50	101	1000	70	130
C	12DCP	1,2-DICHLOROPROPANE	1010	180	101	1000	70	130
B	DBCM	DIBROMOCHLOROMETHANE	995	50	100	1000	70	130
C	112TCA	1,1,2-TRICHLOROETHANE	1030	75	103	1000	70	130
C	PCE	TETRACHLOROETHENE	991	50	99	1000	70	130
C	CB	CHLOROBENZENE	996	50	100	1000	70	130
F	TCTFM	TRICHLOROFLUOROMETHANE	1080	250	108	1000	70	139
ADD	12DCA	1,2-DICHLOROETHANE	1000	50	100	1000	70	130
C	111TCA	1,1,1-TRICHLOROETHANE	983	50	98	1000	70	130
B	BDCM	BROMODICHLOROMETHANE	994	50	99	1000	70	130
C	T13DCP	TRANS-1,3-DICHLOROPROPENE	994	50	99	1000	70	130
C	C13DCP	CIS-1,3-DICHLOROPROPENE	1000	50	100	1000	70	130
C	11DCP	1,1-DICHLOROPROPENE	986	250	99	1000	70	130
B	BF	BROMOFORM	990	200	99	1000	70	130
C	1122PCA	1,1,2,2-TETRACHLOROETHANE	986	50	99	1000	70	130
A	B	BENZENE	997	50	100	1000	70	130
A	T	TOLUENE	957	75	96	1000	70	130
A	EB	ETHYLBENZENE	993	50	99	1000	70	130
C	CM	CHLOROMETHANE	1030	250	103	1000	52	130
B	BM	BROMOMETHANE	1180	100	118	1000	57	147
C	VC	VINYL CHLORIDE	1060	100	106	1000	67	130
C	CE	CHLOROETHANE	1080	100	108	1000	50	151
C	11DCE	1,1-DICHLOROETHENE	995	50	100	1000	65	135
C	T12DCE	TRANS-1,2-DICHLOROETHENE	998	75	100	1000	70	130
C	TCE	TRICHLOROETHENE	995	50	100	1000	70	130
C	12DCB	1,2-DICHLOROBENZENE	998	250	100	1000	70	130
C	13DCB	1,3-DICHLOROBENZENE	999	250	100	1000	70	130
C	14DCB	1,4-DICHLOROBENZENE	991	250	99	1000	70	130
OX	MTBE	METHYL TERT BUTYL ETHER	996	100	100	1000	66	130
A	MPX	P/M-XYLENE	2010	100	100	2000	70	130
A	OX	O-XYLENE	2040	100	102	2000	70	130
C	C12DCE	CIS-1,2-DICHLOROETHENE	1010	50	101	1000	70	130
B	DBM	DIBROMOMETHANE	1040	500	104	1000	70	130
C	14DC	1,4-DICHLOROBUTANE	988	500	99	1000	70	130
C	123TCP	1,2,3-TRICHLOROPROPANE	889	500	89	1000	68	130
A	STY	STYRENE	2080	100	104	2000	70	130
F	DCFM	DICHLORODIFLUOROMETHANE	1140	500	114	1000	30	146
O	ACE	ACETONE	1070	1800	107	1000	54	140
S	CD	CARBON DISULFIDE	991	500	99	1000	59	130
O	MEK	2-BUTANONE	1110	500	111	1000	70	130
O	VA	VINYL ACETATE	1040	500	104	1000	70	130
O	MIBK	4-METHYL-2-PENTANONE	931	500	93	1000	70	130
O	MBK	2-HEXANONE	978	500	98	1000	70	130
		ETHYL METHACRYLATE	882	500	88	1000	70	130
		ACRYLONITRILE	1060	200	106	1000	70	130
B	BCM	BROMOCHLOROMETHANE	1020	250	102	1000	70	130
O	THF	TETRAHYDROFURAN	1040	1000	104	1000	66	130
C	22DCP	2,2-DICHLOROPROPANE	996	250	100	1000	70	130
ADD	12DBE	1,2-DIBROMOETHANE	982	200	98	1000	70	130
C	13DCP	1,3-DICHLOROPROPANE	999	250	100	1000	69	130
C	1112PCA	1,1,1,2-TETRACHLOROETHANE	988	50	99	1000	70	130
B	BB	BROMOBENZENE	981	250	98	1000	70	130
A	BUTB	N-BUTYLBENZENE	1020	50	102	1000	70	130
A	SECBUT	SEC-BUTYLBENZENE	994	50	99	1000	70	130
A	TBB	TERT-BUTYLBENZENE	986	250	99	1000	70	130
C	2CT	O-CHLOROTOLUENE	996	250	100	1000	70	130
C	4CT	P-CHLOROTOLUENE	988	250	99	1000	70	130
B	12DB3CP	1,2-DIBROMO-3-CHLOROPROPANE	1000	250	100	1000	68	130
C	HCB	HEXACHLOROBUTADIENE	978	250	98	1000	67	130
A	IPB	ISOPROPYLBENZENE	979	50	98	1000	70	130
		P-ISOPROPYLTOLUENE	1000	50	100	1000	70	130
2	N0	NAPHTHALENE	947	250	95	1000	70	130
A	PROPB	N-PROPYLBENZENE	986	50	99	1000	70	130
C	123TCB	1,2,3-TRICHLOROBENZENE	968	250	97	1000	70	130
C	124TCB	1,2,4-TRICHLOROBENZENE	979	250	98	1000	70	130
A	135TMB	1,3,5-TRIMETHYLBENZENE	1000	250	100	1000	70	130
A	124TMB	1,2,4-TRIMETHYLBENZENE	1010	250	101	1000	70	130
		TRANS-1,4-DICHLORO-2-BUTENE	992	250	99	1000	70	130
O	DIE	ETHYL ETHER	1010	250	101	1000	67	130

Surrogates (% Recovery)	
1,2-DICHLOROETHANE-D4	98
TOLUENE-D8	101
4-BROMOFLUOROBENZENE	97
DIBROMOFLUOROMETHANE	100

Project Name: FORMER XOM JALK FEE PROPERTY
Project Number: CARDNO ERI

Client ID	LCS Duplicate
Lab ID	WG557459-2
Matrix	SOIL
Matrix Description	
Reference Method	8260C
Batch ID	WG557459
Date Collected	NA
Date Received	8/28/2012
Date Prepped	8/27/2012
Date Analyzed	8/27/2012
Sample Size(wet)	15 g
% Solid	100
File ID	0827A01.D
Units	%
Final Volume	0.1
Dilution	1
Reporting Limit	50

Class	Abbrev	Analytes	Result	SSRL	% REC	Spike Conc.	Lower Limit	Upper Limit	RPD	RPD Limit
C	DCM	METHYLENE CHLORIDE	1110	500	111	1000	70	130	0	30
C	11DCA	1,1-DICHLOROETHANE	1020	75	102	1000	70	130	2	30
C	CF	CHLOROFORM	1020	75	102	1000	70	130	0	30
C	CT	CARBON TETRACHLORIDE	1060	50	106	1000	70	130	5	30
C	12DCP	1,2-DICHLOROPROPANE	1010	180	101	1000	70	130	0	30
B	DBCM	DIBROMOCHLOROMETHANE	990	50	99	1000	70	130	1	30
C	112TCA	1,1,2-TRICHLOROETHANE	1010	75	101	1000	70	130	2	30
C	PCE	TETRACHLOROETHENE	1030	50	103	1000	70	130	4	30
C	CB	CHLOROBENZENE	1020	50	102	1000	70	130	2	30
F	TCTFM	TRICHLOROFLUOROMETHANE	1160	250	116	1000	70	139	7	30
ADD	12DCA	1,2-DICHLOROETHANE	990	50	99	1000	70	130	1	30
C	111TCA	1,1,1-TRICHLOROETHANE	1020	50	102	1000	70	130	4	30
B	BDCM	BROMODICHLOROMETHANE	1010	50	101	1000	70	130	2	30
C	T13DCP	TRANS-1,3-DICHLOROPROPENE	992	50	99	1000	70	130	0	30
C	C13DCP	CIS-1,3-DICHLOROPROPENE	1000	50	100	1000	70	130	0	30
C	11DCP	1,1-DICHLOROPROPENE	1030	250	103	1000	70	130	4	30
B	BF	BROMOFORM	983	200	98	1000	70	130	1	30
C	1122PCA	1,1,2,2-TETRACHLOROETHANE	973	50	97	1000	70	130	2	30
A	B	BENZENE	1020	50	102	1000	70	130	2	30
A	T	TOLUENE	994	75	99	1000	70	130	3	30
A	EB	ETHYLBENZENE	1010	50	101	1000	70	130	2	30
C	CM	CHLOROMETHANE	1070	250	107	1000	52	130	4	30
B	BM	BROMOMETHANE	1310	100	131	1000	57	147	10	30
C	VC	VINYL CHLORIDE	1100	100	110	1000	67	130	4	30
C	CE	CHLOROETHANE	1120	100	112	1000	50	151	4	30
C	11DCE	1,1-DICHLOROETHENE	1050	50	105	1000	65	135	5	30
C	T12DCE	TRANS-1,2-DICHLOROETHENE	1020	75	102	1000	70	130	2	30
C	TCE	TRICHLOROETHENE	1030	50	103	1000	70	130	3	30
C	12DCB	1,2-DICHLOROBENZENE	1000	250	100	1000	70	130	0	30
C	13DCB	1,3-DICHLOROBENZENE	1010	250	101	1000	70	130	1	30
C	14DCB	1,4-DICHLOROBENZENE	1000	250	100	1000	70	130	1	30
OX	MTBE	METHYL TERT BUTYL ETHER	978	100	98	1000	66	130	2	30
A	MPX	P/M-XYLENE	2060	100	103	2000	70	130	3	30
A	OX	O-XYLENE	2080	100	104	2000	70	130	2	30
C	C12DCE	CIS-1,2-DICHLOROETHENE	1030	50	103	1000	70	130	2	30
B	DBM	DIBROMOMETHANE	1030	500	103	1000	70	130	1	30
C	14DC	1,4-DICHLOROBUTANE	979	500	98	1000	70	130	1	30
C	123TCP	1,2,3-TRICHLOROPROPANE	905	500	90	1000	68	130	1	30
A	STY	STYRENE	2100	100	105	2000	70	130	1	30
F	DCFM	DICHLORODIFLUOROMETHANE	1220	500	122	1000	30	146	7	30
O	ACE	ACETONE	1170	1800	117	1000	54	140	9	30
S	CD	CARBON DISULFIDE	1040	500	104	1000	59	130	5	30
O	MEK	2-BUTANONE	1160	500	116	1000	70	130	4	30
O	VA	VINYL ACETATE	1040	500	104	1000	70	130	0	30
O	MIBK	4-METHYL-2-PENTANONE	915	500	92	1000	70	130	1	30
O	MBK	2-HEXANONE	974	500	97	1000	70	130	1	30
		ETHYL METHACRYLATE	874	500	87	1000	70	130	1	30
		ACRYLONITRILE	1020	200	102	1000	70	130	4	30
B	BCM	BROMOCHLOROMETHANE	1060	250	106	1000	70	130	4	30
O	THF	TETRAHYDROFURAN	999	1000	100	1000	66	130	4	30
C	22DCP	2,2-DICHLOROPROPANE	1030	250	103	1000	70	130	3	30
ADD	12DBE	1,2-DIBROMOETHANE	968	200	97	1000	70	130	1	30
C	13DCP	1,3-DICHLOROPROPANE	987	250	99	1000	69	130	1	30
C	1112PCA	1,1,1,2-TETRACHLOROETHANE	1010	50	101	1000	70	130	2	30
B	BB	BROMOBENZENE	986	250	99	1000	70	130	1	30
A	BUTB	N-BUTYLBENZENE	1060	50	106	1000	70	130	4	30
A	SECBUT	SEC-BUTYLBENZENE	1030	50	103	1000	70	130	4	30
A	TBB	TERT-BUTYLBENZENE	1030	250	103	1000	70	130	4	30
C	2CT	O-CHLOROTOLUENE	1020	250	102	1000	70	130	2	30
C	4CT	P-CHLOROTOLUENE	1000	250	100	1000	70	130	1	30
B	12DB3CP	1,2-DIBROMO-3-CHLOROPROPANE	969	250	97	1000	68	130	3	30
C	HCB	HEXACHLOROBUTADIENE	1000	250	100	1000	67	130	2	30
A	IPB	ISOPROPYLBENZENE	1010	50	101	1000	70	130	3	30
		P-ISOPROPYLTOLUENE	1040	50	104	1000	70	130	4	30
2	N0	NAPHTHALENE	937	250	94	1000	70	130	1	30
A	PROPB	N-PROPYLBENZENE	1020	50	102	1000	70	130	3	30
C	123TCB	1,2,3-TRICHLOROBENZENE	964	250	96	1000	70	130	1	30
C	124TCB	1,2,4-TRICHLOROBENZENE	979	250	98	1000	70	130	0	30
A	135TMB	1,3,5-TRIMETHYLBENZENE	1030	250	103	1000	70	130	3	30
A	124TMB	1,2,4-TRIMETHYLBENZENE	1030	250	103	1000	70	130	2	30
		TRANS-1,4-DICHLORO-2-BUTENE	999	250	100	1000	70	130	1	30
O	DIE	ETHYL ETHER	1000	250	100	1000	67	130	1	30

Surrogates (% Recovery)	
1,2-DICHLOROETHANE-D4	96
TOLUENE-D8	100
4-BROMOFLUOROBENZENE	99
DIBROMOFLUOROMETHANE	100

Project Name: FORMER XOM JALK FEE PROPERTY
Project Number: CARDNO ERI

Client ID	S-15-B10		S-80-B10	
Lab ID	L1214919-01		L1214919-02	
Matrix	SOIL		SOIL	
Matrix Description				
Reference Method	8260C		8260C	
Batch ID	WG557459		WG557459	
Date Collected	8/13/2012		8/14/2012	
Date Received	8/21/2012		8/21/2012	
Date Prepped	8/27/2012		8/27/2012	
Date Analyzed	8/27/2012		8/27/2012	
Sample Size(wet)	15.5	g	15.6	g
% Solid	80.6		96.8	
File ID	0827A08.D		0827A09.D	
Units	ug/kg		ug/kg	
Final Volume	0.1		0.1	
Dilution	1		1	
Reporting Limit	72		51	

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL
C	DCM	METHYLENE CHLORIDE	430	J	720	360	J	510
C	11DCA	1,1-DICHLOROETHANE		U	110		U	77
C	CF	CHLOROFORM		U	110		U	77
C	CT	CARBON TETRACHLORIDE		U	72		U	51
C	12DCP	1,2-DICHLOROPROPANE		U	250		U	180
B	DBCM	DIBROMOCHLOROMETHANE		U	72		U	51
C	112TCA	1,1,2-TRICHLOROETHANE		U	110		U	77
C	PCE	TETRACHLOROETHENE		U	72		U	51
C	CB	CHLOROBENZENE		U	72		U	51
F	TCTFM	TRICHLOROFLUOROMETHANE		U	360		U	260
ADD	12DCA	1,2-DICHLOROETHANE		U	72		U	51
C	111TCA	1,1,1-TRICHLOROETHANE		U	72		U	51
B	BDCM	BROMODICHLOROMETHANE		U	72		U	51
C	T13DCP	TRANS-1,3-DICHLOROPROPENE		U	72		U	51
C	C13DCP	CIS-1,3-DICHLOROPROPENE		U	72		U	51
B	BF	BROMOFORM		U	290		U	200
C	1122PCA	1,1,2,2-TETRACHLOROETHANE		U	72		U	51
A	B	BENZENE		U	72		U	51
A	T	TOLUENE		U	110		U	77
A	EB	ETHYLBENZENE		U	72		U	51
B	BM	BROMOMETHANE		U	140		U	100
C	VC	VINYL CHLORIDE		U	140		U	100
C	CE	CHLOROETHANE		U	140		U	100
C	11DCE	1,1-DICHLOROETHENE		U	72		U	51
C	T12DCE	TRANS-1,2-DICHLOROETHENE		U	110		U	77
C	TCE	TRICHLOROETHENE	120		72		U	51
C	12DCB	1,2-DICHLOROBENZENE		U	360		U	260
C	13DCB	1,3-DICHLOROBENZENE		U	360		U	260
C	14DCB	1,4-DICHLOROBENZENE		U	360		U	260
OX	MTBE	METHYL TERT BUTYL ETHER		U	140		U	100
A	MPX	P/M-XYLENE		U	140		U	100
A	OX	O-XYLENE		U	140		U	100
C	C12DCE	CIS-1,2-DICHLOROETHENE	380		72		U	51
C	123TCP	1,2,3-TRICHLOROPROPANE		U	720		U	510
A	STY	STYRENE		U	140		U	100
F	DCFM	DICHLORODIFLUOROMETHANE		U	720		U	510
O	ACE	ACETONE	320	J	2600	170	J	1800
O	MEK	2-BUTANONE		U	720		U	510
O	MIBK	4-METHYL-2-PENTANONE		U	720		U	510
O	THF	TETRAHYDROFURAN		U	1400		U	1000
ADD	12DBE	1,2-DIBROMOETHANE		U	290		U	200
C	1112PCA	1,1,1,2-TETRACHLOROETHANE		U	72		U	51
A	BUTB	N-BUTYLBENZENE		U	72	72		51
A	TBB	TERT-BUTYLBENZENE	62	J	360		U	260
C	2CT	O-CHLOROTOLUENE		U	360		U	260
C	HCB	HEXACHLOROBUTADIENE		U	360		U	260
A	IPB	ISOPROPYLBENZENE	75		72	47	J	51
		P-ISOPROPYLTOLUENE		U	72		U	51
2	N0	NAPHTHALENE		U	360		U	260
A	PROPB	N-PROPYLBENZENE		U	72	110		51
C	124TCB	1,2,4-TRICHLOROBENZENE		U	360		U	260
A	135TMB	1,3,5-TRIMETHYLBENZENE		U	360		U	260
A	124TMB	1,2,4-TRIMETHYLBENZENE		U	360		U	260
O	DIE	ETHYL ETHER		U	360		U	260

Surrogates (% Recovery)			
1,2-DICHLOROETHANE-D4	95		93
TOLUENE-D8	112		100
4-BROMOFLUOROBENZENE	158	Q	117
DIBROMOFLUOROMETHANE	96		96

List of Potential Qualifiers

A: Spectra identified as "Aldol Condensation Product".

B: The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit.

C: Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D: Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E: Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G: The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H: The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I: The RPD between the results for the two columns exceeds the method-specified criteria; however, the lower value has been reported due to obvious interference.

J: Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL). This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M: Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND: Not detected at the method detection limit (MDL) for the sample.

NJ: Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P: The RPD between the results for the two columns exceeds the method-specified criteria.

Q: The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R: Analytical results are from sample re-analysis.

RE: Analytical results are from sample re-extraction.

U: Not detected at the reported detection limit for the sample.

Project Name: FORMER XOM JALK FEE PROPERTY
Project Number: CARDNO ERI

Client ID	Laboratory Method Bl	
Lab ID	WG557459-6	
Matrix	SOIL	
Matrix Description		
Reference Method	8260C	
Batch ID	WG557459	
Date Collected	NA	
Date Received	8/29/2012	
Date Prepped	8/28/2012	
Date Analyzed	8/28/2012	
Sample Size(wet)	15	g
% Solid	100	
File ID	0828A03.D	
Units	ug/kg	
Final Volume	0.1	
Dilution	1	
Reporting Limit	50	

Class	Abbrev	Analytes	Result		SSRL
C	DCM	METHYLENE CHLORIDE		U	500
C	11DCA	1,1-DICHLOROETHANE		U	75
C	CF	CHLOROFORM		U	75
C	CT	CARBON TETRACHLORIDE		U	50
C	12DCP	1,2-DICHLOROPROPANE		U	180
B	DBCM	DIBROMOCHLOROMETHANE		U	50
C	112TCA	1,1,2-TRICHLOROETHANE		U	75
C	PCE	TETRACHLOROETHENE		U	50
C	CB	CHLOROBENZENE		U	50
F	TCTFM	TRICHLOROFLUOROMETHANE		U	250
ADD	12DCA	1,2-DICHLOROETHANE		U	50
C	111TCA	1,1,1-TRICHLOROETHANE		U	50
B	BDCM	BROMODICHLOROMETHANE		U	50
C	T13DCP	TRANS-1,3-DICHLOROPROPENE		U	50
C	C13DCP	CIS-1,3-DICHLOROPROPENE		U	50
B	BF	BROMOFORM		U	200
C	1122PCA	1,1,2,2-TETRACHLOROETHANE		U	50
A	B	BENZENE		U	50
A	T	TOLUENE		U	75
A	EB	ETHYLBENZENE		U	50
B	BM	BROMOMETHANE		U	100
C	VC	VINYL CHLORIDE		U	100
C	CE	CHLOROETHANE		U	100
C	11DCE	1,1-DICHLOROETHENE		U	50
C	T12DCE	TRANS-1,2-DICHLOROETHENE		U	75
C	TCE	TRICHLOROETHENE		U	50
C	12DCB	1,2-DICHLOROBENZENE		U	250
C	13DCB	1,3-DICHLOROBENZENE		U	250
C	14DCB	1,4-DICHLOROBENZENE		U	250
OX	MTBE	METHYL TERT BUTYL ETHER		U	100
A	MPX	P/M-XYLENE		U	100
A	OX	O-XYLENE		U	100
C	C12DCE	CIS-1,2-DICHLOROETHENE		U	50
C	123TCP	1,2,3-TRICHLOROPROPANE		U	500
A	STY	STYRENE		U	100
F	DCFM	DICHLORODIFLUOROMETHANE		U	500
O	ACE	ACETONE		U	1800
O	MEK	2-BUTANONE		U	500
O	MIBK	4-METHYL-2-PENTANONE		U	500
O	THF	TETRAHYDROFURAN		U	1000
ADD	12DBE	1,2-DIBROMOETHANE		U	200
C	1112PCA	1,1,1,2-TETRACHLOROETHANE		U	50
A	BUTB	N-BUTYLBENZENE		U	50
A	TBB	TERT-BUTYLBENZENE		U	250
C	2CT	O-CHLOROTOLUENE		U	250
C	HCB	HEXACHLOROBUTADIENE		U	250
A	IPB	ISOPROPYLBENZENE		U	50
		P-ISOPROPYLTOLUENE		U	50
2	N0	NAPHTHALENE		U	250
A	PROPB	N-PROPYLBENZENE		U	50
C	124TCB	1,2,4-TRICHLOROBENZENE		U	250
A	135TMB	1,3,5-TRIMETHYLBENZENE		U	250
A	124TMB	1,2,4-TRIMETHYLBENZENE		U	250
O	DIE	ETHYL ETHER		U	250

Surrogates (% Recovery)	
1,2-DICHLOROETHANE-D4	107
TOLUENE-D8	89
4-BROMOFLUOROBENZENE	81
DIBROMOFLUOROMETHANE	94

Project Name: FORMER XOM JALK FEE PROPERTY
Project Number: CARDNO ERI

Client ID	Laboratory Control S
Lab ID	WG557459-4
Matrix	SOIL
Matrix Description	
Reference Method	8260C
Batch ID	WG557459
Date Collected	NA
Date Received	8/29/2012
Date Prepped	8/28/2012
Date Analyzed	8/28/2012
Sample Size(wet)	15 g
% Solid	100
File ID	0828A01.D
Units	%
Final Volume	0.1
Dilution	1
Reporting Limit	50

Class	Abbrev	Analytes	Result	SSRL	% REC	Spike Conc.	Lower Limit	Upper Limit
C	DCM	METHYLENE CHLORIDE	785	500	78	1000	70	130
C	11DCA	1,1-DICHLOROETHANE	885	75	88	1000	70	130
C	CF	CHLOROFORM	968	75	97	1000	70	130
C	CT	CARBON TETRACHLORIDE	1260	50	126	1000	70	130
C	12DCP	1,2-DICHLOROPROPANE	792	180	79	1000	70	130
B	DBCM	DIBROMOCHLOROMETHANE	1060	50	106	1000	70	130
C	112TCA	1,1,2-TRICHLOROETHANE	922	75	92	1000	70	130
C	2CEVE	2-CHLOROETHYLVINYL ETHER	1140	1000	114	1000	70	130
C	PCE	TETRACHLOROETHENE	1040	50	104	1000	70	130
C	CB	CHLOROBENZENE	917	50	92	1000	70	130
F	TCTFM	TRICHLOROFLUOROMETHANE	1020	250	102	1000	70	139
ADD	12DCA	1,2-DICHLOROETHANE	1060	50	106	1000	70	130
C	111TCA	1,1,1-TRICHLOROETHANE	997	50	100	1000	70	130
B	BDCM	BROMODICHLOROMETHANE	987	50	99	1000	70	130
C	T13DCP	TRANS-1,3-DICHLOROPROPENE	847	50	85	1000	70	130
C	C13DCP	CIS-1,3-DICHLOROPROPENE	849	50	85	1000	70	130
C	11DCP	1,1-DICHLOROPROPENE	954	250	95	1000	70	130
B	BF	BROMOFORM	1030	200	103	1000	70	130
C	1122PCA	1,1,2,2-TETRACHLOROETHANE	843	50	84	1000	70	130
A	B	BENZENE	868	50	87	1000	70	130
A	T	TOLUENE	901	75	90	1000	70	130
A	EB	ETHYLBENZENE	921	50	92	1000	70	130
C	CM	CHLOROMETHANE	844	250	84	1000	52	130
B	BM	BROMOMETHANE	877	100	88	1000	57	147
C	VC	VINYL CHLORIDE	999	100	100	1000	67	130
C	CE	CHLOROETHANE	838	100	84	1000	50	151
C	11DCE	1,1-DICHLOROETHENE	884	50	88	1000	65	135
C	T12DCE	TRANS-1,2-DICHLOROETHENE	916	75	92	1000	70	130
C	TCE	TRICHLOROETHENE	945	50	94	1000	70	130
C	12DCB	1,2-DICHLOROBENZENE	897	250	90	1000	70	130
C	13DCB	1,3-DICHLOROBENZENE	915	250	92	1000	70	130
C	14DCB	1,4-DICHLOROBENZENE	886	250	89	1000	70	130
OX	MTBE	METHYL TERT BUTYL ETHER	856	100	86	1000	66	130
A	MPX	P/M-XYLENE	1810	100	90	2000	70	130
A	OX	O-XYLENE	1820	100	91	2000	70	130
C	C12DCE	CIS-1,2-DICHLOROETHENE	914	50	91	1000	70	130
B	DBM	DIBROMOMETHANE	982	500	98	1000	70	130
C	14DC	1,4-DICHLOROBUTANE	814	500	81	1000	70	130
C	123TCP	1,2,3-TRICHLOROPROPANE	905	500	90	1000	68	130
A	STY	STYRENE	1810	100	90	2000	70	130
F	DCFM	DICHLORODIFLUOROMETHANE	746	500	75	1000	30	146
O	ACE	ACETONE	888	1800	89	1000	54	140
S	CD	CARBON DISULFIDE	744	500	74	1000	59	130
O	MEK	2-BUTANONE	852	500	85	1000	70	130
O	VA	VINYL ACETATE	852	500	85	1000	70	130
O	MIBK	4-METHYL-2-PENTANONE	779	500	78	1000	70	130
O	MBK	2-HEXANONE	881	500	88	1000	70	130
		ETHYL METHACRYLATE	870	500	87	1000	70	130
O	ACR	ACROLEIN	827	1200	83	1000		
		ACRYLONITRILE	853	200	85	1000	70	130
B	BCM	BROMOCHLOROMETHANE	916	250	92	1000	70	130
O	THF	TETRAHYDROFURAN	872	1000	87	1000	66	130
C	22DCP	2,2-DICHLOROPROPANE	883	250	88	1000	70	130
ADD	12DBE	1,2-DIBROMOETHANE	1060	200	106	1000	70	130
C	13DCP	1,3-DICHLOROPROPANE	923	250	92	1000	69	130
C	1112PCA	1,1,1,2-TETRACHLOROETHANE	1050	50	105	1000	70	130
B	BB	BROMOBENZENE	922	250	92	1000	70	130
A	BUTB	N-BUTYLBENZENE	965	50	96	1000	70	130
A	SECBUT	SEC-BUTYLBENZENE	918	50	92	1000	70	130
A	TBB	TERT-BUTYLBENZENE	943	250	94	1000	70	130
		TRICHLOROBENZENE	991	200	99	1000	70	139
C	2CT	O-CHLOROTOLUENE	908	250	91	1000	70	130
C	4CT	P-CHLOROTOLUENE	897	250	90	1000	70	130
B	12DB3CP	1,2-DIBROMO-3-CHLOROPROPANE	959	250	96	1000	68	130
C	HCB	HEXACHLOROBUTADIENE	1030	250	103	1000	67	130
A	IPB	ISOPROPYLBENZENE	940	50	94	1000	70	130
		P-ISOPROPYLTOLUENE	949	50	95	1000	70	130
2	N0	NAPHTHALENE	867	250	87	1000	70	130
A	PROPB	N-PROPYLBENZENE	912	50	91	1000	70	130
C	123TCB	1,2,3-TRICHLOROBENZENE	938	250	94	1000	70	130
C	124TCB	1,2,4-TRICHLOROBENZENE	955	250	96	1000	70	130
A	135TMB	1,3,5-TRIMETHYLBENZENE	944	250	94	1000	70	130
A	124TMB	1,2,4-TRIMETHYLBENZENE	934	250	93	1000	70	130
		TRANS-1,4-DICHLORO-2-BUTENE	938	250	94	1000	70	130
O	DIE	ETHYL ETHER	830	250	83	1000	67	130
		METHYL ACETATE	910	1000	91	1000	65	130
		ETHYL ACETATE	981	1000	98	1000	70	130
N	CH	CYCLOHEXANE	834	1000	83	1000	70	130
ADD	TBA	TERT-BUTYL ALCOHOL	4200	5000	84	5000	70	130
OX	ETBE	ETHYL-TERT-BUTYL-ETHER	772	200	77	1000	70	130
O	TAME	TERTIARY-AMYL METHYL ETHER	742	200	74	1000	70	130
O	14D	1,4-DIOXANE	42400	5000	85	50000	65	136
N	MCYH	METHYL CYCLOHEXANE	868	200	87	1000	70	130
F	F113	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	970	1000	97	1000	70	130
		1,4-DIETHYLBENZENE	989	200	99	1000	70	130
		4-ETHYLTOLUENE	963	200	96	1000	70	130
A	1245TMP	1,2,4,5-TETRAMETHYLBENZENE	950	200	95	1000	70	130

Surrogates (% Recovery)	
1,2-DICHLOROETHANE-D4	115
TOLUENE-D8	90
4-BROMOFLUOROBENZENE	85
DIBROMOFLUOROMETHANE	98

Project Name: FORMER XOM JALK FEE PROPERTY
Project Number: CARDNO ERI

Client ID	LCS Duplicate
Lab ID	WG557459-5
Matrix	SOIL
Matrix Description	
Reference Method	8260C
Batch ID	WG557459
Date Collected	NA
Date Received	8/29/2012
Date Prepped	8/28/2012
Date Analyzed	8/28/2012
Sample Size(wet)	15 g
% Solid	100
File ID	0828A02.D
Units	%
Final Volume	0.1
Dilution	1
Reporting Limit	50

Class	Abbrev	Analytes	Result	SSRL	% REC	Spike Conc.	Lower Limit	Upper Limit		RPD	RPD Limit
C	DCM	METHYLENE CHLORIDE	711	500	71	1000	70	130		9	30
C	11DCA	1,1-DICHLOROETHANE	798	75	80	1000	70	130		10	30
C	CF	CHLOROFORM	876	75	88	1000	70	130		10	30
C	CT	CARBON TETRACHLORIDE	1080	50	108	1000	70	130		15	30
C	12DCP	1,2-DICHLOROPROPANE	722	180	72	1000	70	130		9	30
B	DBCM	DIBROMOCHLOROMETHANE	955	50	96	1000	70	130		10	30
C	112TCA	1,1,2-TRICHLOROETHANE	846	75	85	1000	70	130		8	30
C	2CEVE	2-CHLOROETHYLVINYL ETHER	1000	1000	100	1000	70	130		13	30
C	PCE	TETRACHLOROETHENE	946	50	95	1000	70	130		9	30
C	CB	CHLOROBENZENE	844	50	84	1000	70	130		9	30
F	TCTFM	TRICHLOROFLUOROMETHANE	844	250	84	1000	70	139		19	30
ADD	12DCA	1,2-DICHLOROETHANE	943	50	94	1000	70	130		12	30
C	111TCA	1,1,1-TRICHLOROETHANE	874	50	87	1000	70	130		14	30
B	BDCM	BROMODICHLOROMETHANE	894	50	89	1000	70	130		11	30
C	T13DCP	TRANS-1,3-DICHLOROPROPENE	763	50	76	1000	70	130		11	30
C	C13DCP	CIS-1,3-DICHLOROPROPENE	771	50	77	1000	70	130		10	30
C	11DCP	1,1-DICHLOROPROPENE	825	250	82	1000	70	130		15	30
B	BF	BROMOFORM	941	200	94	1000	70	130		9	30
C	1122PCA	1,1,2,2-TETRACHLOROETHANE	760	50	76	1000	70	130		10	30
A	B	BENZENE	778	50	78	1000	70	130		11	30
A	T	TOLUENE	811	75	81	1000	70	130		11	30
A	EB	ETHYLBENZENE	834	50	83	1000	70	130		10	30
C	CM	CHLOROMETHANE	736	250	74	1000	52	130		13	30
B	BM	BROMOMETHANE	812	100	81	1000	57	147		8	30
C	VC	VINYL CHLORIDE	850	100	85	1000	67	130		16	30
C	CE	CHLOROETHANE	763	100	76	1000	50	151		10	30
C	11DCE	1,1-DICHLOROETHENE	775	50	78	1000	65	135		12	30
C	T12DCE	TRANS-1,2-DICHLOROETHENE	823	75	82	1000	70	130		11	30
C	TCE	TRICHLOROETHENE	855	50	86	1000	70	130		9	30
C	12DCB	1,2-DICHLOROBENZENE	833	250	83	1000	70	130		8	30
C	13DCB	1,3-DICHLOROBENZENE	848	250	85	1000	70	130		8	30
C	14DCB	1,4-DICHLOROBENZENE	840	250	84	1000	70	130		6	30
OX	MTBE	METHYL TERT BUTYL ETHER	772	100	77	1000	66	130		11	30
A	MPX	P/M-XYLENE	1660	100	83	2000	70	130		8	30
A	OX	O-XYLENE	1650	100	83	2000	70	130		9	30
C	C12DCE	CIS-1,2-DICHLOROETHENE	835	50	84	1000	70	130		8	30
B	DBM	DIBROMOMETHANE	877	500	88	1000	70	130		11	30
C	14DC	1,4-DICHLOROBUTANE	731	500	73	1000	70	130		10	30
C	123TCP	1,2,3-TRICHLOROPROPANE	817	500	82	1000	68	130		9	30
A	STY	STYRENE	1650	100	83	2000	70	130		8	30
F	DCFM	DICHLORODIFLUOROMETHANE	619	500	62	1000	30	146		19	30
O	ACE	ACETONE	742	1800	74	1000	54	140		18	30
S	CD	CARBON DISULFIDE	650	500	65	1000	59	130		13	30
O	MEK	2-BUTANONE	718	500	72	1000	70	130		17	30
O	VA	VINYL ACETATE	764	500	76	1000	70	130		11	30
O	MIBK	4-METHYL-2-PENTANONE	685	500	68	1000	70	130	Q	14	30
O	MBK	2-HEXANONE	742	500	74	1000	70	130		17	30
		ETHYL METHACRYLATE	780	500	78	1000	70	130		11	30
O	ACR	ACROLEIN	747	1200	75	1000				10	30
		ACRYLONITRILE	732	200	73	1000	70	130		15	30
B	BCM	BROMOCHLOROMETHANE	840	250	84	1000	70	130		9	30
O	THF	TETRAHYDROFURAN	732	1000	73	1000	66	130		18	30
C	22DCP	2,2-DICHLOROPROPANE	773	250	77	1000	70	130		13	30
ADD	12DBE	1,2-DIBROMOETHANE	935	200	94	1000	70	130		12	30
C	13DCP	1,3-DICHLOROPROPANE	832	250	83	1000	69	130		10	30
C	1112PCA	1,1,1,2-TETRACHLOROETHANE	970	50	97	1000	70	130		8	30
B	BB	BROMOBENZENE	848	250	85	1000	70	130		8	30
A	BUTB	N-BUTYLBENZENE	867	50	87	1000	70	130		10	30
A	SECBUT	SEC-BUTYLBENZENE	820	50	82	1000	70	130		11	30
A	TBB	TERT-BUTYLBENZENE	854	250	85	1000	70	130		10	30
		TRICHLOROBENZENE	921	200	92	1000	70	139		7	30
C	2CT	O-CHLOROTOLUENE	835	250	84	1000	70	130		8	30
C	4CT	P-CHLOROTOLUENE	819	250	82	1000	70	130		9	30
B	12DB3CP	1,2-DIBROMO-3-CHLOROPROPANE	819	250	82	1000	68	130		16	30
C	HCB	HEXACHLOROBUTADIENE	933	250	93	1000	67	130		10	30
A	IPB	ISOPROPYLBENZENE	850	50	85	1000	70	130		10	30
		P-ISOPROPYLTOLUENE	857	50	86	1000	70	130		10	30
2	N0	NAPHTHALENE	796	250	80	1000	70	130		8	30
A	PROPB	N-PROPYLBENZENE	819	50	82	1000	70	130		10	30
C	123TCB	1,2,3-TRICHLOROBENZENE	866	250	87	1000	70	130		8	30
C	124TCB	1,2,4-TRICHLOROBENZENE	898	250	90	1000	70	130		6	30
A	135TMB	1,3,5-TRIMETHYLBENZENE	860	250	86	1000	70	130		9	30
A	124TMB	1,2,4-TRIMETHYLBENZENE	854	250	85	1000	70	130		9	30
		TRANS-1,4-DICHLORO-2-BUTENE	793	250	79	1000	70	130		17	30
O	DIE	ETHYL ETHER	783	250	78	1000	67	130		6	30
		METHYL ACETATE	752	1000	75	1000	65	130		19	30
		ETHYL ACETATE	808	1000	81	1000	70	130		19	30
N	CH	CYCLOHEXANE	700	1000	70	1000	70	130		17	30
ADD	TBA	TERT-BUTYL ALCOHOL	3810	5000	76	5000	70	130		10	30
OX	ETBE	ETHYL-TERT-BUTYL-ETHER	707	200	71	1000	70	130		8	30
O	TAME	TERTIARY-AMYL METHYL ETHER	674	200	67	1000	70	130	Q	10	30
O	14D	1,4-DIOXANE	35300	5000	71	50000	65	136		18	30
N	MCYH	METHYL CYCLOHEXANE	741	200	74	1000	70	130		16	30
F	F113	1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE	794	1000	79	1000	70	130		20	30
		1,4-DIETHYLBENZENE	901	200	90	1000	70	130		10	30
		4-ETHYLTOLUENE	880	200	88	1000	70	130		9	30
A	1245TMP	1,2,4,5-TETRAMETHYLBENZENE	876	200	88	1000	70	130		8	30

Surrogates (% Recovery)	
1,2-DICHLOROETHANE-D4	106
TOLUENE-D8	90
4-BROMOFLUOROBENZENE	82
DIBROMOFLUOROMETHANE	94

Project Name: FORMER XOM JALK FEE PROPERTY
Project Number: CARDNO ERI

Client ID	S-80-B11	Duplicate Sample
Lab ID	L1215112-01	WG557459-7
Matrix	SOIL	SOIL
Matrix Description		
Reference Method	8260C	8260C
Batch ID	WG557459	WG557459
Date Collected	8/21/2012	NA
Date Received	8/23/2012	8/29/2012
Date Prepped	8/28/2012	8/28/2012
Date Analyzed	8/28/2012	8/28/2012
Sample Size(wet)	15.7 g	15.7 g
% Solid	93.7	100
File ID	0828A17.D	0828A18.D
Units	ug/kg	ug/kg
Final Volume	0.1	0.1
Dilution	1	1
Reporting Limit	54	54

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	RPD	RPD Limit	
C	DCM	METHYLENE CHLORIDE	290	J	540	330	J	540		30	NC
C	11DCA	1,1-DICHLOROETHANE		U	82		U	82		30	NC
C	CF	CHLOROFORM		U	82		U	82		30	NC
C	CT	CARBON TETRACHLORIDE		U	54		U	54		30	NC
C	12DCP	1,2-DICHLOROPROPANE		U	190		U	190		30	NC
B	DBCM	DIBROMOCHLOROMETHANE		U	54		U	54		30	NC
C	112TCA	1,1,2-TRICHLOROETHANE		U	82		U	82		30	NC
C	PCE	TETRACHLOROETHENE	370		54	380		54	3	30	
C	CB	CHLOROBENZENE		U	54		U	54		30	NC
F	TCTFM	TRICHLOROFLUOROMETHANE		U	270		U	270		30	NC
ADD	12DCA	1,2-DICHLOROETHANE		U	54		U	54		30	NC
C	111TCA	1,1,1-TRICHLOROETHANE		U	54		U	54		30	NC
B	BDCM	BROMODICHLOROMETHANE		U	54		U	54		30	NC
C	T13DCP	TRANS-1,3-DICHLOROPROPENE		U	54		U	54		30	NC
C	C13DCP	CIS-1,3-DICHLOROPROPENE		U	54		U	54		30	NC
B	BF	BROMOFORM		U	220		U	220		30	NC
C	1122PCA	1,1,2,2-TETRACHLOROETHANE		U	54		U	54		30	NC
A	B	BENZENE		U	54		U	54		30	NC
A	T	TOLUENE		U	82		U	82		30	NC
A	EB	ETHYLBENZENE		U	54		U	54		30	NC
B	BM	BROMOMETHANE		U	110		U	110		30	NC
C	VC	VINYL CHLORIDE		U	110		U	110		30	NC
C	CE	CHLOROETHANE		U	110		U	110		30	NC
C	11DCE	1,1-DICHLOROETHENE		U	54		U	54		30	NC
C	T12DCE	TRANS-1,2-DICHLOROETHENE		U	82		U	82		30	NC
C	TCE	TRICHLOROETHENE		U	54		U	54		30	NC
C	12DCB	1,2-DICHLOROBENZENE		U	270		U	270		30	NC
C	13DCB	1,3-DICHLOROBENZENE		U	270		U	270		30	NC
C	14DCB	1,4-DICHLOROBENZENE		U	270		U	270		30	NC
OX	MTBE	METHYL TERT BUTYL ETHER		U	110		U	110		30	NC
A	MPX	P/M-XYLENE		U	110		U	110		30	NC
A	OX	O-XYLENE		U	110		U	110		30	NC
C	C12DCE	CIS-1,2-DICHLOROETHENE		U	54		U	54		30	NC
C	123TCP	1,2,3-TRICHLOROPROPANE		U	540		U	540		30	NC
A	STY	STYRENE		U	110		U	110		30	NC
F	DCFM	DICHLORODIFLUOROMETHANE		U	540		U	540		30	NC
O	ACE	ACETONE		U	2000		U	2000		30	NC
O	MEK	2-BUTANONE		U	540		U	540		30	NC
O	MIBK	4-METHYL-2-PENTANONE		U	540		U	540		30	NC
O	THF	TETRAHYDROFURAN		U	1100		U	1100		30	NC
ADD	12DBE	1,2-DIBROMOETHANE		U	220		U	220		30	NC
C	1112PCA	1,1,1,2-TETRACHLOROETHANE		U	54		U	54		30	NC
A	BUTB	N-BUTYLBENZENE		U	54		U	54		30	NC
A	TBB	TERT-BUTYLBENZENE		U	270		U	270		30	NC
C	2CT	O-CHLOROTOLUENE		U	270		U	270		30	NC
C	HCB	HEXACHLOROBUTADIENE		U	270		U	270		30	NC
A	IPB	ISOPROPYLBENZENE		U	54		U	54		30	NC
		P-ISOPROPYLTOLUENE		U	54		U	54		30	NC
2	N0	NAPHTHALENE		U	270		U	270		30	NC
A	PROPB	N-PROPYLBENZENE		U	54		U	54		30	NC
C	124TCB	1,2,4-TRICHLOROBENZENE		U	270		U	270		30	NC
A	135TMB	1,3,5-TRIMETHYLBENZENE		U	270		U	270		30	NC
A	124TMB	1,2,4-TRIMETHYLBENZENE		U	270		U	270		30	NC
O	DIE	ETHYL ETHER		U	270		U	270		30	NC

Surrogates (% Recovery)		
1,2-DICHLOROETHANE-D4	105	102
TOLUENE-D8	88	90
4-BROMOFLUOROBENZENE	85	88
DIBROMOFLUOROMETHANE	88	84

Project Name: FORMER XOM JALK FEE PROPERTY
Project Number: CARDNO ERI

Client ID	S-80-B11	
Lab ID	L1215112-01	
Matrix	SOIL	
Matrix Description		
Reference Method	8260C	
Batch ID	WG557459	
Date Collected	8/21/2012	
Date Received	8/23/2012	
Date Prepped	8/28/2012	
Date Analyzed	8/28/2012	
Sample Size(wet)	15.7	g
% Solid	93.7	
File ID	0828A17.D	
Units	ug/kg	
Final Volume	0.1	
Dilution	1	
Reporting Limit	54	

Class	Abbrev	Analytes	Result		SSRL
C	DCM	METHYLENE CHLORIDE	290	J	540
C	11DCA	1,1-DICHLOROETHANE		U	82
C	CF	CHLOROFORM		U	82
C	CT	CARBON TETRACHLORIDE		U	54
C	12DCP	1,2-DICHLOROPROPANE		U	190
B	DBCM	DIBROMOCHLOROMETHANE		U	54
C	112TCA	1,1,2-TRICHLOROETHANE		U	82
C	PCE	TETRACHLOROETHENE	370		54
C	CB	CHLOROBENZENE		U	54
F	TCTFM	TRICHLOROFLUOROMETHANE		U	270
ADD	12DCA	1,2-DICHLOROETHANE		U	54
C	111TCA	1,1,1-TRICHLOROETHANE		U	54
B	BDCM	BROMODICHLOROMETHANE		U	54
C	T13DCP	TRANS-1,3-DICHLOROPROPENE		U	54
C	C13DCP	CIS-1,3-DICHLOROPROPENE		U	54
B	BF	BROMOFORM		U	220
C	1122PCA	1,1,2,2-TETRACHLOROETHANE		U	54
A	B	BENZENE		U	54
A	T	TOLUENE		U	82
A	EB	ETHYLBENZENE		U	54
B	BM	BROMOMETHANE		U	110
C	VC	VINYL CHLORIDE		U	110
C	CE	CHLOROETHANE		U	110
C	11DCE	1,1-DICHLOROETHENE		U	54
C	T12DCE	TRANS-1,2-DICHLOROETHENE		U	82
C	TCE	TRICHLOROETHENE		U	54
C	12DCB	1,2-DICHLOROBENZENE		U	270
C	13DCB	1,3-DICHLOROBENZENE		U	270
C	14DCB	1,4-DICHLOROBENZENE		U	270
OX	MTBE	METHYL TERT BUTYL ETHER		U	110
A	MPX	P/M-XYLENE		U	110
A	OX	O-XYLENE		U	110
C	C12DCE	CIS-1,2-DICHLOROETHENE		U	54
C	123TCP	1,2,3-TRICHLOROPROPANE		U	540
A	STY	STYRENE		U	110
F	DCFM	DICHLORODIFLUOROMETHANE		U	540
O	ACE	ACETONE		U	2000
O	MEK	2-BUTANONE		U	540
O	MIBK	4-METHYL-2-PENTANONE		U	540
O	THF	TETRAHYDROFURAN		U	1100
ADD	12DBE	1,2-DIBROMOETHANE		U	220
C	1112PCA	1,1,1,2-TETRACHLOROETHANE		U	54
A	BUTB	N-BUTYLBENZENE		U	54
A	TBB	TERT-BUTYLBENZENE		U	270
C	2CT	O-CHLOROTOLUENE		U	270
C	HCB	HEXACHLOROBUTADIENE		U	270
A	IPB	ISOPROPYLBENZENE		U	54
		P-ISOPROPYLTOLUENE		U	54
2	N0	NAPHTHALENE		U	270
A	PROPB	N-PROPYLBENZENE		U	54
C	124TCB	1,2,4-TRICHLOROBENZENE		U	270
A	135TMB	1,3,5-TRIMETHYLBENZENE		U	270
A	124TMB	1,2,4-TRIMETHYLBENZENE		U	270
O	DIE	ETHYL ETHER		U	270

Surrogates (% Recovery)	
1,2-DICHLOROETHANE-D4	105
TOLUENE-D8	88
4-BROMOFLUOROBENZENE	85
DIBROMOFLUOROMETHANE	88

List of Potential Qualifiers

A: Spectra identified as "Aldol Condensation Product".

B: The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit.

C: Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D: Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E: Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G: The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H: The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I: The RPD between the results for the two columns exceeds the method-specified criteria; however, the lower value has been reported due to obvious interference.

J: Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL). This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M: Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND: Not detected at the method detection limit (MDL) for the sample.

NJ: Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P: The RPD between the results for the two columns exceeds the method-specified criteria.

Q: The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R: Analytical results are from sample re-analysis.

RE: Analytical results are from sample re-extraction.

U: Not detected at the reported detection limit for the sample.

Project Name: FORMER XOM JALK FEE PROPERTY
Project Number: CARDNO ERI

Client ID	Laboratory Method Bl
Lab ID	WG566213-3
Matrix	SOIL
Matrix Description	
Reference Method	8260C
Batch ID	WG566213
Date Collected	NA
Date Received	10/10/2012
Date Prepped	10/10/2012
Date Analyzed	10/10/2012
Sample Size(wet)	15 g
% Solid	100
File ID	1010A04.D
Units	ug/kg
Final Volume	0.1
Dilution	1
Reporting Limit	50

Class	Abbrev	Analytes	Result	SSRL
C	DCM	METHYLENE CHLORIDE	U	500
C	11DCA	1,1-DICHLOROETHANE	U	75
C	CF	CHLOROFORM	U	75
C	CT	CARBON TETRACHLORIDE	U	50
C	12DCP	1,2-DICHLOROPROPANE	U	180
B	DBCM	DIBROMOCHLOROMETHANE	U	50
C	112TCA	1,1,2-TRICHLOROETHANE	U	75
C	PCE	TETRACHLOROETHENE	U	50
C	CB	CHLOROBENZENE	U	50
F	TCTFM	TRICHLOROFLUOROMETHANE	U	250
ADD	12DCA	1,2-DICHLOROETHANE	U	50
C	111TCA	1,1,1-TRICHLOROETHANE	U	50
B	BDCM	BROMODICHLOROMETHANE	U	50
C	T13DCP	TRANS-1,3-DICHLOROPROPENE	U	50
C	C13DCP	CIS-1,3-DICHLOROPROPENE	U	50
B	BF	BROMOFORM	U	200
C	1122PCA	1,1,2,2-TETRACHLOROETHANE	U	50
A	B	BENZENE	U	50
A	T	TOLUENE	U	75
A	EB	ETHYLBENZENE	U	50
B	BM	BROMOMETHANE	U	100
C	VC	VINYL CHLORIDE	U	100
C	CE	CHLOROETHANE	U	100
C	11DCE	1,1-DICHLOROETHENE	U	50
C	T12DCE	TRANS-1,2-DICHLOROETHENE	U	75
C	TCE	TRICHLOROETHENE	U	50
C	12DCB	1,2-DICHLOROBENZENE	U	250
C	13DCB	1,3-DICHLOROBENZENE	U	250
C	14DCB	1,4-DICHLOROBENZENE	U	250
OX	MTBE	METHYL TERT BUTYL ETHER	U	100
A	MPX	P/M-XYLENE	U	100
A	OX	O-XYLENE	U	100
C	C12DCE	CIS-1,2-DICHLOROETHENE	U	50
C	123TCP	1,2,3-TRICHLOROPROPANE	U	500
A	STY	STYRENE	U	100
F	DCFM	DICHLORODIFLUOROMETHANE	U	500
O	ACE	ACETONE	U	1800
O	MEK	2-BUTANONE	U	500
O	MIBK	4-METHYL-2-PENTANONE	U	500
O	THF	TETRAHYDROFURAN	U	1000
ADD	12DBE	1,2-DIBROMOETHANE	U	200
C	1112PCA	1,1,1,2-TETRACHLOROETHANE	U	50
A	BUTB	N-BUTYLBENZENE	U	50
A	TBB	TERT-BUTYLBENZENE	U	250
C	2CT	O-CHLOROTOLUENE	U	250
C	HCB	HEXACHLOROBUTADIENE	U	250
A	IPB	ISOPROPYLBENZENE	U	50
		P-ISOPROPYLTOLUENE	U	50
2	N0	NAPHTHALENE	U	250
A	PROPB	N-PROPYLBENZENE	U	50
C	124TCB	1,2,4-TRICHLOROBENZENE	U	250
A	135TMB	1,3,5-TRIMETHYLBENZENE	U	250
A	124TMB	1,2,4-TRIMETHYLBENZENE	U	250
O	DIE	ETHYL ETHER	U	250

Surrogates (% Recovery)	
1,2-DICHLOROETHANE-D4	99
TOLUENE-D8	98
4-BROMOFLUOROBENZENE	99
DIBROMOFLUOROMETHANE	98

Project Name: FORMER XOM JALK FEE PROPERTY
Project Number: CARDNO ERI

Client ID	Laboratory Control S	
Lab ID	WG566213-1	
Matrix	SOIL	
Matrix Description		
Reference Method	8260C	
Batch ID	WG566213	
Date Collected	NA	
Date Received	10/10/2012	
Date Prepped	10/10/2012	
Date Analyzed	10/10/2012	
Sample Size(wet)	15	g
% Solid	100	
File ID	1010A03.D	
Units	%	
Final Volume	0.1	
Dilution	1	
Reporting Limit	50	

Class	Abbrev	Analytes	Result	SSRL	% REC	Spike Conc.	Lower Limit	Upper Limit
C	DCM	METHYLENE CHLORIDE	1030	500	103	1000	70	130
C	11DCA	1,1-DICHLOROETHANE	1110	75	111	1000	70	130
C	CF	CHLOROFORM	1140	75	114	1000	70	130
C	CT	CARBON TETRACHLORIDE	1130	50	113	1000	70	130
C	12DCP	1,2-DICHLOROPROPANE	1100	180	110	1000	70	130
B	DBCM	DIBROMOCHLOROMETHANE	1090	50	109	1000	70	130
C	112TCA	1,1,2-TRICHLOROETHANE	1090	75	109	1000	70	130
C	PCE	TETRACHLOROETHENE	1100	50	110	1000	70	130
C	CB	CHLOROBENZENE	1100	50	110	1000	70	130
F	TCTFM	TRICHLOROFLUOROMETHANE	1080	250	108	1000	70	139
ADD	12DCA	1,2-DICHLOROETHANE	1140	50	114	1000	70	130
C	111TCA	1,1,1-TRICHLOROETHANE	1140	50	114	1000	70	130
B	BDCM	BROMODICHLOROMETHANE	1120	50	112	1000	70	130
C	T13DCP	TRANS-1,3-DICHLOROPROPENE	1070	50	107	1000	70	130
C	C13DCP	CIS-1,3-DICHLOROPROPENE	1120	50	112	1000	70	130
C	11DCP	1,1-DICHLOROPROPENE	1110	250	111	1000	70	130
B	BF	BROMOFORM	1080	200	108	1000	70	130
C	1122PCA	1,1,2,2-TETRACHLOROETHANE	1080	50	108	1000	70	130
A	B	BENZENE	1120	50	112	1000	70	130
A	T	TOLUENE	1060	75	106	1000	70	130
A	EB	ETHYLBENZENE	1090	50	109	1000	70	130
C	CM	CHLOROMETHANE	830	250	83	1000	52	130
B	BM	BROMOMETHANE	1240	100	124	1000	57	147
C	VC	VINYL CHLORIDE	939	100	94	1000	67	130
C	CE	CHLOROETHANE	1110	100	111	1000	50	151
C	11DCE	1,1-DICHLOROETHENE	1070	50	107	1000	65	135
C	T12DCE	TRANS-1,2-DICHLOROETHENE	1110	75	111	1000	70	130
C	TCE	TRICHLOROETHENE	1130	50	113	1000	70	130
C	12DCB	1,2-DICHLOROBENZENE	1070	250	107	1000	70	130
C	13DCB	1,3-DICHLOROBENZENE	1080	250	108	1000	70	130
C	14DCB	1,4-DICHLOROBENZENE	1080	250	108	1000	70	130
OX	MTBE	METHYL TERT BUTYL ETHER	1100	100	110	1000	66	130
A	MPX	P/M-XYLENE	2190	100	110	2000	70	130
A	OX	O-XYLENE	2210	100	111	2000	70	130
C	C12DCE	CIS-1,2-DICHLOROETHENE	1120	50	112	1000	70	130
B	DBM	DIBROMOMETHANE	1140	500	114	1000	70	130
C	14DC	1,4-DICHLOROBUTANE	1040	500	104	1000	70	130
C	123TCP	1,2,3-TRICHLOROPROPANE	1110	500	111	1000	68	130
A	STY	STYRENE	2200	100	110	2000	70	130
F	DCFM	DICHLORODIFLUOROMETHANE	514	500	51	1000	30	146
O	ACE	ACETONE	1260	1800	126	1000	54	140
S	CD	CARBON DISULFIDE	990	500	99	1000	59	130
O	MEK	2-BUTANONE	1250	500	125	1000	70	130
O	VA	VINYL ACETATE	1140	500	114	1000	70	130
O	MIBK	4-METHYL-2-PENTANONE	1120	500	112	1000	70	130
O	MBK	2-HEXANONE	1020	500	102	1000	70	130
		ETHYL METHACRYLATE	1060	500	106	1000	70	130
		ACRYLONITRILE	1110	200	111	1000	70	130
B	BCM	BROMOCHLOROMETHANE	1140	250	114	1000	70	130
O	THF	TETRAHYDROFURAN	1140	1000	114	1000	66	130
C	22DCP	2,2-DICHLOROPROPANE	1110	250	111	1000	70	130
ADD	12DBE	1,2-DIBROMOETHANE	1110	200	111	1000	70	130
C	13DCP	1,3-DICHLOROPROPANE	1090	250	109	1000	69	130
C	1112PCA	1,1,1,2-TETRACHLOROETHANE	1110	50	111	1000	70	130
B	BB	BROMOBENZENE	1070	250	107	1000	70	130
A	BUTB	N-BUTYLBENZENE	1090	50	109	1000	70	130
A	SECBUT	SEC-BUTYLBENZENE	1080	50	108	1000	70	130
A	TBB	TERT-BUTYLBENZENE	1080	250	108	1000	70	130
C	2CT	O-CHLOROTOLUENE	972	250	97	1000	70	130
C	4CT	P-CHLOROTOLUENE	1080	250	108	1000	70	130
B	12DB3CP	1,2-DIBROMO-3-CHLOROPROPANE	1040	250	104	1000	68	130
C	HCB	HEXACHLOROBUTADIENE	1070	250	107	1000	67	130
A	IPB	ISOPROPYLBENZENE	1100	50	110	1000	70	130
		P-ISOPROPYLTOLUENE	1080	50	108	1000	70	130
2	N0	NAPHTHALENE	1060	250	106	1000	70	130
A	PROPB	N-PROPYLBENZENE	1070	50	107	1000	70	130
C	123TCB	1,2,3-TRICHLOROBENZENE	1070	250	107	1000	70	130
C	124TCB	1,2,4-TRICHLOROBENZENE	1080	250	108	1000	70	130
A	135TMB	1,3,5-TRIMETHYLBENZENE	1060	250	106	1000	70	130
A	124TMB	1,2,4-TRIMETHYLBENZENE	1060	250	106	1000	70	130
		TRANS-1,4-DICHLORO-2-BUTENE	1080	250	108	1000	70	130
O	DIE	ETHYL ETHER	1100	250	110	1000	67	130

Surrogates (% Recovery)

1,2-DICHLOROETHANE-D4	102
TOLUENE-D8	98
4-BROMOFLUOROBENZENE	97
DIBROMOFLUOROMETHANE	102

Project Name: FORMER XOM JALK FEE PROPERTY
Project Number: CARDNO ERI

Client ID	LCS Duplicate
Lab ID	WG566213-2
Matrix	SOIL
Matrix Description	
Reference Method	8260C
Batch ID	WG566213
Date Collected	NA
Date Received	10/10/2012
Date Prepped	10/10/2012
Date Analyzed	10/10/2012
Sample Size(wet)	15 g
% Solid	100
File ID	1010A02.D
Units	%
Final Volume	0.1
Dilution	1
Reporting Limit	50

Class	Abbrev	Analytes	Result	SSRL	% REC	Spike Conc.	Lower Limit	Upper Limit	RPD	RPD Limit
C	DCM	METHYLENE CHLORIDE	852	500	85	1000	70	130	19	30
C	11DCA	1,1-DICHLOROETHANE	906	75	91	1000	70	130	20	30
C	CF	CHLOROFORM	927	75	93	1000	70	130	20	30
C	CT	CARBON TETRACHLORIDE	904	50	90	1000	70	130	23	30
C	12DCP	1,2-DICHLOROPROPANE	926	180	93	1000	70	130	17	30
B	DBCM	DIBROMOCHLOROMETHANE	900	50	90	1000	70	130	19	30
C	112TCA	1,1,2-TRICHLOROETHANE	926	75	93	1000	70	130	16	30
C	PCE	TETRACHLOROETHENE	891	50	89	1000	70	130	21	30
C	CB	CHLOROBENZENE	906	50	91	1000	70	130	19	30
F	TCTFM	TRICHLOROFLUOROMETHANE	863	250	86	1000	70	139	23	30
ADD	12DCA	1,2-DICHLOROETHANE	955	50	96	1000	70	130	17	30
C	111TCA	1,1,1-TRICHLOROETHANE	921	50	92	1000	70	130	21	30
B	BDCM	BROMODICHLOROMETHANE	939	50	94	1000	70	130	17	30
C	T13DCP	TRANS-1,3-DICHLOROPROPENE	905	50	90	1000	70	130	17	30
C	C13DCP	CIS-1,3-DICHLOROPROPENE	935	50	94	1000	70	130	17	30
C	11DCP	1,1-DICHLOROPROPENE	901	250	90	1000	70	130	21	30
B	BF	BROMOFORM	920	200	92	1000	70	130	16	30
C	1122PCA	1,1,2,2-TETRACHLOROETHANE	924	50	92	1000	70	130	16	30
A	B	BENZENE	911	50	91	1000	70	130	21	30
A	T	TOLUENE	861	75	86	1000	70	130	21	30
A	EB	ETHYLBENZENE	899	50	90	1000	70	130	19	30
C	CM	CHLOROMETHANE	682	250	68	1000	52	130	20	30
B	BM	BROMOMETHANE	1070	100	107	1000	57	147	15	30
C	VC	VINYL CHLORIDE	764	100	76	1000	67	130	21	30
C	CE	CHLOROETHANE	889	100	89	1000	50	151	22	30
C	11DCE	1,1-DICHLOROETHENE	850	50	85	1000	65	135	23	30
C	T12DCE	TRANS-1,2-DICHLOROETHENE	899	75	90	1000	70	130	21	30
C	TCE	TRICHLOROETHENE	922	50	92	1000	70	130	20	30
C	12DCB	1,2-DICHLOROBENZENE	907	250	91	1000	70	130	16	30
C	13DCB	1,3-DICHLOROBENZENE	907	250	91	1000	70	130	17	30
C	14DCB	1,4-DICHLOROBENZENE	907	250	91	1000	70	130	17	30
OX	MTBE	METHYL TERT BUTYL ETHER	918	100	92	1000	66	130	18	30
A	MPX	P/M-XYLENE	1800	100	90	2000	70	130	20	30
A	OX	O-XYLENE	1820	100	91	2000	70	130	20	30
C	C12DCE	CIS-1,2-DICHLOROETHENE	917	50	92	1000	70	130	20	30
B	DBM	DIBROMOMETHANE	964	500	96	1000	70	130	17	30
C	14DC	1,4-DICHLOROBUTANE	881	500	88	1000	70	130	17	30
C	123TCP	1,2,3-TRICHLOROPROPANE	950	500	95	1000	68	130	16	30
A	STY	STYRENE	1830	100	92	2000	70	130	18	30
F	DCFM	DICHLORODIFLUOROMETHANE	416	500	42	1000	30	146	19	30
O	ACE	ACETONE	1070	1800	107	1000	54	140	16	30
S	CD	CARBON DISULFIDE	801	500	80	1000	59	130	21	30
O	MEK	2-BUTANONE	1030	500	103	1000	70	130	19	30
O	VA	VINYL ACETATE	949	500	95	1000	70	130	18	30
O	MIBK	4-METHYL-2-PENTANONE	947	500	95	1000	70	130	16	30
O	MBK	2-HEXANONE	888	500	89	1000	70	130	14	30
		ETHYL METHACRYLATE	899	500	90	1000	70	130	16	30
		ACRYLONITRILE	944	200	94	1000	70	130	17	30
B	BCM	BROMOCHLOROMETHANE	959	250	96	1000	70	130	17	30
O	THF	TETRAHYDROFURAN	959	1000	96	1000	66	130	17	30
C	22DCP	2,2-DICHLOROPROPANE	905	250	90	1000	70	130	21	30
ADD	12DBE	1,2-DIBROMOETHANE	942	200	94	1000	70	130	17	30
C	13DCP	1,3-DICHLOROPROPANE	918	250	92	1000	69	130	17	30
C	1112PCA	1,1,1,2-TETRACHLOROETHANE	917	50	92	1000	70	130	19	30
B	BB	BROMOBENZENE	903	250	90	1000	70	130	17	30
A	BUTB	N-BUTYLBENZENE	896	50	90	1000	70	130	19	30
A	SECBUT	SEC-BUTYLBENZENE	886	50	89	1000	70	130	19	30
A	TBB	TERT-BUTYLBENZENE	888	250	89	1000	70	130	19	30
C	2CT	O-CHLOROTOLUENE	777	250	78	1000	70	130	22	30
C	4CT	P-CHLOROTOLUENE	903	250	90	1000	70	130	18	30
B	12DB3CP	1,2-DIBROMO-3-CHLOROPROPANE	1010	250	101	1000	68	130	3	30
C	HCB	HEXACHLOROBUTADIENE	867	250	87	1000	67	130	21	30
A	IPB	ISOPROPYLBENZENE	903	50	90	1000	70	130	20	30
		P-ISOPROPYLTOLUENE	884	50	88	1000	70	130	20	30
2	N0	NAPHTHALENE	900	250	90	1000	70	130	16	30
A	PROPB	N-PROPYLBENZENE	887	50	89	1000	70	130	18	30
C	123TCB	1,2,3-TRICHLOROBENZENE	907	250	91	1000	70	130	16	30
C	124TCB	1,2,4-TRICHLOROBENZENE	909	250	91	1000	70	130	17	30
A	135TMB	1,3,5-TRIMETHYLBENZENE	884	250	88	1000	70	130	19	30
A	124TMB	1,2,4-TRIMETHYLBENZENE	888	250	89	1000	70	130	17	30
		TRANS-1,4-DICHLORO-2-BUTENE	920	250	92	1000	70	130	16	30
O	DIE	ETHYL ETHER	930	250	93	1000	67	130	17	30

Surrogates (% Recovery)	
1,2-DICHLOROETHANE-D4	102
TOLUENE-D8	98
4-BROMOFLUOROBENZENE	99
DIBROMOFLUOROMETHANE	102

Project Name: FORMER XOM JALK FEE PROPERTY
Project Number: CARDNO ERI

Client ID	S-25-B19	Duplicate Sample
Lab ID	L1217858-01	WG566213-7
Matrix	SOIL	SOIL
Matrix Description		
Reference Method	8260C	8260C
Batch ID	WG566213	WG566213
Date Collected	9/28/2012	NA
Date Received	10/2/2012	10/11/2012
Date Prepped	10/10/2012	10/11/2012
Date Analyzed	10/10/2012	10/11/2012
Sample Size(wet)	15 g	15.9 g
% Solid	81	100
File ID	1010A05.D	1011A16.D
Units	ug/kg	ug/kg
Final Volume	0.1	0.1
Dilution	1	1
Reporting Limit	62	70

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	RPD	RPD Limit	
C	DCM	METHYLENE CHLORIDE		U	620	520	J	700		30	X
C	11DCA	1,1-DICHLOROETHANE		U	92		U	100		30	NC
C	CF	CHLOROFORM		U	92		U	100		30	NC
C	CT	CARBON TETRACHLORIDE		U	62		U	70		30	NC
C	12DCP	1,2-DICHLOROPROPANE		U	220		U	240		30	NC
B	DBCM	DIBROMOCHLOROMETHANE		U	62		U	70		30	NC
C	112TCA	1,1,2-TRICHLOROETHANE		U	92		U	100		30	NC
C	PCE	TETRACHLOROETHENE	610		62	630		70	3	30	
C	CB	CHLOROBENZENE		U	62		U	70		30	NC
F	TCTFM	TRICHLOROFLUOROMETHANE		U	310		U	350		30	NC
ADD	12DCA	1,2-DICHLOROETHANE		U	62		U	70		30	NC
C	111TCA	1,1,1-TRICHLOROETHANE		U	62		U	70		30	NC
B	BDCM	BROMODICHLOROMETHANE		U	62		U	70		30	NC
C	T13DCP	TRANS-1,3-DICHLOROPROPENE		U	62		U	70		30	NC
C	C13DCP	CIS-1,3-DICHLOROPROPENE		U	62		U	70		30	NC
B	BF	BROMOFORM		U	250		U	280		30	NC
C	1122PCA	1,1,2,2-TETRACHLOROETHANE		U	62		U	70		30	NC
A	B	BENZENE		U	62		U	70		30	NC
A	T	TOLUENE		U	92		U	100		30	NC
A	EB	ETHYLBENZENE		U	62		U	70		30	NC
B	BM	BROMOMETHANE		U	120		U	140		30	NC
C	VC	VINYL CHLORIDE		U	120		U	140		30	NC
C	CE	CHLOROETHANE		U	120		U	140		30	NC
C	11DCE	1,1-DICHLOROETHENE		U	62		U	70		30	NC
C	T12DCE	TRANS-1,2-DICHLOROETHENE		U	92		U	100		30	NC
C	TCE	TRICHLOROETHENE		U	62		U	70		30	NC
C	12DCB	1,2-DICHLOROBENZENE		U	310		U	350		30	NC
C	13DCB	1,3-DICHLOROBENZENE		U	310		U	350		30	NC
C	14DCB	1,4-DICHLOROBENZENE		U	310		U	350		30	NC
OX	MTBE	METHYL TERT BUTYL ETHER		U	120		U	140		30	NC
A	MPX	P/M-XYLENE		U	120		U	140		30	NC
A	OX	O-XYLENE		U	120		U	140		30	NC
C	C12DCE	CIS-1,2-DICHLOROETHENE		U	62		U	70		30	NC
C	123TCP	1,2,3-TRICHLOROPROPANE		U	620		U	700		30	NC
A	STY	STYRENE		U	120		U	140		30	NC
F	DCFM	DICHLORODIFLUOROMETHANE		U	620		U	700		30	NC
O	ACE	ACETONE		U	2200		U	2500		30	NC
O	MEK	2-BUTANONE		U	620		U	700		30	NC
O	MIBK	4-METHYL-2-PENTANONE		U	620		U	700		30	NC
O	THF	TETRAHYDROFURAN		U	1200		U	1400		30	NC
ADD	12DBE	1,2-DIBROMOETHANE		U	250		U	280		30	NC
C	1112PCA	1,1,1,2-TETRACHLOROETHANE		U	62		U	70		30	NC
A	BUTB	N-BUTYLBENZENE		U	62		U	70		30	NC
A	TBB	TERT-BUTYLBENZENE		U	310		U	350		30	NC
C	2CT	O-CHLOROTOLUENE		U	310		U	350		30	NC
C	HCB	HEXACHLOROBUTADIENE		U	310		U	350		30	NC
A	IPB	ISOPROPYLBENZENE		U	62		U	70		30	NC
		P-ISOPROPYLTOLUENE		U	62		U	70		30	NC
2	N0	NAPHTHALENE		U	310		U	350		30	NC
A	PROPB	N-PROPYLBENZENE		U	62		U	70		30	NC
C	124TCB	1,2,4-TRICHLOROBENZENE		U	310		U	350		30	NC
A	135TMB	1,3,5-TRIMETHYLBENZENE		U	310		U	350		30	NC
A	124TMB	1,2,4-TRIMETHYLBENZENE		U	310		U	350		30	NC
O	DIE	ETHYL ETHER		U	310		U	350		30	NC

Surrogates (% Recovery)		
1,2-DICHLOROETHANE-D4	101	103
TOLUENE-D8	96	97
4-BROMOFLUOROBENZENE	98	100
DIBROMOFLUOROMETHANE	95	103

Project Name: FORMER XOM JALK FEE PROPERTY
Project Number: CARDNO ERI

Client ID	S-25-B19
Lab ID	L1217858-01
Matrix	SOIL
Matrix Description	
Reference Method	8260C
Batch ID	WG566213
Date Collected	9/28/2012
Date Received	10/2/2012
Date Prepped	10/10/2012
Date Analyzed	10/10/2012
Sample Size(wet)	15 g
% Solid	81
File ID	1010A05.D
Units	ug/kg
Final Volume	0.1
Dilution	1
Reporting Limit	62

Class	Abbrev	Analytes	Result		SSRL
C	DCM	METHYLENE CHLORIDE		U	620
C	11DCA	1,1-DICHLOROETHANE		U	92
C	CF	CHLOROFORM		U	92
C	CT	CARBON TETRACHLORIDE		U	62
C	12DCP	1,2-DICHLOROPROPANE		U	220
B	DBCM	DIBROMOCHLOROMETHANE		U	62
C	112TCA	1,1,2-TRICHLOROETHANE		U	92
C	PCE	TETRACHLOROETHENE	610		62
C	CB	CHLOROBENZENE		U	62
F	TCTFM	TRICHLOROFLUOROMETHANE		U	310
ADD	12DCA	1,2-DICHLOROETHANE		U	62
C	111TCA	1,1,1-TRICHLOROETHANE		U	62
B	BDCM	BROMODICHLOROMETHANE		U	62
C	T13DCP	TRANS-1,3-DICHLOROPROPENE		U	62
C	C13DCP	CIS-1,3-DICHLOROPROPENE		U	62
B	BF	BROMOFORM		U	250
C	1122PCA	1,1,2,2-TETRACHLOROETHANE		U	62
A	B	BENZENE		U	62
A	T	TOLUENE		U	92
A	EB	ETHYLBENZENE		U	62
B	BM	BROMOMETHANE		U	120
C	VC	VINYL CHLORIDE		U	120
C	CE	CHLOROETHANE		U	120
C	11DCE	1,1-DICHLOROETHENE		U	62
C	T12DCE	TRANS-1,2-DICHLOROETHENE		U	92
C	TCE	TRICHLOROETHENE		U	62
C	12DCB	1,2-DICHLOROBENZENE		U	310
C	13DCB	1,3-DICHLOROBENZENE		U	310
C	14DCB	1,4-DICHLOROBENZENE		U	310
OX	MTBE	METHYL TERT BUTYL ETHER		U	120
A	MPX	P/M-XYLENE		U	120
A	OX	O-XYLENE		U	120
C	C12DCE	CIS-1,2-DICHLOROETHENE		U	62
C	123TCP	1,2,3-TRICHLOROPROPANE		U	620
A	STY	STYRENE		U	120
F	DCFM	DICHLORODIFLUOROMETHANE		U	620
O	ACE	ACETONE		U	2200
O	MEK	2-BUTANONE		U	620
O	MIBK	4-METHYL-2-PENTANONE		U	620
O	THF	TETRAHYDROFURAN		U	1200
ADD	12DBE	1,2-DIBROMOETHANE		U	250
C	1112PCA	1,1,1,2-TETRACHLOROETHANE		U	62
A	BUTB	N-BUTYLBENZENE		U	62
A	TBB	TERT-BUTYLBENZENE		U	310
C	2CT	O-CHLOROTOLUENE		U	310
C	HCB	HEXACHLOROBUTADIENE		U	310
A	IPB	ISOPROPYLBENZENE		U	62
		P-ISOPROPYLTOLUENE		U	62
2	N0	NAPHTHALENE		U	310
A	PROPB	N-PROPYLBENZENE		U	62
C	124TCB	1,2,4-TRICHLOROBENZENE		U	310
A	135TMB	1,3,5-TRIMETHYLBENZENE		U	310
A	124TMB	1,2,4-TRIMETHYLBENZENE		U	310
O	DIE	ETHYL ETHER		U	310

Surrogates (% Recovery)	
1,2-DICHLOROETHANE-D4	101
TOLUENE-D8	96
4-BROMOFLUOROBENZENE	98
DIBROMOFLUOROMETHANE	95

List of Potential Qualifiers

A: Spectra identified as "Aldol Condensation Product".

B: The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit.

C: Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D: Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E: Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G: The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H: The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I: The RPD between the results for the two columns exceeds the method-specified criteria; however, the lower value has been reported due to obvious interference.

J: Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL). This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M: Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND: Not detected at the method detection limit (MDL) for the sample.

NJ: Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P: The RPD between the results for the two columns exceeds the method-specified criteria.

Q: The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R: Analytical results are from sample re-analysis.

RE: Analytical results are from sample re-extraction.

U: Not detected at the reported detection limit for the sample.

Attachment B – Raw Data for Soil Samples Analyzed in 2016

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Method Blank
Lab ID	TS102516B02
Matrix	Soil
Reference Method	SHC
Batch ID	TS102516B02
Date Collected	N/A
Date Received	N/A
Date Prepped	10/25/2016
Date Analyzed	10/27/2016
Sample Size (wet)	25
% Solid	100.00
File ID	F910251672.D
Units	mg/Kg
Final Volume	2
Dilution	1
Reporting Limit	0.0800

Class	Abbrev	Analytes	Result		SSRL
SHC	C9	n-Nonane (C9)		U	0.0800
SHC	C10	n-Decane (C10)		U	0.0800
SHC	C11	n-Undecane (C11)		U	0.0800
SHC	C12	n-Dodecane (C12)		U	0.0800
SHC	C13	n-Tridecane (C13)		U	0.0800
SHC	1380	2,6,10 Trimethyldodecane (1380)		U	0.0800
SHC	C14	n-Tetradecane (C14)		U	0.0800
SHC	1470	2,6,10 Trimethyltridecane (1470)		U	0.0800
SHC	C15	n-Pentadecane (C15)		U	0.0800
SHC	C16	n-Hexadecane (C16)		U	0.0800
SHC	1650	Norpristane (1650)		U	0.0800
SHC	C17	n-Heptadecane (C17)		U	0.0800
SHC	Pr	Pristane		U	0.0800
SHC	C18	n-Octadecane (C18)	0.0263	CJ	0.0800
SHC	Ph	Phytane		U	0.0800
SHC	C19	n-Nonadecane (C19)		U	0.0800
SHC	C20	n-Eicosane (C20)		U	0.0800
SHC	C21	n-Heneicosane (C21)		U	0.0800
SHC	C22	n-Docosane (C22)		U	0.0800
SHC	C23	n-Tricosane (C23)	0.00480	J	0.0800
SHC	C24	n-Tetracosane (C24)		U	0.0800
SHC	C25	n-Pentacosane (C25)	0.0423	CJ	0.0800
SHC	C26	n-Hexacosane (C26)		U	0.0800
SHC	C27	n-Heptacosane (C27)		U	0.0800
SHC	C28	n-Octacosane (C28)	0.00664	J	0.0800
SHC	C29	n-Nonacosane (C29)		U	0.0800
SHC	C30	n-Triacontane (C30)		U	0.0800
SHC	C31	n-Hentriacontane (C31)		U	0.0800
SHC	C32	n-Dotriacontane (C32)		U	0.0800
SHC	C33	n-Tritriacontane (C33)		U	0.0800
SHC	C34	n-Tetratriacontane (C34)		U	0.0800
SHC	C35	n-Pentatriacontane (C35)		U	0.0800
SHC	C36	n-Hexatriacontane (C36)		U	0.0800
SHC	C37	n-Heptatriacontane (C37)		U	0.0800
SHC	C38	n-Octatriacontane (C38)		U	0.0800
SHC	C39	n-Nonatriacontane (C39)		U	0.0800
SHC	C40	n-Tetracontane (C40)		U	0.0800
SHC	TSH	Total Saturated Hydrocarbons	0.0801		0.0800
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)		U	2.64

Surrogates (% Recovery)	
ortho-Terphenyl	97
d50-Tetracosane	94

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Laboratory Control Sample
Lab ID	TS102516LCS01
Matrix	Soil
Reference Method	SHC
Batch ID	TS102516B02
Date Collected	N/A
Date Received	N/A
Date Prepped	10/25/2016
Date Analyzed	10/27/2016
Sample Size (wet)	25
% Solid	100.00
File ID	F910251674.D
Units	mg/Kg
Final Volume	2
Dilution	1
Reporting Limit	0.0800

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
SHC	C9	n-Nonane (C9)	0.508	S	0.0800	63	0.800	50	130
SHC	C10	n-Decane (C10)	0.558	S	0.0800	70	0.800	50	130
SHC	C12	n-Dodecane (C12)	0.605	S	0.0800	76	0.800	50	130
SHC	C14	n-Tetradecane (C14)	0.669	S	0.0800	84	0.800	50	130
SHC	C16	n-Hexadecane (C16)	0.769	S	0.0800	96	0.800	50	130
SHC	C18	n-Octadecane (C18)	0.791	S	0.0800	99	0.800	50	130
SHC	C19	n-Nonadecane (C19)	0.721	S	0.0800	90	0.800	50	130
SHC	C20	n-Eicosane (C20)	0.808	S	0.0800	101	0.800	50	130
SHC	C22	n-Docosane (C22)	0.795	S	0.0800	99	0.800	50	130
SHC	C24	n-Tetracosane (C24)	0.799	S	0.0800	100	0.800	50	130
SHC	C26	n-Hexacosane (C26)	0.796	S	0.0800	99	0.800	50	130
SHC	C28	n-Octacosane (C28)	0.800	S	0.0800	100	0.800	50	130
SHC	C30	n-Triacontane (C30)	0.803	S	0.0800	100	0.800	50	130
SHC	C36	n-Hexatriacontane (C36)	0.787	S	0.0800	98	0.800	50	130

Surrogates (% Recovery)	
ortho-Terphenyl	102
d50-Tetracosane	97

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Laboratory Control Sample Dup
Lab ID	TS102516LCSD01
Matrix	Soil
Reference Method	SHC
Batch ID	TS102516B02
Date Collected	N/A
Date Received	N/A
Date Prepped	10/25/2016
Date Analyzed	10/27/2016
Sample Size (wet)	25
% Solid	100.00
File ID	F910251676.D
Units	mg/Kg
Final Volume	2
Dilution	1
Reporting Limit	0.0800

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit	RPD	RPD Limit
SHC	C9	n-Nonane (C9)	0.498	S	0.0800	62	0.800	50	130	2	30
SHC	C10	n-Decane (C10)	0.551	S	0.0800	69	0.800	50	130	1	30
SHC	C12	n-Dodecane (C12)	0.610	S	0.0800	76	0.800	50	130	1	30
SHC	C14	n-Tetradecane (C14)	0.600	S	0.0800	75	0.800	50	130	11	30
SHC	C16	n-Hexadecane (C16)	0.732	S	0.0800	91	0.800	50	130	5	30
SHC	C18	n-Octadecane (C18)	0.729	S	0.0800	91	0.800	50	130	8	30
SHC	C19	n-Nonadecane (C19)	0.661	S	0.0800	83	0.800	50	130	9	30
SHC	C20	n-Eicosane (C20)	0.739	S	0.0800	92	0.800	50	130	9	30
SHC	C22	n-Docosane (C22)	0.736	S	0.0800	92	0.800	50	130	8	30
SHC	C24	n-Tetracosane (C24)	0.734	S	0.0800	92	0.800	50	130	9	30
SHC	C26	n-Hexacosane (C26)	0.731	S	0.0800	91	0.800	50	130	8	30
SHC	C28	n-Octacosane (C28)	0.732	S	0.0800	92	0.800	50	130	9	30
SHC	C30	n-Triacontane (C30)	0.740	S	0.0800	92	0.800	50	130	8	30
SHC	C36	n-Hexatriacontane (C36)	0.706	S	0.0800	88	0.800	50	130	11	30

Surrogates (% Recovery)	
ortho-Terphenyl	92
d50-Tetracosane	87

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	S-3-B35	S-3-B35
Lab ID	1610008-22	1610008-22D
Matrix	Soil	Soil
Reference Method	SHC	SHC
Batch ID	TS102516B02	TS102516B02
Date Collected	10/20/2016	10/20/2016
Date Received	10/22/2016	10/22/2016
Date Prepped	10/25/2016	10/25/2016
Date Analyzed	10/28/2016	10/28/2016
Sample Size (wet)	15.3	15.39
% Solid	92.76	92.76
File ID	F9102516100.D	F9102516102.D
Units	mg/Kg	mg/Kg
Final Volume	20	20
Dilution	1	1
Reporting Limit	1.41	1.40

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	RPD	RPD Limit	
SHC	C9	n-Nonane (C9)		U	1.41		U	1.40		30	N/A
SHC	C10	n-Decane (C10)		U	1.41		U	1.40		30	N/A
SHC	C11	n-Undecane (C11)		U	1.41		U	1.40		30	N/A
SHC	C12	n-Dodecane (C12)		U	1.41		U	1.40		30	N/A
SHC	C13	n-Tridecane (C13)		U	1.41		U	1.40		30	N/A
SHC	1380	2,6,10 Trimethyldodecane (1380)		U	1.41		U	1.40		30	N/A
SHC	C14	n-Tetradecane (C14)		U	1.41		U	1.40		30	N/A
SHC	1470	2,6,10 Trimethyltridecane (1470)		U	1.41		U	1.40		30	N/A
SHC	C15	n-Pentadecane (C15)		U	1.41		U	1.40		30	N/A
SHC	C16	n-Hexadecane (C16)		U	1.41		U	1.40		30	N/A
SHC	1650	Norpristane (1650)		U	1.41		U	1.40		30	N/A
SHC	C17	n-Heptadecane (C17)		U	1.41		U	1.40		30	N/A
SHC	Pr	Pristane		U	1.41		U	1.40		30	N/A
SHC	C18	n-Octadecane (C18)		U	1.41		U	1.40		30	N/A
SHC	Ph	Phytane		U	1.41		U	1.40		30	N/A
SHC	C19	n-Nonadecane (C19)		U	1.41		U	1.40		30	N/A
SHC	C20	n-Eicosane (C20)		U	1.41		U	1.40		30	N/A
SHC	C21	n-Heneicosane (C21)	0.0888	J	1.41	0.0574	J	1.40	43	30	¤
SHC	C22	n-Docosane (C22)	0.0831	J	1.41	0.0616	J	1.40	30	30	
SHC	C23	n-Tricosane (C23)	0.135	J	1.41	0.108	J	1.40	23	30	
SHC	C24	n-Tetracosane (C24)		U	1.41		U	1.40		30	N/A
SHC	C25	n-Pentacosane (C25)	0.395	JB	1.41	0.366	JB	1.40	8	30	
SHC	C26	n-Hexacosane (C26)		U	1.41		U	1.40		30	N/A
SHC	C27	n-Heptacosane (C27)		U	1.41		U	1.40		30	N/A
SHC	C28	n-Octacosane (C28)		U	1.41		U	1.40		30	N/A
SHC	C29	n-Nonacosane (C29)		U	1.41		U	1.40		30	N/A
SHC	C30	n-Triacontane (C30)		U	1.41		U	1.40		30	N/A
SHC	C31	n-Hentriacontane (C31)	1.26	J	1.41	0.434	J	1.40	98	30	¤
SHC	C32	n-Dotriacontane (C32)		U	1.41		U	1.40		30	N/A
SHC	C33	n-Tritriacontane (C33)		U	1.41		U	1.40		30	N/A
SHC	C34	n-Tetratriacontane (C34)		U	1.41		U	1.40		30	N/A
SHC	C35	n-Pentatriacontane (C35)	0.748	J	1.41	0.254	J	1.40	99	30	¤
SHC	C36	n-Hexatriacontane (C36)		U	1.41		U	1.40		30	N/A
SHC	C37	n-Heptatriacontane (C37)		U	1.41		U	1.40		30	N/A
SHC	C38	n-Octatriacontane (C38)		U	1.41		U	1.40		30	N/A
SHC	C39	n-Nonatriacontane (C39)		U	1.41		U	1.40		30	N/A
SHC	C40	n-Tetracontane (C40)		U	1.41		U	1.40		30	N/A
SHC	TSH	Total Saturated Hydrocarbons	2.71		1.41	1.28	J	1.40	72	30	¤
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	1760		46.5	977		46.2	57	30	¤

Surrogates (% Recovery)		
ortho-Terphenyl	105	95
d50-Tetracosane	98	91

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Alaska North Slope Crude
Lab ID	TO102315ANC01
Matrix	Oil
Reference Method	SHC
Batch ID	N/A
Date Collected	N/A
Date Received	N/A
Date Prepped	N/A
Date Analyzed	10/21/2015
Sample Size (wet)	0.10382
% Solid	100.00
File ID	F9102015036.D
Units	mg/Kg
Final Volume	10
Dilution	1
Reporting Limit	96.3

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
SHC	C9	n-Nonane (C9)	7190		96.3	114	6286.00	65	135
SHC	C10	n-Decane (C10)	5900		96.3	117	5047.00	65	135
SHC	C11	n-Undecane (C11)	5420		96.3	115	4703.00	65	135
SHC	C12	n-Dodecane (C12)	4860		96.3	117	4155.00	65	135
SHC	C13	n-Tridecane (C13)	4420		96.3	109	4058.00	65	135
SHC	1380	2,6,10 Trimethyldodecane (1380)	1020		96.3	121	845.00	65	135
SHC	C14	n-Tetradecane (C14)	4020		96.3	109	3670.00	65	135
SHC	1470	2,6,10 Trimethyltridecane (1470)	1560		96.3	114	1367.00	65	135
SHC	C15	n-Pentadecane (C15)	3990		96.3	109	3660.00	65	135
SHC	C16	n-Hexadecane (C16)	3450		96.3	104	3330.00	65	135
SHC	1650	Norpristane (1650)	1130		96.3	103	1093.00	65	135
SHC	C17	n-Heptadecane (C17)	3060		96.3	101	3012.00	65	135
SHC	Pr	Pristane	2350		96.3	110	2145.00	65	135
SHC	C18	n-Octadecane (C18)	2680		96.3	99	2700.00	65	135
SHC	Ph	Phytane	1540		96.3	126	1215.00	65	135
SHC	C19	n-Nonadecane (C19)	2650		96.3	115	2305.00	65	135
SHC	C20	n-Eicosane (C20)	2620		96.3	112	2337.00	65	135
SHC	C21	n-Heneicosane (C21)	2300		96.3	113	2044.00	65	135
SHC	C22	n-Docosane (C22)	2190		96.3	111	1972.00	65	135
SHC	C23	n-Tricosane (C23)	1960		96.3	112	1745.00	65	135
SHC	C24	n-Tetracosane (C24)	1870		96.3	114	1641.00	65	135
SHC	C25	n-Pentacosane (C25)	1750		96.3	112	1562.00	65	135
SHC	C26	n-Hexacosane (C26)	1550		96.3	112	1378.00	65	135
SHC	C27	n-Heptacosane (C27)	1250		96.3	115	1083.00	65	135
SHC	C28	n-Octacosane (C28)	887		96.3	114	776.00	65	135
SHC	C29	n-Nonacosane (C29)	877		96.3	120	734.00	65	135
SHC	C30	n-Triacontane (C30)	700		96.3	112	627.00	65	135
SHC	C31	n-Hentriacontane (C31)	574		96.3	112	514.00	65	135
SHC	C32	n-Dotriacontane (C32)	597		96.3	130	458.00	65	135
SHC	C33	n-Tritriacontane (C33)	385		96.3	99	388.00	65	135
SHC	C34	n-Tetratriacontane (C34)	321		96.3	93	347.00	65	135
SHC	C35	n-Pentatriacontane (C35)	282		96.3	101	278.00	65	135
SHC	C36	n-Hexatriacontane (C36)	176		96.3	95	186.00	65	135
SHC	C37	n-Heptatriacontane (C37)	178		96.3	117	152.00	65	135
SHC	C38	n-Octatriacontane (C38)	155		96.3	118	131.00	65	135
SHC	C39	n-Nonatriacontane (C39)	102		96.3	115	89.00	65	135
SHC	C40	n-Tetracontane (C40)	94.7	J	96.3	103	92.00	65	135
SHC	TSH	Total Saturated Hydrocarbons	76000		96.3	112	68122.00	65	135
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	623000		3180	112	554993.00	65	135

Surrogates (% Recovery)
ortho-Terphenyl
d50-Tetracosane

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	S-16-B26	S-14-B27
Lab ID	1610008-02	1610008-04
Matrix	Soil	Soil
Reference Method	SHC	SHC
Batch ID	TS102516B02	TS102516B02
Date Collected	10/18/2016	10/18/2016
Date Received	10/20/2016	10/20/2016
Date Prepped	10/25/2016	10/25/2016
Date Analyzed	10/28/2016	10/28/2016
Sample Size (wet)	30.32	30.24
% Solid	84.78	96.48
File ID	F910251678.D	F910251680.D
Units	mg/Kg	mg/Kg
Final Volume	2	4
Dilution	1	1
Reporting Limit	0.0778	0.137

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL
SHC	C9	n-Nonane (C9)		U	0.0778		U	0.137
SHC	C10	n-Decane (C10)		U	0.0778		U	0.137
SHC	C11	n-Undecane (C11)		U	0.0778		U	0.137
SHC	C12	n-Dodecane (C12)		U	0.0778		U	0.137
SHC	C13	n-Tridecane (C13)		U	0.0778	0.0173	J	0.137
SHC	1380	2,6,10 Trimethyldodecane (1380)		U	0.0778	0.0233	J	0.137
SHC	C14	n-Tetradecane (C14)		U	0.0778	0.0601	J	0.137
SHC	1470	2,6,10 Trimethyltridecane (1470)		U	0.0778	0.0790	J	0.137
SHC	C15	n-Pentadecane (C15)		U	0.0778	0.0762	J	0.137
SHC	C16	n-Hexadecane (C16)		U	0.0778	0.126	J	0.137
SHC	1650	Norpristane (1650)		U	0.0778	0.119	J	0.137
SHC	C17	n-Heptadecane (C17)		U	0.0778	0.199		0.137
SHC	Pr	Pristane		U	0.0778	0.468		0.137
SHC	C18	n-Octadecane (C18)	0.0239	JB	0.0778	0.294		0.137
SHC	Ph	Phytane		U	0.0778	0.499		0.137
SHC	C19	n-Nonadecane (C19)		U	0.0778	0.451		0.137
SHC	C20	n-Eicosane (C20)		U	0.0778	0.475		0.137
SHC	C21	n-Heneicosane (C21)	0.00327	J	0.0778	1.34		0.137
SHC	C22	n-Docosane (C22)	0.00327	J	0.0778	0.450		0.137
SHC	C23	n-Tricosane (C23)	0.00685	JB	0.0778	0.302		0.137
SHC	C24	n-Tetracosane (C24)		U	0.0778	0.281		0.137
SHC	C25	n-Pentacosane (C25)	0.0433	JB	0.0778	0.456		0.137
SHC	C26	n-Hexacosane (C26)	0.00195	J	0.0778		U	0.137
SHC	C27	n-Heptacosane (C27)	0.00412	J	0.0778		U	0.137
SHC	C28	n-Octacosane (C28)		U	0.0778		U	0.137
SHC	C29	n-Nonacosane (C29)	0.00381	J	0.0778		U	0.137
SHC	C30	n-Triacontane (C30)		U	0.0778		U	0.137
SHC	C31	n-Hentriacontane (C31)	0.00412	J	0.0778	0.276		0.137
SHC	C32	n-Dotriacontane (C32)		U	0.0778		U	0.137
SHC	C33	n-Tritriacontane (C33)	0.00389	J	0.0778		U	0.137
SHC	C34	n-Tetratriacontane (C34)		U	0.0778		U	0.137
SHC	C35	n-Pentatriacontane (C35)		U	0.0778	0.284		0.137
SHC	C36	n-Hexatriacontane (C36)		U	0.0778		U	0.137
SHC	C37	n-Heptatriacontane (C37)		U	0.0778		U	0.137
SHC	C38	n-Octatriacontane (C38)		U	0.0778		U	0.137
SHC	C39	n-Nonatriacontane (C39)		U	0.0778		U	0.137
SHC	C40	n-Tetracontane (C40)		U	0.0778		U	0.137
SHC	TSH	Total Saturated Hydrocarbons	0.0984	B	0.0778	6.28		0.137
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)		U	2.57	850		4.52

Surrogates (% Recovery)		
ortho-Terphenyl	91	95
d50-Tetracosane	57	87

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	S-16-B30	S-6-B28	S-9-B32	S-8-B24
Lab ID	1610008-06	1610008-07	1610008-12	1610008-15
Matrix	Soil	Soil	Soil	Soil
Reference Method	SHC	SHC	SHC	SHC
Batch ID	TS102516B02	TS102516B02	TS102516B02	TS102516B02
Date Collected	10/18/2016	10/19/2016	10/19/2016	10/20/2016
Date Received	10/20/2016	10/21/2016	10/21/2016	10/22/2016
Date Prepped	10/25/2016	10/25/2016	10/25/2016	10/25/2016
Date Analyzed	10/28/2016	10/28/2016	10/28/2016	10/28/2016
Sample Size (wet)	30.86	20.1	30.67	25.18
% Solid	83.26	84.58	87.62	88.49
File ID	F910251682.D	F910251684.D	F910251692.D	F910251694.D
Units	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Final Volume	2	16	8	2
Dilution	1	1	1	1
Reporting Limit	0.0778	0.941	0.298	0.0898

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	Result		SSRL	Result		SSRL
SHC	C9	n-Nonane (C9)		U	0.0778		U	0.941	0.0113	J	0.298	0.00153	J	0.0898
SHC	C10	n-Decane (C10)		U	0.0778		U	0.941	0.00834	J	0.298	0.00772	J	0.0898
SHC	C11	n-Undecane (C11)		U	0.0778		U	0.941	0.00893	J	0.298	0.0105	J	0.0898
SHC	C12	n-Dodecane (C12)		U	0.0778		U	0.941	0.0101	J	0.298	0.0153	J	0.0898
SHC	C13	n-Tridecane (C13)		U	0.0778		U	0.941	0.0417	J	0.298	0.0212	J	0.0898
SHC	1380	2,6,10 Trimethyldodecane (1380)		U	0.0778	0.0527	J	0.941	0.351		0.298	0.00727	J	0.0898
SHC	C14	n-Tetradecane (C14)		U	0.0778		U	0.941	0.118	J	0.298	0.0206	J	0.0898
SHC	1470	2,6,10 Trimethyltridecane (1470)		U	0.0778	0.0941	J	0.941	0.672		0.298	0.0134	J	0.0898
SHC	C15	n-Pentadecane (C15)		U	0.0778		U	0.941	0.138	J	0.298	0.0320	J	0.0898
SHC	C16	n-Hexadecane (C16)		U	0.0778		U	0.941	0.158	J	0.298	0.0216	J	0.0898
SHC	1650	Norpristane (1650)		U	0.0778	0.194	J	0.941	1.07		0.298	0.0222	J	0.0898
SHC	C17	n-Heptadecane (C17)		U	0.0778	0.0452	J	0.941	0.158	J	0.298	0.0237	J	0.0898
SHC	Pr	Pristane		U	0.0778	0.639	J	0.941	2.49		0.298	0.0575	J	0.0898
SHC	C18	n-Octadecane (C18)	0.0220	JB	0.0778	0.755	J	0.941	0.332		0.298	0.0749	JB	0.0898
SHC	Ph	Phytane		U	0.0778	0.926	J	0.941	2.68		0.298	0.0774	J	0.0898
SHC	C19	n-Nonadecane (C19)		U	0.0778	0.149	J	0.941	0.380		0.298	0.0319	J	0.0898
SHC	C20	n-Eicosane (C20)		U	0.0778	0.0932	J	0.941	0.444		0.298	0.0221	J	0.0898
SHC	C21	n-Heneicosane (C21)		U	0.0778	0.286	J	0.941	1.97		0.298	0.373		0.0898
SHC	C22	n-Docosane (C22)	0.00163	J	0.0778	0.180	J	0.941	0.280	J	0.298	0.0261	J	0.0898
SHC	C23	n-Tricosane (C23)	0.00825	JB	0.0778	0.270	J	0.941	0.290	J	0.298	0.0251	JB	0.0898
SHC	C24	n-Tetracosane (C24)		U	0.0778		U	0.941	0.420		0.298	0.0142	J	0.0898
SHC	C25	n-Pentacosane (C25)	0.0412	JB	0.0778	1.00		0.941	0.811		0.298	0.0522	JB	0.0898
SHC	C26	n-Hexacosane (C26)		U	0.0778		U	0.941	0.254	J	0.298	0.0475	J	0.0898
SHC	C27	n-Heptacosane (C27)	0.00451	J	0.0778		U	0.941	0.263	J	0.298	0.0396	J	0.0898
SHC	C28	n-Octacosane (C28)		U	0.0778		U	0.941		U	0.298		U	0.0898
SHC	C29	n-Nonacosane (C29)	0.00467	J	0.0778		U	0.941		U	0.298		U	0.0898
SHC	C30	n-Triacontane (C30)		U	0.0778		U	0.941	0.436		0.298		U	0.0898
SHC	C31	n-Hentriacontane (C31)	0.00475	J	0.0778		U	0.941	0.424		0.298	0.127		0.0898
SHC	C32	n-Dotriacontane (C32)		U	0.0778		U	0.941		U	0.298		U	0.0898
SHC	C33	n-Tritriacontane (C33)		U	0.0778		U	0.941		U	0.298		U	0.0898
SHC	C34	n-Tetratriacontane (C34)		U	0.0778		U	0.941		U	0.298		U	0.0898
SHC	C35	n-Pentatriacontane (C35)		U	0.0778	0.490	J	0.941	0.446		0.298		U	0.0898
SHC	C36	n-Hexatriacontane (C36)		U	0.0778		U	0.941		U	0.298		U	0.0898
SHC	C37	n-Heptatriacontane (C37)		U	0.0778	0.626	J	0.941		U	0.298		U	0.0898
SHC	C38	n-Octatriacontane (C38)		U	0.0778	1.13		0.941		U	0.298		U	0.0898
SHC	C39	n-Nonatriacontane (C39)		U	0.0778	0.741	J	0.941		U	0.298		U	0.0898
SHC	C40	n-Tetracontane (C40)		U	0.0778	1.23		0.941		U	0.298		U	0.0898
SHC	TSH	Total Saturated Hydrocarbons	0.0869	B	0.0778	8.90		0.941	14.7		0.298	1.16		0.0898
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)		U	2.57	1510		31.1	1330		9.82	191		2.96

Surrogates (% Recovery)				
ortho-Terphenyl	93	97	103	99
d50-Tetracosane	91	88	119	90

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	S-5-B34	S-9-B34	S-3-B35	S-5-B36
Lab ID	1610008-20	1610008-21	1610008-22	1610008-23
Matrix	Soil	Soil	Soil	Soil
Reference Method	SHC	SHC	SHC	SHC
Batch ID	TS102516B02	TS102516B02	TS102516B02	TS102516B02
Date Collected	10/20/2016	10/20/2016	10/20/2016	10/21/2016
Date Received	10/22/2016	10/22/2016	10/22/2016	10/22/2016
Date Prepped	10/25/2016	10/25/2016	10/25/2016	10/25/2016
Date Analyzed	10/28/2016	10/31/2016	10/28/2016	10/28/2016
Sample Size (wet)	20.14	20.77	15.3	30.32
% Solid	92.01	91.08	92.76	89.64
File ID	F910251696.D	F910301618.D	F9102516100.D	F9102516104.D
Units	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Final Volume	3.33	10	20	2
Dilution	1	1	1	1
Reporting Limit	0.180	0.529	1.41	0.0736

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	Result		SSRL	Result		SSRL
SHC	C9	n-Nonane (C9)		U	0.180		U	0.529		U	1.41		U	0.0736
SHC	C10	n-Decane (C10)		U	0.180		U	0.529		U	1.41		U	0.0736
SHC	C11	n-Undecane (C11)		U	0.180		U	0.529		U	1.41		U	0.0736
SHC	C12	n-Dodecane (C12)		U	0.180		U	0.529		U	1.41		U	0.0736
SHC	C13	n-Tridecane (C13)		U	0.180		U	0.529		U	1.41		U	0.0736
SHC	1380	2,6,10 Trimethyldodecane (1380)	0.0780	J	0.180	0.0296	J	0.529		U	1.41		U	0.0736
SHC	C14	n-Tetradecane (C14)	0.0160	J	0.180		U	0.529		U	1.41		U	0.0736
SHC	1470	2,6,10 Trimethyltridecane (1470)	0.116	J	0.180	0.0666	J	0.529		U	1.41		U	0.0736
SHC	C15	n-Pentadecane (C15)	0.0199	J	0.180		U	0.529		U	1.41		U	0.0736
SHC	C16	n-Hexadecane (C16)		U	0.180		U	0.529		U	1.41		U	0.0736
SHC	1650	Norpristane (1650)	0.104	J	0.180	0.110	J	0.529		U	1.41		U	0.0736
SHC	C17	n-Heptadecane (C17)	0.0286	J	0.180	0.0439	J	0.529		U	1.41	0.00537	J	0.0736
SHC	Pr	Pristane	0.292		0.180	0.347	J	0.529		U	1.41	0.0116	J	0.0736
SHC	C18	n-Octadecane (C18)	0.0780	JB	0.180	0.147	JB	0.529		U	1.41	0.0207	JB	0.0736
SHC	Ph	Phytane	0.274		0.180	0.325	J	0.529		U	1.41	0.0108	J	0.0736
SHC	C19	n-Nonadecane (C19)	0.0539	J	0.180	0.125	J	0.529		U	1.41		U	0.0736
SHC	C20	n-Eicosane (C20)		U	0.180	0.0692	J	0.529		U	1.41		U	0.0736
SHC	C21	n-Heneicosane (C21)	0.101	J	0.180	0.431	J	0.529	0.0888	J	1.41		U	0.0736
SHC	C22	n-Docosane (C22)	0.0455	J	0.180	0.140	J	0.529	0.0831	J	1.41		U	0.0736
SHC	C23	n-Tricosane (C23)	0.0654	J	0.180	0.172	J	0.529	0.135	J	1.41		U	0.0736
SHC	C24	n-Tetracosane (C24)		U	0.180	0.151	J	0.529		U	1.41		U	0.0736
SHC	C25	n-Pentacosane (C25)	0.119	JB	0.180	0.339	JB	0.529	0.395	JB	1.41		U	0.0736
SHC	C26	n-Hexacosane (C26)		U	0.180		U	0.529		U	1.41		U	0.0736
SHC	C27	n-Heptacosane (C27)	0.0882	J	0.180		U	0.529		U	1.41		U	0.0736
SHC	C28	n-Octacosane (C28)		U	0.180		U	0.529		U	1.41		U	0.0736
SHC	C29	n-Nonacosane (C29)		U	0.180		U	0.529		U	1.41		U	0.0736
SHC	C30	n-Triacontane (C30)		U	0.180		U	0.529		U	1.41		U	0.0736
SHC	C31	n-Hentriacontane (C31)	0.228		0.180		U	0.529	1.26	J	1.41		U	0.0736
SHC	C32	n-Dotriacontane (C32)		U	0.180		U	0.529		U	1.41		U	0.0736
SHC	C33	n-Tritriacontane (C33)		U	0.180		U	0.529		U	1.41		U	0.0736
SHC	C34	n-Tetratriacontane (C34)		U	0.180	0.763		0.529		U	1.41		U	0.0736
SHC	C35	n-Pentatriacontane (C35)		U	0.180	0.491	J	0.529	0.748	J	1.41		U	0.0736
SHC	C36	n-Hexatriacontane (C36)		U	0.180	0.213	J	0.529		U	1.41		U	0.0736
SHC	C37	n-Heptatriacontane (C37)	0.113	J	0.180	0.605		0.529		U	1.41	0.0188	J	0.0736
SHC	C38	n-Octatriacontane (C38)	0.245		0.180	1.28		0.529		U	1.41	0.0387	J	0.0736
SHC	C39	n-Nonatriacontane (C39)		U	0.180	0.627		0.529		U	1.41	0.0333	J	0.0736
SHC	C40	n-Tetracontane (C40)		U	0.180	0.801		0.529		U	1.41	0.0448	J	0.0736
SHC	TSH	Total Saturated Hydrocarbons	2.07		0.180	7.28		0.529	2.71		1.41	0.184	B	0.0736
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	433		5.93	829		17.4	1760		46.5	117		2.43

Surrogates (% Recovery)				
ortho-Terphenyl	96	94	105	101
d50-Tetracosane	88	85	98	96

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Method Blank
Lab ID	TS102516B02
Matrix	Soil
Reference Method	SHC
Batch ID	TS102516B02
Date Collected	N/A
Date Received	N/A
Date Prepped	10/25/2016
Date Analyzed	10/27/2016
Sample Size (wet)	25
% Solid	100.00
File ID	F910251672.D
Units	mg/Kg
Final Volume	2
Dilution	1
Reporting Limit	1.68

Class	Abbrev	Analytes	Result		SSRL
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)		U	2.64
		C10-C28 DRO	0.314	J	1.68

Surrogates (% Recovery)

ortho-Terphenyl	97
d50-Tetracosane	94

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	S-3-B35	S-3-B35
Lab ID	1610008-22	1610008-22D
Matrix	Soil	Soil
Reference Method	SHC	SHC
Batch ID	TS102516B02	TS102516B02
Date Collected	10/20/2016	10/20/2016
Date Received	10/22/2016	10/22/2016
Date Prepped	10/25/2016	10/25/2016
Date Analyzed	10/28/2016	10/28/2016
Sample Size (wet)	15.3	15.39
% Solid	92.76	92.76
File ID	F9102516100.D	F9102516102.D
Units	mg/Kg	mg/Kg
Final Volume	20	20
Dilution	1	1
Reporting Limit	29.6	29.4

Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	RPD	RPD Limit	
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	1760	46.5	977	46.2	57	30	¤
		C10-C28 DRO	161	29.6	92.2	29.4	54	30	¤

Surrogates (% Recovery)		
ortho-Terphenyl	105	95
d50-Tetracosane	98	91

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	S-16-B26	S-14-B27	S-16-B30
Lab ID	1610008-02	1610008-04	1610008-06
Matrix	Soil	Soil	Soil
Reference Method	SHC	SHC	SHC
Batch ID	TS102516B02	TS102516B02	TS102516B02
Date Collected	10/18/2016	10/18/2016	10/18/2016
Date Received	10/20/2016	10/20/2016	10/20/2016
Date Prepped	10/25/2016	10/25/2016	10/25/2016
Date Analyzed	10/28/2016	10/28/2016	10/28/2016
Sample Size (wet)	30.32	30.24	30.86
% Solid	84.78	96.48	83.26
File ID	F910251678.D	F910251680.D	F910251682.D
Units	mg/Kg	mg/Kg	mg/Kg
Final Volume	2	4	2
Dilution	1	1	1
Reporting Limit	1.63	2.88	1.64

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	Result		SSRL
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)		U	2.57	850		4.52		U	2.57
		C10-C28 DRO	1.55	JB	1.63	512		2.88	2.17	B	1.64

Surrogates (% Recovery)			
ortho-Terphenyl	91	95	93
d50-Tetracosane	57	87	91

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

		Client ID	S-6-B28		S-9-B32		S-8-B24		S-5-B34	
		Lab ID	1610008-07		1610008-12		1610008-15		1610008-20	
		Matrix	Soil		Soil		Soil		Soil	
		Reference Method	SHC		SHC		SHC		SHC	
		Batch ID	TS102516B02		TS102516B02		TS102516B02		TS102516B02	
		Date Collected	10/19/2016		10/19/2016		10/20/2016		10/20/2016	
		Date Received	10/21/2016		10/21/2016		10/22/2016		10/22/2016	
		Date Prepped	10/25/2016		10/25/2016		10/25/2016		10/25/2016	
		Date Analyzed	10/28/2016		10/28/2016		10/28/2016		10/28/2016	
		Sample Size (wet)	20.1		30.67		25.18		20.14	
		% Solid	84.58		87.62		88.49		92.01	
		File ID	F910251684.D		F910251692.D		F910251694.D		F910251696.D	
		Units	mg/Kg		mg/Kg		mg/Kg		mg/Kg	
		Final Volume	16		8		2		3.33	
		Dilution	1		1		1		1	
		Reporting Limit	19.8		6.25		1.88		3.77	
Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	1510	31.1	1330	9.82	191	2.96	433	5.93
		C10-C28 DRO	473	19.8	972	6.25	38.8	1.88	142	3.77
		Surrogates (% Recovery)								
		ortho-Terphenyl	97		103		99		96	
		d50-Tetracosane	88		119		90		88	

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	S-9-B34	S-3-B35	S-5-B36
Lab ID	1610008-21	1610008-22	1610008-23
Matrix	Soil	Soil	Soil
Reference Method	SHC	SHC	SHC
Batch ID	TS102516B02	TS102516B02	TS102516B02
Date Collected	10/20/2016	10/20/2016	10/21/2016
Date Received	10/22/2016	10/22/2016	10/22/2016
Date Prepped	10/25/2016	10/25/2016	10/25/2016
Date Analyzed	10/31/2016	10/28/2016	10/28/2016
Sample Size (wet)	20.77	15.3	30.32
% Solid	91.08	92.76	89.64
File ID	F910301618.D	F9102516100.D	F9102516104.D
Units	mg/Kg	mg/Kg	mg/Kg
Final Volume	10	20	2
Dilution	1	1	1
Reporting Limit	11.1	29.6	1.54

Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	Result	SSRL
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	939	17.4	1760	46.5	117	2.43
		C10-C28 DRO	353	11.1	161	29.6	57.5	1.54

Surrogates (% Recovery)			
ortho-Terphenyl	94	105	101
d50-Tetracosane	85	98	96

U: The analyte was analyzed for but not detected at the sample specific level reported.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
E: Estimated value, exceeds the upper limit of calibration.
NA: Not Applicable
D: Secondary Dilution Performed
D1: Tertiary Dilution Performed
ª: Value outside of QC Limits.
§: Surrogate value outside of acceptable range.
X: It is not possible to calculate RPD, one result is below the detection limit, the other is above reporting limit.
G: Matrix Interference.
P: Greater than 40% RPD between the two columns, the higher value is reported according to the method.
I: Due to interference, the lower value is reported.
N: Spike recovery outside control limits.
E: Estimated due to Interference. (Metals)
¤: Duplicate outside control limits.
P: Spike compound. (Metals)
J: Below CRDL, Project DL, or RL but greater than or equal to MDL
C: Sample concentration is > 4 times the spike level, recovery limits do not apply. (Metals)
S: Spike Compound. (Organics)
§: RPD criteria not applicable to results less than 5 times the reporting limit. (Metals)
T: Tentatively identified corexit compound.
C: Co-elution.
Z: Result not surrogate corrected.
DL: Surrogate result diluted out of sample.
W: Matrix interference may be present based on chemical reasonableness evaluation.

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Method Blank
Lab ID	TS102516B02
Matrix	Soil
Reference Method	Modified 8270D
Batch ID	TS102516B02
Date Collected	N/A
Date Received	N/A
Date Prepped	10/25/2016
Date Analyzed	11/01/2016
Sample Size (wet)	25
% Solid	100.00
File ID	F210311625.D
Units	µg/Kg
Final Volume	2
Dilution	1
Reporting Limit	0.800

Class	Abbrev	Analytes	Result		SSRL
2	D0	cis/trans-Decalin		U	0.800
2	D1	C1-Decalins		U	0.800
2	D2	C2-Decalins		U	0.800
2	D3	C3-Decalins		U	0.800
2	D4	C4-Decalins		U	0.800
2	BT0	Benzothiophene		U	0.800
2	BT1	C1-Benzo(b)thiophenes		U	0.800
2	BT2	C2-Benzo(b)thiophenes		U	0.800
2	BT3	C3-Benzo(b)thiophenes		U	0.800
2	BT4	C4-Benzo(b)thiophenes		U	0.800
2	N0	Naphthalene	0.0906	J	0.800
2	N1	C1-Naphthalenes	0.120	J	0.800
2	N2	C2-Naphthalenes		U	0.800
2	N3	C3-Naphthalenes		U	0.800
2	N4	C4-Naphthalenes		U	0.800
2	B	Biphenyl	0.0578	J	0.800
3	DF	Dibenzofuran		U	0.800
3	AY	Acenaphthylene	0.235	J	0.800
3	AE	Acenaphthene	0.0630	J	0.800
3	F0	Fluorene		U	0.800
3	F1	C1-Fluorenes		U	0.800
3	F2	C2-Fluorenes		U	0.800
3	F3	C3-Fluorenes		U	0.800
3	A0	Anthracene	0.0261	J	0.800
3	P0	Phenanthrene	0.176	J	0.800
3	PA1	C1-Phenanthrenes/Anthracenes		U	0.800
3	PA2	C2-Phenanthrenes/Anthracenes		U	0.800
3	PA3	C3-Phenanthrenes/Anthracenes		U	0.800
3	PA4	C4-Phenanthrenes/Anthracenes		U	0.800
3	RET	Retene		U	0.800
3	DBT0	Dibenzothiophene		U	0.800
3	DBT1	C1-Dibenzothiophenes		U	0.800
3	DBT2	C2-Dibenzothiophenes		U	0.800
3	DBT3	C3-Dibenzothiophenes		U	0.800
3	DBT4	C4-Dibenzothiophenes		U	0.800
4	BF	Benzo(b)fluorene		U	0.800
4	FL0	Fluoranthene	0.0713	J	0.800
4	PY0	Pyrene	0.0560	J	0.800
4	FP1	C1-Fluoranthenes/Pyrenes		U	0.800
4	FP2	C2-Fluoranthenes/Pyrenes		U	0.800
4	FP3	C3-Fluoranthenes/Pyrenes		U	0.800
4	FP4	C4-Fluoranthenes/Pyrenes		U	0.800
4	NBT0	Naphthobenzothiophenes		U	0.800
4	NBT1	C1-Naphthobenzothiophenes		U	0.800
4	NBT2	C2-Naphthobenzothiophenes		U	0.800
4	NBT3	C3-Naphthobenzothiophenes		U	0.800
4	NBT4	C4-Naphthobenzothiophenes		U	0.800
4	BA0	Benz[a]anthracene		U	0.800
4	C0	Chrysene/Triphenylene	0.0361	J	0.800
4	BC1	C1-Chrysenes		U	0.800
4	BC2	C2-Chrysenes		U	0.800
4	BC3	C3-Chrysenes		U	0.800
4	BC4	C4-Chrysenes		U	0.800

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Method Blank
Lab ID	TS102516B02
Matrix	Soil
Reference Method	Modified 8270D
Batch ID	TS102516B02
Date Collected	N/A
Date Received	N/A
Date Prepped	10/25/2016
Date Analyzed	11/01/2016
Sample Size (wet)	25
% Solid	100.00
File ID	F210311625.D
Units	µg/Kg
Final Volume	2
Dilution	1
Reporting Limit	0.800

Class	Abbrev	Analytes	Result	SSRL
5	BBF	Benzo[b]fluoranthene	U	0.800
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	U	0.800
5	BAF	Benzo[a]fluoranthene	U	0.800
5	BEP	Benzo[e]pyrene	U	0.800
5	BAP	Benzo[a]pyrene	U	0.800
5	PER	Perylene	U	0.800
6	IND	Indeno[1,2,3-cd]pyrene	U	0.800
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	U	0.800
6	GHI	Benzo[g,h,i]perylene	U	0.800
3	CAR	Carbazole	U	0.800
3	4MDT	4-Methyldibenzothiophene	U	0.800
3	2MDT	2/3-Methyldibenzothiophene	U	0.800
3	1MDT	1-Methyldibenzothiophene	U	0.800
3	3MP	3-Methylphenanthrene	U	0.800
3	2MP	2-Methylphenanthrene	U	0.800
3	2MA	2-Methylanthracene	U	0.800
3	9MP	9/4-Methylphenanthrene	U	0.800
3	1MP	1-Methylphenanthrene	U	0.800
t23	T4	C23 Tricyclic Terpane	U	0.800
t24	T5	C24 Tricyclic Terpane	U	0.800
t25	T6	C25 Tricyclic Terpane	U	0.800
te24	T6a	C24 Tetracyclic Terpane	U	0.800
t26S	T6b	C26 Tricyclic Terpane-22S	U	0.800
t26R	T6c	C26 Tricyclic Terpane-22R	U	0.800
t28S	T7	C28 Tricyclic Terpane-22S	U	0.800
t28R	T8	C28 Tricyclic Terpane-22R	U	0.800
t29S	T9	C29 Tricyclic Terpane-22S	U	0.800
t29R	T10	C29 Tricyclic Terpane-22R	U	0.800
Ts	T11	18a-22,29,30-Trisnorneohopane-TS	U	0.800
t30S	T11a	C30 Tricyclic Terpane-22S	U	0.800
t30R	T11b	C30 Tricyclic Terpane-22R	U	0.800
Tm	T12	17a(H)-22,29,30-Trisnorhopane-TM	U	0.800
BNH	T14a	17a/b,21b/a 28,30-Bisnorhopane	U	0.800
25N	T14b	17a(H),21b(H)-25-Norhopane	U	0.800
H29	T15	30-Norhopane	U	0.800
C29Ts	T16	18a(H)-30-Norneohopane-C29Ts	U	0.800
X	X	17a(H)-Diahopane	U	0.800
M29	T17	30-Normoretane	U	0.800
OL	T18	18a(H)&18b(H)-Oleananes	U	0.800
H30	T19	Hopane	U	0.800
M30	T20	Moretane	U	0.800
H31S	T21	30-Homohopane-22S	U	0.800
H31R	T22	30-Homohopane-22R	U	0.800
T22A	T22A	T22a-Gammacerane/C32-diahopane	U	0.800
H32S	T26	30,31-Bishomohopane-22S	U	0.800
H32R	T27	30,31-Bishomohopane-22R	U	0.800
H33S	T30	30,31-Trishomohopane-22S	U	0.800
H33R	T31	30,31-Trishomohopane-22R	U	0.800
H34S	T32	Tetrakishomohopane-22S	U	0.800
H34R	T33	Tetrakishomohopane-22R	U	0.800
H35S	T34	Pentakishomohopane-22S	U	0.800
H35R	T35	Pentakishomohopane-22R	U	0.800
d27S	S4	13b(H),17a(H)-20S-Diacholestane	U	0.800
d27R	S5	13b(H),17a(H)-20R-Diacholestane	U	0.800
d28S	S8	13b,17a-20S-Methyldiacholestane	U	0.800
aa27S	S12	14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12)	U	0.800
aa27R	S17	14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17)	U	0.800
d29R	S18	Unknown Sterane (S18)	U	0.800
d29S	S19	13a,17b-20S-Ethyldiacholestane	U	0.800
aa28S	S20	14a,17a-20S-Methylcholestane	U	0.800
aa28R	S24	14a,17a-20R-Methylcholestane	U	0.800
aa29S	S25	14a(H),17a(H)-20S-Ethylcholestane	U	0.800
aa29R	S28	14a(H),17a(H)-20R-Ethylcholestane	U	0.800
bb27R	S14	14b(H),17b(H)-20R-Cholestane	U	0.800
bb27S	S15	14b(H),17b(H)-20S-Cholestane	U	0.800
bb28R	S22	14b,17b-20R-Methylcholestane	U	0.800
bb28S	S23	14b,17b-20S-Methylcholestane	U	0.800
bb29R	S26	14b(H),17b(H)-20R-Ethylcholestane	U	0.800
bb29S	S27	14b(H),17b(H)-20S-Ethylcholestane	U	0.800
RC26/SC27TA	RC26/SC27TA	C26,20R- +C27,20S- triaromatic steroid	U	0.800
SC28TA	SC28TA	C28,20S-triaromatic steroid	U	0.800
RC27TA	RC27TA	C27,20R-triaromatic steroid	U	0.800
RC28TA	RC28TA	C28,20R-triaromatic steroid	U	0.800

Surrogates (% Recovery)	
Naphthalene-d8	90
Phenanthrene-d10	104
Benzo[a]pyrene-d12	84
5B(H)Cholane	N/A

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Laboratory Control Sample
Lab ID	TS102516LCS01
Matrix	Soil
Reference Method	Modified 8270D
Batch ID	TS102516B02
Date Collected	N/A
Date Received	N/A
Date Prepped	10/25/2016
Date Analyzed	11/01/2016
Sample Size (wet)	25
% Solid	100.00
File ID	F210311626.D
Units	µg/Kg
Final Volume	2
Dilution	1
Reporting Limit	0.800

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
2	N0	Naphthalene	31.8	S	0.800	80	40.0	50	130
3	AY	Acenaphthylene	29.9	S	0.800	75	40.0	50	130
3	AE	Acenaphthene	33.0	S	0.800	83	40.0	50	130
3	F0	Fluorene	34.6	S	0.800	86	40.0	50	130
3	A0	Anthracene	37.6	S	0.800	94	40.0	50	130
3	P0	Phenanthrene	37.0	S	0.800	92	40.0	50	130
4	FL0	Fluoranthene	38.0	S	0.800	95	40.0	50	130
4	PY0	Pyrene	35.5	S	0.800	89	40.0	50	130
4	BA0	Benz[a]anthracene	37.1	S	0.800	93	40.0	50	130
4	C0	Chrysene/Triphenylene	38.0	S	0.800	95	40.0	50	130
5	BBF	Benzo[b]fluoranthene	39.8	S	0.800	100	40.0	50	130
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	39.5	S	0.800	99	40.0	50	130
5	BAP	Benzo[a]pyrene	35.2	S	0.800	88	40.0	50	130
6	IND	Indeno[1,2,3-cd]pyrene	34.6	S	0.800	87	40.0	50	130
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	36.3	S	0.800	91	40.0	50	130
6	GHI	Benzo[g,h,i]perylene	34.7	S	0.800	87	40.0	50	130

Surrogates (% Recovery)		
Naphthalene-d8	81	
Phenanthrene-d10	95	
Benzo[a]pyrene-d12	81	
5B(H)Cholane		N/A

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Laboratory Control Sample Dup
Lab ID	TS102516LCSD01
Matrix	Soil
Reference Method	Modified 8270D
Batch ID	TS102516B02
Date Collected	N/A
Date Received	N/A
Date Prepped	10/25/2016
Date Analyzed	11/02/2016
Sample Size (wet)	25
% Solid	100.00
File ID	F210311627.D
Units	µg/Kg
Final Volume	2
Dilution	1
Reporting Limit	0.800

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit	RPD	RPD Limit
2	N0	Naphthalene	34.9	S	0.800	87	40.0	50	130	9	30
3	AY	Acenaphthylene	32.3	S	0.800	81	40.0	50	130	8	30
3	AE	Acenaphthene	34.9	S	0.800	87	40.0	50	130	5	30
3	F0	Fluorene	36.2	S	0.800	90	40.0	50	130	5	30
3	A0	Anthracene	38.5	S	0.800	96	40.0	50	130	2	30
3	P0	Phenanthrene	37.6	S	0.800	94	40.0	50	130	2	30
4	FL0	Fluoranthene	38.4	S	0.800	96	40.0	50	130	1	30
4	PY0	Pyrene	35.4	S	0.800	89	40.0	50	130	0	30
4	BA0	Benz[a]anthracene	36.7	S	0.800	92	40.0	50	130	1	30
4	C0	Chrysene/Triphenylene	36.9	S	0.800	92	40.0	50	130	3	30
5	BBF	Benzo[b]fluoranthene	38.5	S	0.800	96	40.0	50	130	3	30
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	38.2	S	0.800	96	40.0	50	130	3	30
5	BAP	Benzo[a]pyrene	32.3	S	0.800	81	40.0	50	130	9	30
6	IND	Indeno[1,2,3-cd]pyrene	34.0	S	0.800	85	40.0	50	130	2	30
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	35.1	S	0.800	88	40.0	50	130	3	30
6	GHI	Benzo[g,h,i]perylene	33.6	S	0.800	84	40.0	50	130	3	30

Surrogates (% Recovery)	
Naphthalene-d8	87
Phenanthrene-d10	95
Benzo[a]pyrene-d12	71
5B(H)Cholane	N/A

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	S-3-B35	S-3-B35
Lab ID	1610008-22	1610008-22D
Matrix	Soil	Soil
Reference Method	Modified 8270D	Modified 8270D
Batch ID	TS102516B02	TS102516B02
Date Collected	10/20/2016	10/20/2016
Date Received	10/22/2016	10/22/2016
Date Prepped	10/25/2016	10/25/2016
Date Analyzed	11/02/2016	11/03/2016
Sample Size (wet)	15.3	15.39
% Solid	92.76	92.76
File ID	F210311637.D	F210311642.D
Units	µg/Kg	µg/Kg
Final Volume	20	20
Dilution	1	1
Reporting Limit	14.1	14.0

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	RPD	RPD Limit	
2	D0	cis/trans-Decalin		U	14.1		U	14.0		30	N/A
2	D1	C1-Decalins		U	14.1		U	14.0		30	N/A
2	D2	C2-Decalins		U	14.1		U	14.0		30	N/A
2	D3	C3-Decalins		U	14.1		U	14.0		30	N/A
2	D4	C4-Decalins		U	14.1		U	14.0		30	N/A
2	BT0	Benzothiophene		U	14.1		U	14.0		30	N/A
2	BT1	C1-Benzo(b)thiophenes		U	14.1		U	14.0		30	N/A
2	BT2	C2-Benzo(b)thiophenes		U	14.1		U	14.0		30	N/A
2	BT3	C3-Benzo(b)thiophenes		U	14.1		U	14.0		30	N/A
2	BT4	C4-Benzo(b)thiophenes		U	14.1		U	14.0		30	N/A
2	N0	Naphthalene	2.50	J	14.1	2.18	J	14.0	14	30	
2	N1	C1-Naphthalenes	4.06	J	14.1	5.03	J	14.0	21	30	
2	N2	C2-Naphthalenes	11.3	J	14.1	10.8	J	14.0	4	30	
2	N3	C3-Naphthalenes	23.1		14.1	15.3		14.0	41	30	¤
2	N4	C4-Naphthalenes		U	14.1		U	14.0		30	N/A
2	B	Biphenyl	1.25	J	14.1	1.74	J	14.0	33	30	¤
3	DF	Dibenzofuran	0.585	J	14.1	0.888	J	14.0	41	30	¤
3	AY	Acenaphthylene	2.65	J	14.1	2.25	JB	14.0	16	30	
3	AE	Acenaphthene	1.10	J	14.1	0.661	J	14.0	50	30	¤
3	F0	Fluorene	2.93	J	14.1	2.12	J	14.0	32	30	¤
3	F1	C1-Fluorenes		U	14.1		U	14.0		30	N/A
3	F2	C2-Fluorenes		U	14.1		U	14.0		30	N/A
3	F3	C3-Fluorenes		U	14.1		U	14.0		30	N/A
3	A0	Anthracene	3.68	J	14.1	4.37	J	14.0	17	30	
3	P0	Phenanthrene	8.18	J	14.1	9.41	J	14.0	14	30	
3	PA1	C1-Phenanthrenes/Anthracenes	10.6	J	14.1	11.4	J	14.0	7	30	
3	PA2	C2-Phenanthrenes/Anthracenes	18.1		14.1	16.4		14.0	10	30	
3	PA3	C3-Phenanthrenes/Anthracenes	39.9		14.1	26.2		14.0	41	30	¤
3	PA4	C4-Phenanthrenes/Anthracenes	68.4		14.1	30.2		14.0	78	30	¤
3	RET	Retene		U	14.1		U	14.0		30	N/A
3	DBT0	Dibenzothiophene	1.29	J	14.1	1.93	J	14.0	40	30	¤
3	DBT1	C1-Dibenzothiophenes	4.06	J	14.1	4.76	J	14.0	16	30	
3	DBT2	C2-Dibenzothiophenes	14.4		14.1	14.2		14.0	1	30	
3	DBT3	C3-Dibenzothiophenes	31.1		14.1	20.3		14.0	42	30	¤
3	DBT4	C4-Dibenzothiophenes	48.5		14.1	27.4		14.0	56	30	¤
4	BF	Benzo(b)fluorene	2.80	J	14.1	3.43	J	14.0	20	30	
4	FL0	Fluoranthene	24.9		14.1	33.0		14.0	28	30	
4	PY0	Pyrene	28.0		14.1	36.1		14.0	25	30	
4	FP1	C1-Fluoranthenes/Pyrenes	47.3		14.1	24.8		14.0	62	30	¤
4	FP2	C2-Fluoranthenes/Pyrenes	123		14.1	52.1		14.0	81	30	¤
4	FP3	C3-Fluoranthenes/Pyrenes	264		14.1	91.2		14.0	97	30	¤
4	FP4	C4-Fluoranthenes/Pyrenes	348		14.1	127		14.0	93	30	¤
4	NBT0	Naphthobenzothiophenes	11.7	J	14.1	8.71	J	14.0	29	30	
4	NBT1	C1-Naphthobenzothiophenes	82.4		14.1	28.7		14.0	97	30	¤
4	NBT2	C2-Naphthobenzothiophenes	244		14.1	74.3		14.0	106	30	¤
4	NBT3	C3-Naphthobenzothiophenes	388		14.1	131		14.0	99	30	¤
4	NBT4	C4-Naphthobenzothiophenes	422		14.1	167		14.0	86	30	¤
4	BA0	Benz[a]anthracene	16.6		14.1	23.6		14.0	35	30	¤
4	C0	Chrysene/Triphenylene	53.1		14.1	40.8		14.0	26	30	
4	BC1	C1-Chrysenes	128		14.1	46.4		14.0	94	30	¤
4	BC2	C2-Chrysenes	404		14.1	147		14.0	93	30	¤
4	BC3	C3-Chrysenes	774		14.1	325		14.0	82	30	¤
4	BC4	C4-Chrysenes	627		14.1	316		14.0	66	30	¤

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	S-3-B35	S-3-B35
Lab ID	1610008-22	1610008-22D
Matrix	Soil	Soil
Reference Method	Modified 8270D	Modified 8270D
Batch ID	TS102516B02	TS102516B02
Date Collected	10/20/2016	10/20/2016
Date Received	10/22/2016	10/22/2016
Date Prepped	10/25/2016	10/25/2016
Date Analyzed	11/02/2016	11/03/2016
Sample Size (wet)	15.3	15.39
% Solid	92.76	92.76
File ID	F210311637.D	F210311642.D
Units	µg/Kg	µg/Kg
Final Volume	20	20
Dilution	1	1
Reporting Limit	14.1	14.0

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	RPD	RPD Limit	
5	BBF	Benzo[b]fluoranthene	39.2		14.1	39.1		14.0	0	30	
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	23.8		14.1	33.7		14.0	34	30	¤
5	BAF	Benzo[a]fluoranthene	9.74	J	14.1	9.61	J	14.0	1	30	
5	BEP	Benzo[e]pyrene	84.2		14.1	59.8		14.0	34	30	¤
5	BAP	Benzo[a]pyrene	33.7		14.1	44.6		14.0	28	30	
5	PER	Perylene	166		14.1	77.1		14.0	73	30	¤
6	IND	Indeno[1,2,3-cd]pyrene	33.4		14.1	36.7		14.0	9	30	
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	16.2		14.1	15.0		14.0	8	30	
6	GHI	Benzo[g,h,i]perylene	62.7		14.1	58.8		14.0	6	30	
3	CAR	Carbazole	1.53	J	14.1	1.93	J	14.0	23	30	
3	4MDT	4-Methyldibenzothiophene	1.24	J	14.1	1.63	J	14.0	27	30	
3	2MDT	2/3-Methyldibenzothiophene		U	14.1		U	14.0		30	N/A
3	1MDT	1-Methyldibenzothiophene	1.41	J	14.1	2.06	J	14.0	37	30	¤
3	3MP	3-Methylphenanthrene	2.28	J	14.1	1.33	J	14.0	52	30	¤
3	2MP	2-Methylphenanthrene	1.87	J	14.1	2.29	J	14.0	20	30	
3	2MA	2-Methylanthracene	1.91	J	14.1	1.53	J	14.0	22	30	
3	9MP	9/4-Methylphenanthrene	2.16	J	14.1	2.99	J	14.0	32	30	¤
3	1MP	1-Methylphenanthrene	1.70	J	14.1	2.23	J	14.0	27	30	
t23	T4	C23 Tricyclic Terpane	36.5		14.1	27.2		14.0	29	30	
t24	T5	C24 Tricyclic Terpane	28.2		14.1	10.9	J	14.0	89	30	¤
t25	T6	C25 Tricyclic Terpane	46.9		14.1	16.0		14.0	98	30	¤
te24	T6a	C24 Tetracyclic Terpane	19.3		14.1		U	14.0		30	X
t26S	T6b	C26 Tricyclic Terpane-22S	31.7		14.1	13.4	J	14.0	81	30	¤
t26R	T6c	C26 Tricyclic Terpane-22R	33.4		14.1	9.92	J	14.0	108	30	¤
t28S	T7	C28 Tricyclic Terpane-22S	58.1		14.1	17.1		14.0	109	30	¤
t28R	T8	C28 Tricyclic Terpane-22R	65.1		14.1	23.2		14.0	95	30	¤
t29S	T9	C29 Tricyclic Terpane-22S	62.9		14.1	28.2		14.0	76	30	¤
t29R	T10	C29 Tricyclic Terpane-22R	76.7		14.1	24.8		14.0	102	30	¤
Ts	T11	18a-22,29,30-Trisnorneohopane-TS	94.4		14.1	29.0		14.0	106	30	¤
t30S	T11a	C30 Tricyclic Terpane-22S	137		14.1	25.1		14.0	138	30	¤
t30R	T11b	C30 Tricyclic Terpane-22R	96.7		14.1	32.0		14.0	101	30	¤
Tm	T12	17a(H)-22,29,30-Trisnorhopane-TM	166		14.1	51.6		14.0	105	30	¤
BNH	T14a	17a/b,21b/a 28,30-Bisnorhopane	661	G	14.1	163	G	14.0	121	30	¤
25N	T14b	17a(H),21b(H)-25-Norhopane	73.6		14.1	13.4	J	14.0	138	30	¤
H29	T15	30-Norhopane	818		14.1	177		14.0	129	30	¤
C29Ts	T16	18a(H)-30-Norneohopane-C29Ts	336	G	14.1	112	G	14.0	100	30	¤
X	X	17a(H)-Diahopane	29.0		14.1	4.05	J	14.0	151	30	¤
M29	T17	30-Normoretane	294	G	14.1	72.0		14.0	121	30	¤
OL	T18	18a(H)&18b(H)-Oleananes	709	G	14.1	317	G	14.0	76	30	¤
H30	T19	Hopane	1380		14.1	382		14.0	113	30	¤
M30	T20	Moretane	308		14.1	93.5		14.0	107	30	¤
H31S	T21	30-Homohopane-22S	469		14.1	128		14.0	114	30	¤
H31R	T22	30-Homohopane-22R	433		14.1	118		14.0	114	30	¤
T22A	T22A	T22a-Gammacerane/C32-diahopane	281		14.1	77.8		14.0	113	30	¤
H32S	T26	30,31-Bishomohopane-22S	328		14.1	90.3		14.0	114	30	¤
H32R	T27	30,31-Bishomohopane-22R	280		14.1	74.8		14.0	116	30	¤
H33S	T30	30,31-Trishomohopane-22S	371		14.1	111		14.0	108	30	¤
H33R	T31	30,31-Trishomohopane-22R	282		14.1	72.3		14.0	118	30	¤
H34S	T32	Tetrakishomohopane-22S	279		14.1	80.5		14.0	110	30	¤
H34R	T33	Tetrakishomohopane-22R	251		14.1	65.7		14.0	117	30	¤
H35S	T34	Pentakishomohopane-22S	325		14.1	73.8		14.0	126	30	¤
H35R	T35	Pentakishomohopane-22R	298		14.1	85.6		14.0	111	30	¤
d27S	S4	13b(H),17a(H)-20S-Diacholestane	96.2		14.1	34.6		14.0	94	30	¤
d27R	S5	13b(H),17a(H)-20R-Diacholestane	34.7		14.1	14.1		14.0	84	30	¤
d28S	S8	13b,17a-20S-Methyldiacholestane	358		14.1	94.8		14.0	116	30	¤
aa27S	S12	14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12)	955		14.1	277		14.0	110	30	¤
aa27R	S17	14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17)	1280		14.1	466		14.0	93	30	¤
d29R	S18	Unknown Sterane (S18)	132		14.1	58.1		14.0	78	30	¤
d29S	S19	13a,17b-20S-Ethyldiacholestane	107		14.1	42.0		14.0	87	30	¤
aa28S	S20	14a,17a-20S-Methylcholestane	1840		14.1	641		14.0	97	30	¤
aa28R	S24	14a,17a-20R-Methylcholestane	2330		14.1	579		14.0	120	30	¤
aa29S	S25	14a(H),17a(H)-20S-Ethylcholestane	1910		14.1	787		14.0	83	30	¤
aa29R	S28	14a(H),17a(H)-20R-Ethylcholestane	2840		14.1	973		14.0	98	30	¤
bb27R	S14	14b(H),17b(H)-20R-Cholestane	243		14.1	80.1		14.0	101	30	¤
bb27S	S15	14b(H),17b(H)-20S-Cholestane	284		14.1	81.2		14.0	111	30	¤
bb28R	S22	14b,17b-20R-Methylcholestane	1170		14.1	336		14.0	111	30	¤
bb28S	S23	14b,17b-20S-Methylcholestane	1490		14.1	482		14.0	102	30	¤
bb29R	S26	14b(H),17b(H)-20R-Ethylcholestane	1540		14.1	624		14.0	85	30	¤
bb29S	S27	14b(H),17b(H)-20S-Ethylcholestane	787		14.1	297		14.0	90	30	¤
RC26/SC27TA	RC26/SC27TA	C26,20R- +C27,20S- triaromatic steroid	12800		14.1	4460		14.0	96	30	¤
SC28TA	SC28TA	C28,20S-triaromatic steroid	6980		14.1	3270		14.0	72	30	¤
RC27TA	RC27TA	C27,20R-triaromatic steroid	9730		14.1	3380		14.0	97	30	¤
RC28TA	RC28TA	C28,20R-triaromatic steroid	6910		14.1	3210		14.0	73	30	¤

Surrogates (% Recovery)				
Naphthalene-d8	84		82	
Phenanthrene-d10	106		95	
Benzo[a]pyrene-d12	99		89	
5B(H)Cholane		N/A		N/A

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Alaska North Slope Crude
Lab ID	SS110816ANC01
Matrix	Oil
Reference Method	Modified 8270D
Batch ID	N/A
Date Collected	N/A
Date Received	N/A
Date Prepped	N/A
Date Analyzed	10/21/2016
Sample Size (wet)	0.0502
% Solid	100.00
File ID	F210191615.D
Units	mg/Kg
Final Volume	10
Dilution	1
Reporting Limit	1.99

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
2	D0	cis/trans-Decalin	460		1.99	96	479.20	65	135
2	D1	C1-Decalins	722		1.99	99	728.90	65	135
2	D2	C2-Decalins	610		1.99	96	635.50	65	135
2	D3	C3-Decalins	296		1.99	90	329.80	65	135
2	D4	C4-Decalins	271		1.99	83	326.50	65	135
2	BT0	Benzothiophene	5.37		1.99	99	5.40	65	135
2	BT1	C1-Benzo(b)thiophenes	27.4		1.99	95	28.90	65	135
2	BT2	C2-Benzo(b)thiophenes	51.6		1.99	104	49.60	65	135
2	BT3	C3-Benzo(b)thiophenes	103		1.99	104	99.00	65	135
2	BT4	C4-Benzo(b)thiophenes	90.1		1.99	103	87.10	65	135
2	N0	Naphthalene	546		1.99	98	555.80	65	135
2	N1	C1-Naphthalenes	1170		1.99	100	1167.30	65	135
2	N2	C2-Naphthalenes	1430		1.99	102	1409.70	65	135
2	N3	C3-Naphthalenes	1040		1.99	100	1035.90	65	135
2	N4	C4-Naphthalenes	567		1.99	101	561.10	65	135
2	B	Biphenyl	146		1.99	101	145.70	65	135
3	DF	Dibenzofuran	49.7		1.99	97	51.20	65	135
3	AY	Acenaphthylene	6.56		1.99	101	6.50	65	135
3	AE	Acenaphthene	18.3		1.99	98	18.70	65	135
3	F0	Fluorene	68.4		1.99	92	74.60	65	135
3	F1	C1-Fluorenes	160		1.99	94	170.20	65	135
3	F2	C2-Fluorenes	235		1.99	92	255.40	65	135
3	F3	C3-Fluorenes	231		1.99	97	238.50	65	135
3	A0	Anthracene		U	1.99				
3	P0	Phenanthrene	193		1.99	91	212.20	65	135
3	PA1	C1-Phenanthrenes/Anthracenes	406		1.99	94	432.70	65	135
3	PA2	C2-Phenanthrenes/Anthracenes	453		1.99	97	465.90	65	135
3	PA3	C3-Phenanthrenes/Anthracenes	315		1.99	99	317.40	65	135
3	PA4	C4-Phenanthrenes/Anthracenes	121		1.99	94	129.00	65	135
3	RET	Retene		U	1.99				
3	DBT0	Dibenzothiophene	132		1.99	95	138.90	65	135
3	DBT1	C1-Dibenzothiophenes	282		1.99	101	278.60	65	135
3	DBT2	C2-Dibenzothiophenes	381		1.99	101	377.50	65	135
3	DBT3	C3-Dibenzothiophenes	356		1.99	104	341.40	65	135
3	DBT4	C4-Dibenzothiophenes	175		1.99	96	183.40	65	135
4	BF	Benzo(b)fluorene	5.62		1.99				
4	FL0	Fluoranthene	4.07		1.99	102	4.00	65	135
4	PY0	Pyrene	9.30		1.99	72	13.00	65	135
4	FP1	C1-Fluoranthenes/Pyrenes	53.4		1.99	85	63.10	65	135
4	FP2	C2-Fluoranthenes/Pyrenes	88.7		1.99	87	102.20	65	135
4	FP3	C3-Fluoranthenes/Pyrenes	105		1.99	88	119.60	65	135
4	FP4	C4-Fluoranthenes/Pyrenes	85.4		1.99	82	104.00	65	135
4	NBT0	Naphthobenzothiophenes	39.8		1.99	91	43.80	65	135
4	NBT1	C1-Naphthobenzothiophenes	105		1.99	90	117.20	65	135
4	NBT2	C2-Naphthobenzothiophenes	138		1.99	85	163.30	65	135
4	NBT3	C3-Naphthobenzothiophenes	107		1.99	83	128.70	65	135
4	NBT4	C4-Naphthobenzothiophenes	73.3		1.99	82	89.00	65	135
4	BA0	Benz[a]anthracene	2.44		1.99	116	2.10	65	135
4	C0	Chrysene/Triphenylene	32.4		1.99	92	35.20	65	135
4	BC1	C1-Chrysenes	57.8		1.99	92	62.80	65	135
4	BC2	C2-Chrysenes	71.8		1.99	84	86.00	65	135
4	BC3	C3-Chrysenes	84.4		1.99	87	97.60	65	135
4	BC4	C4-Chrysenes	47.8		1.99	80	59.40	65	135

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Alaska North Slope Crude
Lab ID	SS110816ANC01
Matrix	Oil
Reference Method	Modified 8270D
Batch ID	N/A
Date Collected	N/A
Date Received	N/A
Date Prepped	N/A
Date Analyzed	10/21/2016
Sample Size (wet)	0.0502
% Solid	100.00
File ID	F210191615.D
Units	mg/Kg
Final Volume	10
Dilution	1
Reporting Limit	1.99

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
5	BBF	Benzo[b]fluoranthene	5.28		1.99	102	5.20	65	135
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	1.02	J	1.99				
5	BAF	Benzo[a]fluoranthene		U	1.99				
5	BEP	Benzo[e]pyrene	10.3		1.99	105	9.80	65	135
5	BAP	Benzo[a]pyrene	2.03		1.99	107	1.90	65	135
5	PER	Perylene	3.27		1.99	117	2.80	65	135
6	IND	Indeno[1,2,3-cd]pyrene	0.981	J	1.99				
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	1.22	J	1.99				
6	GHI	Benzo[g,h,i]perylene	3.50		1.99	113	3.10	65	135
3	CAR	Carbazole	5.62		1.99	94	6.00	65	135
3	4MDT	4-Methyldibenzothiophene	136		1.99	103	131.80	65	135
3	2MDT	2/3-Methyldibenzothiophene	101		1.99	104	97.50	65	135
3	1MDT	1-Methyldibenzothiophene	42.1		1.99	95	44.20	65	135
3	3MP	3-Methylphenanthrene	85.0		1.99	95	89.40	65	135
3	2MP	2-Methylphenanthrene	90.5		1.99	93	97.70	65	135
3	2MA	2-Methylanthracene	3.05		1.99	95	3.20	65	135
3	9MP	9/4-Methylphenanthrene	134		1.99	95	141.20	65	135
3	1MP	1-Methylphenanthrene	89.9		1.99	92	97.40	65	135
t23	T4	C23 Tricyclic Terpane	63.6		1.99	95	67.30	65	135
t24	T5	C24 Tricyclic Terpane	39.0		1.99	91	43.00	65	135
t25	T6	C25 Tricyclic Terpane	37.8		1.99	90	42.00	65	135
te24	T6a	C24 Tetracyclic Terpane	13.5		1.99	91	14.80	65	135
t26S	T6b	C26 Tricyclic Terpane-22S	16.8		1.99	95	17.70	65	135
t26R	T6c	C26 Tricyclic Terpane-22R	12.8		1.99	83	15.40	65	135
t28S	T7	C28 Tricyclic Terpane-22S	14.4		1.99	86	16.80	65	135
t28R	T8	C28 Tricyclic Terpane-22R	16.2		1.99	90	18.10	65	135
t29S	T9	C29 Tricyclic Terpane-22S	16.9		1.99	81	20.80	65	135
t29R	T10	C29 Tricyclic Terpane-22R	20.6		1.99	91	22.60	65	135
Ts	T11	18a-22,29,30-Trisnorneohopane-TS	25.2		1.99	81	31.30	65	135
t30S	T11a	C30 Tricyclic Terpane-22S	14.4		1.99	89	16.20	65	135
t30R	T11b	C30 Tricyclic Terpane-22R	13.8		1.99	84	16.40	65	135
Tm	T12	17a(H)-22,29,30-Trisnorhopane-TM	30.1		1.99	80	37.80	65	135
BNH	T14a	17a/b,21b/a 28,30-Bisnorhopane	6.66		1.99	95	7.00	65	135
25N	T14b	17a(H),21b(H)-25-Norhopane	7.72		1.99	89	8.70	65	135
H29	T15	30-Norhopane	83.5		1.99	84	99.70	65	135
C29Ts	T16	18a(H)-30-Norneohopane-C29Ts	21.2		1.99	84	25.20	65	135
X	X	17a(H)-Diahopane	14.1		1.99	100	14.20	65	135
M29	T17	30-Normoretane	11.6		1.99	100	11.60	65	135
OL	T18	18a(H)&18b(H)-Oleananes	4.10		1.99				
H30	T19	Hopane	144		1.99	83	173.60	65	135
M30	T20	Moretane	16.1		1.99	92	17.50	65	135
H31S	T21	30-Homohopane-22S	62.1		1.99	83	75.10	65	135
H31R	T22	30-Homohopane-22R	52.6		1.99	82	64.10	65	135
T22A	T22A	T22a-Gammacerane/C32-diahopane	11.0		1.99				
H32S	T26	30,31-Bishomohopane-22S	45.5		1.99	85	53.60	65	135
H32R	T27	30,31-Bishomohopane-22R	34.6		1.99	87	39.60	65	135
H33S	T30	30,31-Trishomohopane-22S	34.5		1.99	83	41.80	65	135
H33R	T31	30,31-Trishomohopane-22R	26.5		1.99	98	27.20	65	135
H34S	T32	Tetrakishomohopane-22S	26.1		1.99	87	29.80	65	135
H34R	T33	Tetrakishomohopane-22R	19.9		1.99	94	21.20	65	135
H35S	T34	Pentakishomohopane-22S	27.5		1.99	91	30.20	65	135
H35R	T35	Pentakishomohopane-22R	24.4		1.99	104	23.50	65	135
d27S	S4	13b(H),17a(H)-20S-Diacholestane	53.5		1.99	107	50.00	65	135
d27R	S5	13b(H),17a(H)-20R-Diacholestane	26.2		1.99	99	26.30	65	135
d28S	S8	13b,17a-20S-Methyldiacholestane	24.9		1.99	97	25.70	65	135
aa27S	S12	14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12)	55.0		1.99	85	65.00	65	135
aa27R	S17	14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17)	70.7		1.99	93	75.80	65	135
d29R	S18	Unknown Sterane (S18)	22.5		1.99	105	21.30	65	135
d29S	S19	13a,17b-20S-Ethyldiacholestane	2.62		1.99	67	3.90	65	135
aa28S	S20	14a,17a-20S-Methylcholestane	34.9		1.99	94	37.30	65	135
aa28R	S24	14a,17a-20R-Methylcholestane	30.3		1.99	88	34.50	65	135
aa29S	S25	14a(H),17a(H)-20S-Ethylcholestane	55.1		1.99	108	51.00	65	135
aa29R	S28	14a(H),17a(H)-20R-Ethylcholestane	35.9		1.99	91	39.50	65	135
bb27R	S14	14b(H),17b(H)-20R-Cholestane	34.9		1.99	84	41.50	65	135
bb27S	S15	14b(H),17b(H)-20S-Cholestane	36.8		1.99	87	42.50	65	135
bb28R	S22	14b,17b-20R-Methylcholestane	39.2		1.99	88	44.80	65	135
bb28S	S23	14b,17b-20S-Methylcholestane	45.9		1.99	83	55.40	65	135
bb29R	S26	14b(H),17b(H)-20R-Ethylcholestane	58.5		1.99	96	60.90	65	135
bb29S	S27	14b(H),17b(H)-20S-Ethylcholestane	28.9		1.99	72	40.30	65	135
RC26/SC27TA	RC26/SC27TA	C26,20R- +C27,20S- triaromatic steroid	366		1.99	124	293.90	65	135
SC28TA	SC28TA	C28,20S-triaromatic steroid	236		1.99	126	187.60	65	135
RC27TA	RC27TA	C27,20R-triaromatic steroid	221		1.99	123	180.20	65	135
RC28TA	RC28TA	C28,20R-triaromatic steroid	199		1.99	132	150.50	65	135

Surrogates (% Recovery)
Naphthalene-d8
Phenanthrene-d10
Benzo[a]pyrene-d12
5B(H)Cholane

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	S-16-B26	S-14-B27	S-16-B30	S-6-B28	S-9-B32
Lab ID	1610008-02	1610008-04	1610008-06	1610008-07	1610008-12
Matrix	Soil	Soil	Soil	Soil	Soil
Reference Method	Modified 8270D	Modified 8270D	Modified 8270D	Modified 8270D	Modified 8270D
Batch ID	TS102516B02	TS102516B02	TS102516B02	TS102516B02	TS102516B02
Date Collected	10/18/2016	10/18/2016	10/18/2016	10/19/2016	10/19/2016
Date Received	10/20/2016	10/20/2016	10/20/2016	10/21/2016	10/21/2016
Date Prepped	10/25/2016	10/25/2016	10/25/2016	10/25/2016	10/25/2016
Date Analyzed	11/02/2016	11/02/2016	11/02/2016	11/02/2016	11/02/2016
Sample Size (wet)	30.32	30.24	30.86	20.1	30.67
% Solid	84.78	96.48	83.26	84.58	87.62
File ID	F210311628.D	F210311629.D	F210311630.D	F210311631.D	F210311632.D
Units	µg/Kg	µg/Kg	µg/Kg	µg/Kg	µg/Kg
Final Volume	2	4	2	16	8
Dilution	1	1	1	1	1
Reporting Limit	0.778	1.37	0.778	9.41	2.98

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	Result		SSRL	Result		SSRL	Result		SSRL
2	D0	cis/trans-Decalin		U	0.778	3.05		1.37		U	0.778	5.39	J	9.41	29.4		2.98
2	D1	C1-Decalins		U	0.778	10.7		1.37		U	0.778	15.4		9.41	55.6		2.98
2	D2	C2-Decalins		U	0.778	35.6		1.37		U	0.778	23.0		9.41	114		2.98
2	D3	C3-Decalins		U	0.778	41.6		1.37		U	0.778		U	9.41	152		2.98
2	D4	C4-Decalins		U	0.778	78.0		1.37		U	0.778		U	9.41	319		2.98
2	BT0	Benzothiophene		U	0.778		U	1.37		U	0.778	0.389	J	9.41		U	2.98
2	BT1	C1-Benzo(b)thiophenes		U	0.778		U	1.37		U	0.778	4.98	J	9.41	2.91	J	2.98
2	BT2	C2-Benzo(b)thiophenes		U	0.778		U	1.37		U	0.778	7.68	J	9.41	5.74		2.98
2	BT3	C3-Benzo(b)thiophenes		U	0.778		U	1.37		U	0.778	16.5		9.41	21.2		2.98
2	BT4	C4-Benzo(b)thiophenes		U	0.778		U	1.37		U	0.778		U	9.41	43.3		2.98
2	N0	Naphthalene	2.02		0.778	1.76		1.37	5.85		0.778	15.5		9.41	0.790	JB	2.98
2	N1	C1-Naphthalenes	0.193	JB	0.778	0.720	JB	1.37	0.244	JB	0.778	36.0		9.41	1.47	J	2.98
2	N2	C2-Naphthalenes		U	0.778		U	1.37		U	0.778	65.7		9.41	3.84		2.98
2	N3	C3-Naphthalenes		U	0.778		U	1.37		U	0.778	65.9		9.41	8.54		2.98
2	N4	C4-Naphthalenes		U	0.778		U	1.37		U	0.778	49.4		9.41	38.6		2.98
2	B	Biphenyl	0.642	J	0.778	2.33		1.37	1.41		0.778	4.25	J	9.41	1.22	J	2.98
3	DF	Dibenzofuran	0.0500	J	0.778		U	1.37	0.0554	J	0.778	26.7		9.41	0.871	J	2.98
3	AY	Acenaphthylene	0.250	JB	0.778	2.19	B	1.37	0.212	JB	0.778	7.81	J	9.41	3.29		2.98
3	AE	Acenaphthene		U	0.778		U	1.37		U	0.778	117		9.41		U	2.98
3	F0	Fluorene	0.113	J	0.778		U	1.37	0.313	J	0.778	54.9		9.41	1.39	J	2.98
3	F1	C1-Fluorenes		U	0.778		U	1.37		U	0.778	27.0		9.41	10.2		2.98
3	F2	C2-Fluorenes		U	0.778		U	1.37		U	0.778	55.0		9.41	38.7		2.98
3	F3	C3-Fluorenes		U	0.778		U	1.37		U	0.778	101		9.41		U	2.98
3	A0	Anthracene		U	0.778	1.29	J	1.37	0.131	JB	0.778	165		9.41	2.31	J	2.98
3	P0	Phenanthrene	0.516	JB	0.778	0.554	JB	1.37	1.24	B	0.778	758		9.41	5.92		2.98
3	PA1	C1-Phenanthrenes/Anthracenes		U	0.778		U	1.37	0.258	J	0.778	288		9.41		U	2.98
3	PA2	C2-Phenanthrenes/Anthracenes		U	0.778		U	1.37		U	0.778	175		9.41	44.4		2.98
3	PA3	C3-Phenanthrenes/Anthracenes		U	0.778	78.9		1.37		U	0.778	116		9.41	92.4		2.98
3	PA4	C4-Phenanthrenes/Anthracenes		U	0.778	102		1.37		U	0.778	99.1		9.41	140		2.98
3	RET	Retene		U	0.778		U	1.37		U	0.778		U	9.41		U	2.98
3	DBT0	Dibenzothiophene	0.0377	J	0.778		U	1.37	0.0262	J	0.778	32.6		9.41		U	2.98
3	DBT1	C1-Dibenzothiophenes		U	0.778		U	1.37		U	0.778	21.8		9.41		U	2.98
3	DBT2	C2-Dibenzothiophenes		U	0.778		U	1.37		U	0.778	40.2		9.41		U	2.98
3	DBT3	C3-Dibenzothiophenes		U	0.778	52.1		1.37		U	0.778	54.5		9.41	58.2		2.98
3	DBT4	C4-Dibenzothiophenes		U	0.778	56.3		1.37		U	0.778		U	9.41	67.8		2.98
4	BF	Benzo(b)fluorene		U	0.778		U	1.37		U	0.778	36.4		9.41		U	2.98
4	FL0	Fluoranthene	0.0820	JB	0.778		U	1.37	0.0971	JB	0.778	855		9.41	6.76		2.98
4	PY0	Pyrene	0.0766	JB	0.778	0.957	J	1.37	0.0994	JB	0.778	865		9.41	52.4		2.98
4	FP1	C1-Fluoranthenes/Pyrenes		U	0.778	26.1		1.37		U	0.778	336		9.41	66.9		2.98
4	FP2	C2-Fluoranthenes/Pyrenes		U	0.778	39.4		1.37		U	0.778	271		9.41	55.0		2.98
4	FP3	C3-Fluoranthenes/Pyrenes		U	0.778	68.7		1.37		U	0.778	178		9.41	88.3		2.98
4	FP4	C4-Fluoranthenes/Pyrenes		U	0.778	85.5		1.37		U	0.778	179		9.41	158		2.98
4	NBT0	Naphthobenzothiophenes		U	0.778		U	1.37		U	0.778	52.8		9.41		U	2.98
4	NBT1	C1-Naphthobenzothiophenes		U	0.778	15.7		1.37		U	0.778	57.3		9.41	18.6		2.98
4	NBT2	C2-Naphthobenzothiophenes		U	0.778	54.2	G	1.37		U	0.778		U	9.41	43.0		2.98
4	NBT3	C3-Naphthobenzothiophenes		U	0.778	19.2		1.37		U	0.778		U	9.41	35.9		2.98
4	NBT4	C4-Naphthobenzothiophenes		U	0.778		U	1.37		U	0.778		U	9.41		U	2.98
4	BA0	Benz[a]anthracene	0.0471	J	0.778		U	1.37	0.0534	J	0.778	407		9.41		U	2.98
4	C0	Chrysene/Triphenylene	0.152	JB	0.778	11.4		1.37	0.317	JB	0.778	535		9.41	18.9		2.98
4	BC1	C1-Chrysenes		U	0.778	17.0		1.37		U	0.778	265		9.41	25.8		2.98
4	BC2	C2-Chrysenes		U	0.778	22.8		1.37		U	0.778	145		9.41	42.7		2.98
4	BC3	C3-Chrysenes		U	0.778	29.5		1.37		U	0.778	304		9.41	56.3		2.98
4	BC4	C4-Chrysenes		U	0.778		U	1.37		U	0.778	309		9.41	39.0		2.98

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	S-16-B26	S-14-B27	S-16-B30	S-6-B28	S-9-B32
Lab ID	1610008-02	1610008-04	1610008-06	1610008-07	1610008-12
Matrix	Soil	Soil	Soil	Soil	Soil
Reference Method	Modified 8270D	Modified 8270D	Modified 8270D	Modified 8270D	Modified 8270D
Batch ID	TS102516B02	TS102516B02	TS102516B02	TS102516B02	TS102516B02
Date Collected	10/18/2016	10/18/2016	10/18/2016	10/19/2016	10/19/2016
Date Received	10/20/2016	10/20/2016	10/20/2016	10/21/2016	10/21/2016
Date Prepped	10/25/2016	10/25/2016	10/25/2016	10/25/2016	10/25/2016
Date Analyzed	11/02/2016	11/02/2016	11/02/2016	11/02/2016	11/02/2016
Sample Size (wet)	30.32	30.24	30.86	20.1	30.67
% Solid	84.78	96.48	83.26	84.58	87.62
File ID	F210311628.D	F210311629.D	F210311630.D	F210311631.D	F210311632.D
Units	µg/Kg	µg/Kg	µg/Kg	µg/Kg	µg/Kg
Final Volume	2	4	2	16	8
Dilution	1	1	1	1	1
Reporting Limit	0.778	1.37	0.778	9.41	2.98

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	Result		SSRL	Result		SSRL	Result		SSRL
5	BBF	Benzo[b]fluoranthene	0.0432	J	0.778	1.99		1.37		U	0.778	332		9.41	6.14		2.98
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	0.0390	J	0.778	0.797	J	1.37		U	0.778	411		9.41	2.82	J	2.98
5	BAF	Benzo[a]fluoranthene		U	0.778	0.441	J	1.37		U	0.778	72.8		9.41	0.689	J	2.98
5	BEP	Benzo[e]pyrene		U	0.778	4.14		1.37		U	0.778	284		9.41	7.86		2.98
5	BAP	Benzo[a]pyrene	0.0597	J	0.778		U	1.37		U	0.778	467		9.41		U	2.98
5	PER	Perylene		U	0.778	0.496	J	1.37		U	0.778	200		9.41	0.526	J	2.98
6	IND	Indeno[1,2,3-cd]pyrene	0.0760	J	0.778	0.750	J	1.37		U	0.778	301		9.41	1.41	J	2.98
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	0.111	J	0.778		U	1.37		U	0.778	85.2		9.41		U	2.98
6	GHI	Benzo[g,h,i]perylene	0.0876	J	0.778	1.21	J	1.37		U	0.778	363		9.41	2.38	J	2.98
3	CAR	Carbazole		U	0.778		U	1.37		U	0.778	78.3		9.41		U	2.98
3	4MDT	4-Methyldibenzothiophene		U	0.778		U	1.37		U	0.778	7.94	J	9.41		U	2.98
3	2MDT	2/3-Methyldibenzothiophene		U	0.778		U	1.37		U	0.778		U	9.41		U	2.98
3	1MDT	1-Methyldibenzothiophene		U	0.778		U	1.37		U	0.778	3.55	J	9.41		U	2.98
3	3MP	3-Methylphenanthrene		U	0.778		U	1.37	0.0273	J	0.778	62.6		9.41		U	2.98
3	2MP	2-Methylphenanthrene		U	0.778		U	1.37	0.0581	J	0.778	77.8		9.41		U	2.98
3	2MA	2-Methylanthracene		U	0.778		U	1.37		U	0.778	33.9		9.41		U	2.98
3	9MP	9/4-Methylphenanthrene		U	0.778		U	1.37	0.0402	J	0.778	60.0		9.41		U	2.98
3	1MP	1-Methylphenanthrene		U	0.778		U	1.37	0.0503	J	0.778	50.9		9.41		U	2.98
t23	T4	C23 Tricyclic Terpane		U	0.778	235		1.37		U	0.778	69.9		9.41	424		2.98
t24	T5	C24 Tricyclic Terpane		U	0.778	146		1.37		U	0.778	53.9		9.41	274		2.98
t25	T6	C25 Tricyclic Terpane		U	0.778	133		1.37		U	0.778	57.4		9.41	250		2.98
te24	T6a	C24 Tetracyclic Terpane		U	0.778	26.0		1.37		U	0.778		U	9.41	43.5		2.98
t26S	T6b	C26 Tricyclic Terpane-22S		U	0.778	55.1		1.37		U	0.778	33.5		9.41	109		2.98
t26R	T6c	C26 Tricyclic Terpane-22R		U	0.778	50.9		1.37		U	0.778	33.0		9.41	96.1		2.98
t28S	T7	C28 Tricyclic Terpane-22S		U	0.778	57.2		1.37		U	0.778	58.8		9.41	91.5		2.98
t28R	T8	C28 Tricyclic Terpane-22R		U	0.778	53.7		1.37		U	0.778	67.8		9.41	96.3		2.98
t29S	T9	C29 Tricyclic Terpane-22S		U	0.778	47.2		1.37		U	0.778	96.8		9.41	87.2		2.98
t29R	T10	C29 Tricyclic Terpane-22R		U	0.778	53.0		1.37		U	0.778	60.0		9.41	104		2.98
Ts	T11	18a-22,29,30-Trisnorneohopane-TS		U	0.778	63.8		1.37		U	0.778	45.5		9.41	91.5		2.98
t30S	T11a	C30 Tricyclic Terpane-22S		U	0.778	42.9		1.37		U	0.778	72.4		9.41	71.1		2.98
t30R	T11b	C30 Tricyclic Terpane-22R		U	0.778	40.4		1.37		U	0.778	85.1		9.41	63.0		2.98
Tm	T12	17a(H)-22,29,30-Trisnorhopane-TM		U	0.778	60.0		1.37		U	0.778	64.6		9.41	100		2.98
BNH	T14a	17a/b,21b/a 28,30-Bisnorhopane		U	0.778	64.5		1.37		U	0.778	209	G	9.41	149		2.98
25N	T14b	17a(H),21b(H)-25-Norhopane		U	0.778	18.8		1.37		U	0.778	31.4		9.41	30.4		2.98
H29	T15	30-Norhopane		U	0.778	164		1.37		U	0.778	144		9.41	287		2.98
C29Ts	T16	18a(H)-30-Norneohopane-C29Ts		U	0.778	65.4		1.37		U	0.778	182	G	9.41	115		2.98
X	X	17a(H)-Diahopane		U	0.778	34.5		1.37		U	0.778	23.0		9.41	48.2		2.98
M29	T17	30-Normoretane		U	0.778	30.6		1.37		U	0.778	72.9	G	9.41	49.1		2.98
OL	T18	18a(H)&18b(H)-Oleananes		U	0.778	43.8		1.37		U	0.778	375		9.41	88.6		2.98
H30	T19	Hopane		U	0.778	325		1.37		U	0.778	538		9.41	537		2.98
M30	T20	Moretane		U	0.778	53.7		1.37		U	0.778	138		9.41	88.8		2.98
H31S	T21	30-Homohopane-22S		U	0.778	114		1.37		U	0.778	139		9.41	176		2.98
H31R	T22	30-Homohopane-22R		U	0.778	109		1.37		U	0.778	144		9.41	162		2.98
T22A	T22A	T22a-Gammacerane/C32-diahopane		U	0.778	22.2		1.37		U	0.778	82.2		9.41	33.9		2.98
H32S	T26	30,31-Bishomohopane-22S		U	0.778	76.9		1.37		U	0.778	100		9.41	118		2.98
H32R	T27	30,31-Bishomohopane-22R		U	0.778	56.3		1.37		U	0.778	74.5		9.41	84.3		2.98
H33S	T30	30,31-Trishomohopane-22S		U	0.778	60.5		1.37		U	0.778	118		9.41	88.6		2.98
H33R	T31	30,31-Trishomohopane-22R		U	0.778	39.9		1.37		U	0.778	60.6		9.41	59.9		2.98
H34S	T32	Tetrakishomohopane-22S		U	0.778	37.1		1.37	6.06	G	0.778	78.7		9.41	54.6		2.98
H34R	T33	Tetrakishomohopane-22R		U	0.778	24.3		1.37		U	0.778	56.7		9.41	37.7		2.98
H35S	T34	Pentakishomohopane-22S		U	0.778	27.0		1.37		U	0.778	82.4		9.41	40.5		2.98
H35R	T35	Pentakishomohopane-22R		U	0.778	34.1	G	1.37		U	0.778	81.5		9.41	31.1		2.98
d27S	S4	13b(H),17a(H)-20S-Diacholestane		U	0.778	189		1.37		U	0.778	56.4		9.41	372		2.98
d27R	S5	13b(H),17a(H)-20R-Diacholestane		U	0.778	113		1.37		U	0.778	24.1		9.41	216		2.98
d28S	S8	13b,17a-20S-Methyldiacholestane		U	0.778	123		1.37		U	0.778	97.3		9.41	213		2.98
aa27S	S12	14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12)		U	0.778	284		1.37		U	0.778	233		9.41	596		2.98
aa27R	S17	14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17)		U	0.778	311		1.37		U	0.778	395		9.41	673		2.98
d29R	S18	Unknown Sterane (S18)		U	0.778	60.2		1.37		U	0.778	108		9.41	103		2.98
d29S	S19	13a,17b-20S-Ethyldiacholestane		U	0.778	13.1		1.37		U	0.778		U	9.41	26.2		2.98
aa28S	S20	14a,17a-20S-Methylcholestane		U	0.778	122		1.37		U	0.778	260		9.41	254		2.98
aa28R	S24	14a,17a-20R-Methylcholestane		U	0.778	157		1.37		U	0.778	304		9.41	396		2.98
aa29S	S25	14a(H),17a(H)-20S-Ethylcholestane		U	0.778	125		1.37		U	0.778	308		9.41	240		2.98
aa29R	S28	14a(H),17a(H)-20R-Ethylcholestane		U	0.778	162		1.37		U	0.778	248		9.41	331		2.98
bb27R	S14	14b(H),17b(H)-20R-Cholestane		U	0.778	133		1.37		U	0.778	148		9.41	294		2.98
bb27S	S15	14b(H),17b(H)-20S-Cholestane		U	0.778	140		1.37		U	0.778	131		9.41	294		2.98
bb28R	S22	14b,17b-20R-Methylcholestane		U	0.778	153		1.37		U	0.778	295		9.41	346		2.98
bb28S	S23	14b,17b-20S-Methylcholestane		U	0.778	202		1.37		U	0.778	332		9.41	384		2.98
bb29R	S26	14b(H),17b(H)-20R-Ethylcholestane		U	0.778	187		1.37		U	0.778	234		9.41	374		2.98
bb29S	S27	14b(H),17b(H)-20S-Ethylcholestane		U	0.778	153		1.37		U	0.778	212		9.41	230		2.98
RC26/SC27TA	RC26/SC27TA	C26,20R- +C27,20S- triaromatic steroid	0.528	J	0.778	429		1.37		U	0.778	2700		9.41	514		2.98
SC28TA	SC28TA	C28,20S-triaromatic steroid		U	0.778	171		1.37		U	0.778	2050		9.41	214		2.98
RC27TA	RC27TA	C27,20R-triaromatic steroid		U	0.778	252		1.37		U	0.778	519		9.41	312		2.98
RC28TA	RC28TA	C28,20R-triaromatic steroid		U	0.778	116		1.37		U	0.778	493		9.41	128		2.98

Surrogates (% Recovery)

Naphthalene-d8	76	84	78	81	81
Phenanthrene-d10	91	100	94	93	91
Benzo[a]pyrene-d12	76	89	82	91	76
5B(H)Cholane	N/A	N/A	N/A	N/A	N/A

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	S-8-B24	S-5-B34	S-9-B34	S-3-B35	S-5-B36
Lab ID	1610008-15	1610008-20	1610008-21	1610008-22	1610008-23
Matrix	Soil	Soil	Soil	Soil	Soil
Reference Method	Modified 8270D	Modified 8270D	Modified 8270D	Modified 8270D	Modified 8270D
Batch ID	TS102516B02	TS102516B02	TS102516B02	TS102516B02	TS102516B02
Date Collected	10/20/2016	10/20/2016	10/20/2016	10/20/2016	10/21/2016
Date Received	10/22/2016	10/22/2016	10/22/2016	10/22/2016	10/22/2016
Date Prepped	10/25/2016	10/25/2016	10/25/2016	10/25/2016	10/25/2016
Date Analyzed	11/02/2016	11/02/2016	11/02/2016	11/02/2016	11/02/2016
Sample Size (wet)	25.18	20.14	20.77	15.3	30.32
% Solid	88.49	92.01	91.08	92.76	89.64
File ID	F210311634.D	F210311635.D	F210311636.D	F210311637.D	F210311639.D
Units	µg/Kg	µg/Kg	µg/Kg	µg/Kg	µg/Kg
Final Volume	2	3.33	10	20	2
Dilution	1	1	1	1	1
Reporting Limit	0.898	1.80	5.29	14.1	0.736

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	Result		SSRL	Result		SSRL	Result		SSRL
2	D0	cis/trans-Decalin	9.39		0.898	9.14		1.80	2.94	J	5.29		U	14.1		U	0.736
2	D1	C1-Decalins	16.1		0.898	25.3		1.80	11.2		5.29		U	14.1		U	0.736
2	D2	C2-Decalins	19.2		0.898	38.0		1.80	19.0		5.29		U	14.1		U	0.736
2	D3	C3-Decalins	9.72		0.898	29.5		1.80	24.0		5.29		U	14.1		U	0.736
2	D4	C4-Decalins	7.93		0.898	30.2		1.80	37.1		5.29		U	14.1		U	0.736
2	BT0	Benzothiophene	0.129	J	0.898	0.617	J	1.80	0.935	J	5.29		U	14.1		U	0.736
2	BT1	C1-Benzo(b)thiophenes	0.893	J	0.898	2.22		1.80	4.93	J	5.29		U	14.1		U	0.736
2	BT2	C2-Benzo(b)thiophenes	1.14		0.898	2.42		1.80	4.62	J	5.29		U	14.1		U	0.736
2	BT3	C3-Benzo(b)thiophenes	2.04		0.898	7.26		1.80	14.0		5.29		U	14.1		U	0.736
2	BT4	C4-Benzo(b)thiophenes	1.89		0.898	11.7		1.80	15.3		5.29		U	14.1		U	0.736
2	N0	Naphthalene	1.19		0.898	2.00		1.80	1.62	J	5.29	2.50	J	14.1	0.179	JB	0.736
2	N1	C1-Naphthalenes	1.82		0.898	2.88		1.80	2.79	J	5.29	4.06	J	14.1	0.271	JB	0.736
2	N2	C2-Naphthalenes	3.45		0.898	13.2		1.80	8.40		5.29	11.3	J	14.1	0.752		0.736
2	N3	C3-Naphthalenes	4.54		0.898	34.0		1.80	21.5		5.29	23.1		14.1	1.49		0.736
2	N4	C4-Naphthalenes	4.85		0.898	44.3		1.80	32.2		5.29		U	14.1	2.29		0.736
2	B	Biphenyl	0.752	J	0.898	0.489	JB	1.80	1.04	J	5.29	1.25	J	14.1	0.109	JB	0.736
3	DF	Dibenzofuran	0.222	J	0.898	0.396	J	1.80	1.06	J	5.29	0.585	J	14.1	0.0514	J	0.736
3	AY	Acenaphthylene	1.56	B	0.898	2.64		1.80	2.70	J	5.29	2.65	J	14.1	0.797	B	0.736
3	AE	Acenaphthene	0.502	JB	0.898	0.815	J	1.80	1.07	J	5.29	1.10	J	14.1		U	0.736
3	F0	Fluorene	0.463	J	0.898	0.697	J	1.80	2.20	J	5.29	2.93	J	14.1	0.173	J	0.736
3	F1	C1-Fluorenes	0.930		0.898	4.89		1.80	9.91		5.29		U	14.1	0.341	J	0.736
3	F2	C2-Fluorenes	2.83		0.898	23.9		1.80	74.3		5.29		U	14.1	2.20		0.736
3	F3	C3-Fluorenes	4.71		0.898	33.5		1.80	148		5.29		U	14.1	3.60		0.736
3	A0	Anthracene	2.04		0.898	2.59		1.80	4.15	J	5.29	3.68	J	14.1	0.816		0.736
3	P0	Phenanthrene	5.06		0.898	7.46		1.80	15.0		5.29	8.18	J	14.1	0.550	JB	0.736
3	PA1	C1-Phenanthrenes/Anthracenes	5.34		0.898	22.2		1.80	68.3		5.29	10.6	J	14.1	1.72		0.736
3	PA2	C2-Phenanthrenes/Anthracenes	8.02		0.898	50.0		1.80	193		5.29	18.1		14.1	3.79		0.736
3	PA3	C3-Phenanthrenes/Anthracenes	8.90		0.898	52.6		1.80	261		5.29	39.9		14.1	4.80		0.736
3	PA4	C4-Phenanthrenes/Anthracenes	9.38		0.898	33.8		1.80	184		5.29	68.4		14.1		U	0.736
3	RET	Retene		U	0.898		U	1.80		U	5.29		U	14.1		U	0.736
3	DBT0	Dibenzothiophene	0.379	J	0.898	1.31	J	1.80	2.85	J	5.29	1.29	J	14.1	0.0929	J	0.736
3	DBT1	C1-Dibenzothiophenes	0.934		0.898	5.04		1.80	12.5		5.29	4.06	J	14.1	0.516	J	0.736
3	DBT2	C2-Dibenzothiophenes	2.97		0.898	18.8		1.80	58.8		5.29	14.4		14.1		U	0.736
3	DBT3	C3-Dibenzothiophenes	5.45		0.898	24.0		1.80	106		5.29	31.1		14.1		U	0.736
3	DBT4	C4-Dibenzothiophenes	6.20		0.898	15.9		1.80	91.8		5.29	48.5		14.1		U	0.736
4	BF	Benzo(b)fluorene	1.09		0.898	0.931	J	1.80	10.2		5.29	2.80	J	14.1		U	0.736
4	FL0	Fluoranthene	15.1		0.898	15.3		1.80	14.6		5.29	24.9		14.1	0.538	JB	0.736
4	PY0	Pyrene	20.2		0.898	19.4		1.80	33.0		5.29	28.0		14.1	0.765		0.736
4	FP1	C1-Fluoranthenes/Pyrenes	12.3		0.898	19.8		1.80	112		5.29	47.3		14.1		U	0.736
4	FP2	C2-Fluoranthenes/Pyrenes	15.3		0.898	29.6		1.80	184		5.29	123		14.1	3.37		0.736
4	FP3	C3-Fluoranthenes/Pyrenes	19.7		0.898	49.2		1.80	286		5.29	264		14.1	7.24		0.736
4	FP4	C4-Fluoranthenes/Pyrenes	26.3		0.898	53.2		1.80	340		5.29	348		14.1	10.2		0.736
4	NBT0	Naphthobenzothiophenes	3.52		0.898	2.57		1.80	13.3		5.29	11.7	J	14.1		U	0.736
4	NBT1	C1-Naphthobenzothiophenes	7.87		0.898	11.8		1.80	72.0		5.29	82.4		14.1	2.77		0.736
4	NBT2	C2-Naphthobenzothiophenes	17.9		0.898	18.9		1.80	120		5.29	244		14.1		U	0.736
4	NBT3	C3-Naphthobenzothiophenes	23.1		0.898	20.7		1.80	125		5.29	388		14.1		U	0.736
4	NBT4	C4-Naphthobenzothiophenes	27.2		0.898	31.1		1.80	108		5.29	422		14.1		U	0.736
4	BA0	Benz[a]anthracene	15.0		0.898	6.49		1.80	9.45		5.29	16.6		14.1	0.222	J	0.736
4	C0	Chrysene/Triphenylene	24.2		0.898	14.3		1.80	79.1		5.29	53.1		14.1	0.478	J	0.736
4	BC1	C1-Chrysenes	16.3		0.898	17.2		1.80	138		5.29	128		14.1	1.58		0.736
4	BC2	C2-Chrysenes	26.0		0.898	33.4		1.80	210		5.29	404		14.1	2.90		0.736
4	BC3	C3-Chrysenes	55.2		0.898	73.9		1.80	302		5.29	774		14.1		U	0.736
4	BC4	C4-Chrysenes	46.3		0.898	56.8		1.80	234		5.29	627		14.1		U	0.736

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	S-8-B24	S-5-B34	S-9-B34	S-3-B35	S-5-B36
Lab ID	1610008-15	1610008-20	1610008-21	1610008-22	1610008-23
Matrix	Soil	Soil	Soil	Soil	Soil
Reference Method	Modified 8270D	Modified 8270D	Modified 8270D	Modified 8270D	Modified 8270D
Batch ID	TS102516B02	TS102516B02	TS102516B02	TS102516B02	TS102516B02
Date Collected	10/20/2016	10/20/2016	10/20/2016	10/20/2016	10/21/2016
Date Received	10/22/2016	10/22/2016	10/22/2016	10/22/2016	10/22/2016
Date Prepped	10/25/2016	10/25/2016	10/25/2016	10/25/2016	10/25/2016
Date Analyzed	11/02/2016	11/02/2016	11/02/2016	11/02/2016	11/02/2016
Sample Size (wet)	25.18	20.14	20.77	15.3	30.32
% Solid	88.49	92.01	91.08	92.76	89.64
File ID	F210311634.D	F210311635.D	F210311636.D	F210311637.D	F210311639.D
Units	µg/Kg	µg/Kg	µg/Kg	µg/Kg	µg/Kg
Final Volume	2	3.33	10	20	2
Dilution	1	1	1	1	1
Reporting Limit	0.898	1.80	5.29	14.1	0.736

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	Result		SSRL	Result		SSRL	Result		SSRL
5	BBF	Benzo[b]fluoranthene	30.8		0.898	9.11		1.80	28.5		5.29	39.2		14.1	0.435	J	0.736
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	28.5		0.898	8.00		1.80	15.3		5.29	23.8		14.1	0.361	J	0.736
5	BAF	Benzo[a]fluoranthene	4.55		0.898	2.32		1.80	3.67	J	5.29	9.74	J	14.1		U	0.736
5	BEP	Benzo[e]pyrene	33.7		0.898	15.0		1.80	47.5		5.29	84.2		14.1	0.947		0.736
5	BAP	Benzo[a]pyrene	30.0		0.898	11.7		1.80	17.4		5.29	33.7		14.1	0.383	J	0.736
5	PER	Perylene	19.0		0.898	18.1		1.80	39.9		5.29	166		14.1	1.06		0.736
6	IND	Indeno[1,2,3-cd]pyrene	35.7		0.898	11.0		1.80	23.6		5.29	33.4		14.1	0.700	J	0.736
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	12.7		0.898	2.98		1.80	9.65		5.29	16.2		14.1		U	0.736
6	GHI	Benzo[g,h,i]perylene	40.7		0.898	19.0		1.80	35.1		5.29	62.7		14.1	1.99		0.736
3	CAR	Carbazole	0.766	J	0.898	1.57	J	1.80	5.88		5.29	1.53	J	14.1	0.147	J	0.736
3	4MDT	4-Methyldibenzothiophene	0.373	J	0.898	3.06		1.80	6.22		5.29	1.24	J	14.1	0.108	J	0.736
3	2MDT	2/3-Methyldibenzothiophene	29.1		0.898		U	1.80		U	5.29		U	14.1		U	0.736
3	1MDT	1-Methyldibenzothiophene	0.191	J	0.898	1.03	J	1.80	3.10	J	5.29	1.41	J	14.1	0.157	J	0.736
3	3MP	3-Methylphenanthrene	1.06		0.898	4.99		1.80	15.2		5.29	2.28	J	14.1	0.145	J	0.736
3	2MP	2-Methylphenanthrene	1.24		0.898	5.41		1.80	15.5		5.29	1.87	J	14.1	0.152	J	0.736
3	2MA	2-Methylanthracene	0.588	J	0.898	1.68	J	1.80	4.67	J	5.29	1.91	J	14.1	0.368	J	0.736
3	9MP	9/4-Methylphenanthrene	1.41		0.898	6.24		1.80	19.7		5.29	2.16	J	14.1	0.372	J	0.736
3	1MP	1-Methylphenanthrene	0.907		0.898	3.94		1.80	10.4		5.29	1.70	J	14.1		U	0.736
t23	T4	C23 Tricyclic Terpane	8.09		0.898	28.3		1.80	142		5.29	36.5		14.1	7.09		0.736
t24	T5	C24 Tricyclic Terpane	5.58		0.898	23.2		1.80	149		5.29	28.2		14.1	4.62		0.736
t25	T6	C25 Tricyclic Terpane	7.09		0.898	27.7		1.80	191		5.29	46.9		14.1	4.02		0.736
te24	T6a	C24 Tetracyclic Terpane	6.40		0.898	5.63		1.80	18.8		5.29	19.3		14.1		U	0.736
t26S	T6b	C26 Tricyclic Terpane-22S	3.28		0.898	12.8		1.80	68.0		5.29	31.7		14.1	1.61		0.736
t26R	T6c	C26 Tricyclic Terpane-22R	3.30		0.898	13.0		1.80	69.8		5.29	33.4		14.1	2.50		0.736
t28S	T7	C28 Tricyclic Terpane-22S	6.12		0.898	20.3		1.80	110		5.29	58.1		14.1		U	0.736
t28R	T8	C28 Tricyclic Terpane-22R	7.18		0.898	23.3		1.80	107		5.29	65.1		14.1		U	0.736
t29S	T9	C29 Tricyclic Terpane-22S	8.99		0.898	27.8		1.80	134		5.29	62.9		14.1	4.07		0.736
t29R	T10	C29 Tricyclic Terpane-22R	10.1		0.898	23.6		1.80	130		5.29	76.7		14.1	2.33		0.736
Ts	T11	18a-22,29,30-Trisnorneohopane-TS	8.49		0.898	19.2		1.80	76.3		5.29	94.4		14.1	2.92		0.736
t30S	T11a	C30 Tricyclic Terpane-22S	11.0		0.898	22.4		1.80	142		5.29	137		14.1	3.22		0.736
t30R	T11b	C30 Tricyclic Terpane-22R	12.3		0.898	27.8		1.80	146		5.29	96.7		14.1	4.95		0.736
Tm	T12	17a(H)-22,29,30-Trisnorhopane-TM	14.4		0.898	29.4		1.80	104		5.29	166		14.1	5.81		0.736
BNH	T14a	17a/b,21b/a 28,30-Bisnorhopane	48.3		0.898	69.2	G	1.80	258	G	5.29	661	G	14.1	13.7	G	0.736
25N	T14b	17a(H),21b(H)-25-Norhopane	4.93		0.898	12.9		1.80	87.8		5.29	73.6		14.1		U	0.736
H29	T15	30-Norhopane	45.4		0.898	75.0		1.80	354		5.29	818		14.1	9.91		0.736
C29Ts	T16	18a(H)-30-Norneohopane-C29Ts	25.2	G	0.898	58.0	G	1.80	190	G	5.29	336	G	14.1	9.01	G	0.736
X	X	17a(H)-Diahopane	1.21		0.898	8.14		1.80	21.5		5.29	29.0		14.1	2.06		0.736
M29	T17	30-Normoretane	17.7		0.898	27.0		1.80	103	G	5.29	294	G	14.1		U	0.736
OL	T18	18a(H)&18b(H)-Oleananes	59.6	G	0.898	111	G	1.80	394	G	5.29	709	G	14.1	16.7	G	0.736
H30	T19	Hopane	98.9		0.898	215		1.80	874		5.29	1380		14.1	26.1		0.736
M30	T20	Moretane	23.5		0.898	46.0		1.80	178		5.29	308		14.1	9.46		0.736
H31S	T21	30-Homohopane-22S	34.9		0.898	60.3		1.80	238		5.29	469		14.1	8.91		0.736
H31R	T22	30-Homohopane-22R	39.2		0.898	60.1		1.80	281		5.29	433		14.1	7.09		0.736
T22A	T22A	T22a-Gammacerane/C32-diahopane	18.6		0.898	26.2		1.80	84.3		5.29	281		14.1	3.16		0.736
H32S	T26	30,31-Bishomohopane-22S	25.2		0.898	44.9		1.80	160		5.29	328		14.1	6.37		0.736
H32R	T27	30,31-Bishomohopane-22R	18.0		0.898	31.3		1.80	120		5.29	280		14.1	4.87		0.736
H33S	T30	30,31-Trishomohopane-22S	26.4		0.898	39.6		1.80	155		5.29	371		14.1	5.54		0.736
H33R	T31	30,31-Trishomohopane-22R	21.4		0.898	27.3		1.80	98.9		5.29	282		14.1	3.51		0.736
H34S	T32	Tetrakishomohopane-22S	17.7		0.898	30.9		1.80	98.2		5.29	279		14.1	3.16		0.736
H34R	T33	Tetrakishomohopane-22R	13.4		0.898	23.1		1.80	81.4		5.29	251		14.1		U	0.736
H35S	T34	Pentakishomohopane-22S	18.9		0.898	28.5		1.80	94.9		5.29	325		14.1	4.63		0.736
H35R	T35	Pentakishomohopane-22R	23.5		0.898	35.0	G	1.80	147	G	5.29	298		14.1		U	0.736
d27S	S4	13b(H),17a(H)-20S-Diacholestane	13.5		0.898	26.2		1.80	145		5.29	96.2		14.1	3.41		0.736
d27R	S5	13b(H),17a(H)-20R-Diacholestane	5.37		0.898	9.65		1.80	61.8		5.29	34.7		14.1	1.50		0.736
d28S	S8	13b,17a-20S-Methyldiacholestane	23.8		0.898	34.6		1.80	220		5.29	358		14.1	7.68		0.736
aa27S	S12	14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12)	81.3		0.898	106		1.80	657		5.29	955		14.1	16.6		0.736
aa27R	S17	14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17)	139		0.898	168		1.80	1140		5.29	1280		14.1	20.0		0.736
d29R	S18	Unknown Sterane (S18)	16.1		0.898	23.5		1.80	82.5		5.29	132		14.1	7.19		0.736
d29S	S19	13a,17b-20S-Ethyldiacholestane	8.36		0.898	6.51		1.80	43.0		5.29	107		14.1	0.981		0.736
aa28S	S20	14a,17a-20S-Methylcholestane	129		0.898	125		1.80	1030		5.29	1840		14.1	13.0		0.736
aa28R	S24	14a,17a-20R-Methylcholestane	163		0.898	128		1.80	1340		5.29	2330		14.1	13.1		0.736
aa29S	S25	14a(H),17a(H)-20S-Ethylcholestane	146		0.898	131		1.80	904		5.29	1910		14.1	14.2		0.736
aa29R	S28	14a(H),17a(H)-20R-Ethylcholestane	203		0.898	130		1.80	1200		5.29	2840		14.1	15.8		0.736
bb27R	S14	14b(H),17b(H)-20R-Cholestane	27.3		0.898	54.2		1.80	376		5.29	243		14.1	4.62		0.736
bb27S	S15	14b(H),17b(H)-20S-Cholestane	24.9		0.898	53.3		1.80	352		5.29	284		14.1	4.15		0.736
bb28R	S22	14b,17b-20R-Methylcholestane	97.3		0.898	130		1.80	1140		5.29	1170		14.1	12.9		0.736
bb28S	S23	14b,17b-20S-Methylcholestane	125		0.898	146		1.80	1320		5.29	1490		14.1	16.9		0.736
bb29R	S26	14b(H),17b(H)-20R-Ethylcholestane	117		0.898	113		1.80	1000		5.29	1540		14.1	11.9		0.736
bb29S	S27	14b(H),17b(H)-20S-Ethylcholestane	90.1		0.898	86.1		1.80	561		5.29	787		14.1	10.2		0.736
RC26/SC27TA	RC26/SC27TA	C26,20R- +C27,20S- triaromatic steroid	921		0.898	724		1.80	3290		5.29	12800		14.1	128		0.736
SC28TA	SC28TA	C28,20S-triaromatic steroid	607		0.898	380		1.80	1500		5.29	6980		14.1	68.5		0.736
RC27TA	RC27TA	C27,20R-triaromatic steroid	602		0.898	347		1.80	1810		5.29	9730		14.1	50.4		0.736
RC28TA	RC28TA	C28,20R-triaromatic steroid	567		0.898	248		1.80	1190		5.29	6910		14.1	28.5		0.736

Surrogates (% Recovery)					
Naphthalene-d8	79	83	85	84	79
Phenanthrene-d10	96	96	102	106	101
Benzo[a]pyrene-d12	92	96	98	99	91
5B(H)Cholane	N/A	N/A	N/A	N/A	N/A

U: The analyte was analyzed for but not detected at the sample specific level reported.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
E: Estimated value, exceeds the upper limit of calibration.
NA: Not Applicable
D: Secondary Dilution Performed
D1: Tertiary Dilution Performed
^{a}: Value outside of QC Limits.
§: Surrogate value outside of acceptable range.
X: It is not possible to calculate RPD, one result is below the detection limit, the other is above reporting limit.
G: Matrix Interference.
P: Greater than 40% RPD between the two columns, the higher value is reported according to the method.
I: Due to interference, the lower value is reported.
N: Spike recovery outside control limits.
E: Estimated due to Interference. (Metals)
¤: Duplicate outside control limits.
P: Spike compound. (Metals)
J: Below CRDL, Project DL, or RL but greater than or equal to MDL
C: Sample concentration is > 4 times the spike level, recovery limits do not apply. (Metals)
S: Spike Compound. (Organics)
§: RPD criteria not applicable to results less than 5 times the reporting limit. (Metals)
T: Tentatively identified corexit compound.
C: Co-elution.
Z: Result not surrogate corrected.
DL: Surrogate result diluted out of sample.
W: Matrix interference may be present based on chemical reasonableness evaluation.

Project Name:
Project Number: JALK FEE

Client ID	Laboratory Method Bl		Laboratory Method Bl	
Lab ID	WG947526-10		WG947526-5	
Matrix	SOIL		SOIL	
Matrix Description				
Reference Method	8260C		8260C	
Batch ID	WG947526		WG947526	
Date Collected	NA		NA	
Date Received	10/31/2016		10/31/2016	
Date Prepped	10/30/2016		10/28/2016	
Date Analyzed	10/30/2016		10/28/2016	
Sample Size(wet)	15	g	15	g
% Solid	100		100	
File ID	V17161030A05		V17161028A05	
Units	ug/kg		ug/kg	
Final Volume	0.1		0.1	
Dilution	1		1	
Reporting Limit	50		50	

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL
C	DCM	METHYLENE CHLORIDE		U	500		U	500
C	11DCA	1,1-DICHLOROETHANE		U	75		U	75
C	CF	CHLOROFORM		U	75		U	75
C	CT	CARBON TETRACHLORIDE		U	50		U	50
C	12DCP	1,2-DICHLOROPROPANE		U	180		U	180
B	DBCM	DIBROMOCHLOROMETHANE		U	50		U	50
C	112TCA	1,1,2-TRICHLOROETHANE		U	75		U	75
C	PCE	TETRACHLOROETHENE		U	50		U	50
C	CB	CHLOROBENZENE		U	50		U	50
F	TCTFM	TRICHLOROFLUOROMETHANE		U	250		U	250
ADD	12DCA	1,2-DICHLOROETHANE		U	50		U	50
C	111TCA	1,1,1-TRICHLOROETHANE		U	50		U	50
B	BDCM	BROMODICHLOROMETHANE		U	50		U	50
C	T13DCP	TRANS-1,3-DICHLOROPROPENE		U	50		U	50
C	C13DCP	CIS-1,3-DICHLOROPROPENE		U	50		U	50
B	BF	BROMOFORM		U	200		U	200
C	1122PCA	1,1,2,2-TETRACHLOROETHANE		U	50		U	50
A	B	BENZENE		U	50	5.9	J	50
A	T	TOLUENE		U	75	9.9	J	75
A	EB	ETHYLBENZENE		U	50		U	50
B	BM	BROMOMETHANE		U	100	22	J	100
C	VC	VINYL CHLORIDE		U	100		U	100
C	CE	CHLOROETHANE		U	100		U	100
C	11DCE	1,1-DICHLOROETHENE		U	50		U	50
C	T12DCE	TRANS-1,2-DICHLOROETHENE		U	75		U	75
C	TCE	TRICHLOROETHENE		U	50		U	50
C	12DCB	1,2-DICHLOROBENZENE		U	250		U	250
C	13DCB	1,3-DICHLOROBENZENE		U	250		U	250
C	14DCB	1,4-DICHLOROBENZENE		U	250		U	250
		METHYL TERT BUTYL ETHER		U	100		U	100
A	MPX	P/M-XYLENE		U	100		U	100
A	OX	O-XYLENE		U	100		U	100
C	C12DCE	CIS-1,2-DICHLOROETHENE		U	50		U	50
C	123TCP	1,2,3-TRICHLOROPROPANE		U	500		U	500
A	STY	STYRENE		U	100		U	100
F	DCFM	DICHLORODIFLUOROMETHANE		U	500		U	500
O	ACE	ACETONE		U	1800		U	1800
O	MEK	2-BUTANONE		U	500		U	500
O	MIBK	4-METHYL-2-PENTANONE		U	500		U	500
O	THF	TETRAHYDROFURAN		U	1000		U	1000
ADD	12DBE	1,2-DIBROMOETHANE		U	200		U	200
C	1112PCA	1,1,1,2-TETRACHLOROETHANE		U	50		U	50
A	BUTB	N-BUTYLBENZENE		U	50		U	50
A	TBB	TERT-BUTYLBENZENE		U	250		U	250
		O-CHLOROTOLUENE		U	250		U	250
C	HCB	HEXACHLOROBUTADIENE		U	250		U	250
A	IPB	ISOPROPYLBENZENE		U	50		U	50
		P-ISOPROPYLTOLUENE		U	50		U	50
A	N0	NAPHTHALENE		U	250	8.0	J	250
A	PROPB	N-PROPYLBENZENE		U	50		U	50
C	124TCB	1,2,4-TRICHLOROBENZENE		U	250		U	250
A	135TMB	1,3,5-TRIMETHYLBENZENE		U	250		U	250
A	124TMB	1,2,4-TRIMETHYLBENZENE		U	250		U	250
		ETHYL ETHER		U	250		U	250

Surrogates (% Recovery)		
1,2-DICHLOROETHANE-D4	91	84
TOLUENE-D8	94	98
4-BROMOFLUOROBENZENE	88	89
DIBROMOFLUOROMETHANE	102	98

Project Name:
Project Number: JALK FEE

Client ID	Laboratory Control S	LCS Duplicate
Lab ID	WG947526-3	WG947526-4
Matrix	SOIL	SOIL
Matrix Description		
Reference Method	8260C	8260C
Batch ID	WG947526	WG947526
Date Collected	NA	NA
Date Received	10/31/2016	10/31/2016
Date Prepped	10/28/2016	10/28/2016
Date Analyzed	10/28/2016	10/28/2016
Sample Size(wet)	15 g	15 g
% Solid	100	100
File ID	V17161028A01	V17161028A02
Units	%	%
Final Volume	0.1	0.1
Dilution	1	1
Reporting Limit	50	50

Class	Abbrev	Analytes	Result	SSRL	% REC	Spike Conc.	Lower Limit	Upper Limit	Result	SSRL	% REC	Spike Conc.	Lower Limit	Upper Limit	RPD	RPD Limit
C	DCM	METHYLENE CHLORIDE	1130	500	113	1000	70	130	1090	500	109	1000	70	130	4	30
C	11DCA	1,1-DICHLOROETHANE	1110	75	111	1000	70	130	1050	75	105	1000	70	130	6	30
C	CF	CHLOROFORM	992	75	99	1000	70	130	949	75	95	1000	70	130	4	30
C	CT	CARBON TETRACHLORIDE	843	50	84	1000	70	130	803	50	80	1000	70	130	5	30
C	12DCP	1,2-DICHLOROPROPANE	1190	180	119	1000	70	130	1150	180	115	1000	70	130	3	30
B	DBCM	DIBROMOCHLOROMETHANE	997	50	100	1000	70	130	1010	50	101	1000	70	130	1	30
C	112TCA	1,1,2-TRICHLOROETHANE	1090	75	109	1000	70	130	1080	75	108	1000	70	130	1	30
C	PCE	TETRACHLOROETHENE	1030	50	103	1000	70	130	989	50	99	1000	70	130	4	30
C	CB	CHLOROBENZENE	1070	50	107	1000	70	130	1030	50	103	1000	70	130	4	30
F	TCTFM	TRICHLOROFLUOROMETHANE	795	250	80	1000	70	139	763	250	76	1000	70	139	5	30
ADD	12DCA	1,2-DICHLOROETHANE	870	50	87	1000	70	130	856	50	86	1000	70	130	1	30
C	111TCA	1,1,1-TRICHLOROETHANE	855	50	86	1000	70	130	821	50	82	1000	70	130	5	30
B	BDCM	BROMODICHLOROMETHANE	949	50	95	1000	70	130	909	50	91	1000	70	130	4	30
C	T13DCP	TRANS-1,3-DICHLOROPROPENE	984	50	98	1000	70	130	943	50	94	1000	70	130	4	30
C	C13DCP	CIS-1,3-DICHLOROPROPENE	1030	50	103	1000	70	130	982	50	98	1000	70	130	5	30
B	BF	BROMOFORM	1020	200	102	1000	70	130	1010	200	101	1000	70	130	1	30
C	1122PCA	1,1,2,2-TETRACHLOROETHANE	1070	50	107	1000	70	130	1070	50	107	1000	70	130	0	30
A	B	BENZENE	1050	50	105	1000	70	130	1000	50	100	1000	70	130	5	30
A	T	TOLUENE	1020	75	102	1000	70	130	979	75	98	1000	70	130	4	30
A	EB	ETHYLBENZENE	992	50	99	1000	70	130	936	50	94	1000	70	130	5	30
B	BM	BROMOMETHANE	1110	100	111	1000	57	147	965	100	96	1000	57	147	14	30
C	VC	VINYL CHLORIDE	1080	100	108	1000	67	130	1010	100	101	1000	67	130	7	30
C	CE	CHLOROETHANE	1120	100	112	1000	50	151	1010	100	101	1000	50	151	10	30
C	11DCE	1,1-DICHLOROETHENE	1050	50	105	1000	65	135	963	50	96	1000	65	135	9	30
C	T12DCE	TRANS-1,2-DICHLOROETHENE	1100	75	110	1000	70	130	1020	75	102	1000	70	130	8	30
C	TCE	TRICHLOROETHENE	1000	50	100	1000	70	130	970	50	97	1000	70	130	3	30
C	12DCB	1,2-DICHLOROBENZENE	1040	250	104	1000	70	130	999	250	100	1000	70	130	4	30
C	13DCB	1,3-DICHLOROBENZENE	1060	250	106	1000	70	130	1020	250	102	1000	70	130	4	30
C	14DCB	1,4-DICHLOROBENZENE	1050	250	105	1000	70	130	1030	250	103	1000	70	130	2	30
		METHYL TERT BUTYL ETHER	984	100	98	1000	66	130	944	100	94	1000	66	130	4	30
A	MPX	P/M-XYLENE	2080	100	104	2000	70	130	2010	100	101	2000	70	130	3	30
A	OX	O-XYLENE	2060	100	103	2000	70	130	2010	100	100	2000	70	130	3	30
C	C12DCE	CIS-1,2-DICHLOROETHENE	1080	50	108	1000	70	130	1070	50	107	1000	70	130	1	30
C	123TCP	1,2,3-TRICHLOROPROPANE	964	500	96	1000	68	130	929	500	93	1000	68	130	3	30
A	STY	STYRENE	2020	100	101	2000	70	130	1960	100	98	2000	70	130	3	30
F	DCFM	DICHLORODIFLUOROMETHANE	660	500	66	1000	30	146	630	500	63	1000	30	146	5	30
O	ACE	ACETONE	1360	1800	136	1000	54	140	1270	1800	127	1000	54	140	7	30
O	MEK	2-BUTANONE	1170	500	117	1000	70	130	1180	500	118	1000	70	130	1	30
O	MIBK	4-METHYL-2-PENTANONE	1090	500	109	1000	70	130	1040	500	104	1000	70	130	5	30
O	THF	TETRAHYDROFURAN	1210	1000	121	1000	66	130	1100	1000	110	1000	66	130	10	30
ADD	12DBE	1,2-DIBROMOETHANE	1060	200	106	1000	70	130	1050	200	105	1000	70	130	1	30
C	1112PCA	1,1,1,2-TETRACHLOROETHANE	1030	50	103	1000	70	130	981	50	98	1000	70	130	5	30
A	BUTB	N-BUTYLBENZENE	1010	50	101	1000	70	130	952	50	95	1000	70	130	6	30
A	TBB	TERT-BUTYLBENZENE	959	250	96	1000	70	130	914	250	91	1000	70	130	5	30
		O-CHLOROTOLUENE	962	250	96	1000	70	130	918	250	92	1000	70	130	4	30
C	HCB	HEXACHLOROBUTADIENE	974	250	97	1000	67	130	924	250	92	1000	67	130	5	30
A	IPB	ISOPROPYLBENZENE	976	50	98	1000	70	130	938	50	94	1000	70	130	4	30
		P-ISOPROPYLTOLUENE	960	50	96	1000	70	130	929	50	93	1000	70	130	3	30
A	N0	NAPHTHALENE	983	250	98	1000	70	130	976	250	98	1000	70	130	0	30
A	PROPB	N-PROPYLBENZENE	985	50	98	1000	70	130	940	50	94	1000	70	130	4	30
C	124TCB	1,2,4-TRICHLOROBENZENE	1040	250	104	1000	70	130	1020	250	102	1000	70	130	2	30
A	135TMB	1,3,5-TRIMETHYLBENZENE	954	250	95	1000	70	130	909	250	91	1000	70	130	4	30
A	124TMB	1,2,4-TRIMETHYLBENZENE	947	250	95	1000	70	130	903	250	90	1000	70	130	5	30
		ETHYL ETHER	1100	250	110	1000	67	130	1030	250	103	1000	67	130	7	30

Surrogates (% Recovery)		
1,2-DICHLOROETHANE-D4	82	81
TOLUENE-D8	100	99
4-BROMOFLUOROBENZENE	89	89
DIBROMOFLUOROMETHANE	98	100

Project Name:
Project Number: JALK FEE

Client ID	Laboratory Control S	LCS Duplicate
Lab ID	WG947526-8	WG947526-9
Matrix	SOIL	SOIL
Matrix Description		
Reference Method	8260C	8260C
Batch ID	WG947526	WG947526
Date Collected	NA	NA
Date Received	10/31/2016	10/31/2016
Date Prepped	10/30/2016	10/30/2016
Date Analyzed	10/30/2016	10/30/2016
Sample Size(wet)	15 g	15 g
% Solid	100	100
File ID	V17161030A01	V17161030A02
Units	%	%
Final Volume	0.1	0.1
Dilution	1	1
Reporting Limit	50	50

Class	Abbrev	Analytes	Result	SSRL	% REC	Spike Conc.	Lower Limit	Upper Limit	Result	SSRL	% REC	Spike Conc.	Lower Limit	Upper Limit	RPD	RPD Limit
C	DCM	METHYLENE CHLORIDE	962	500	96	1000	70	130	942	500	94	1000	70	130	2	30
C	11DCA	1,1-DICHLOROETHANE	1020	75	102	1000	70	130	978	75	98	1000	70	130	4	30
C	CF	CHLOROFORM	947	75	95	1000	70	130	919	75	92	1000	70	130	3	30
C	CT	CARBON TETRACHLORIDE	925	50	92	1000	70	130	878	50	88	1000	70	130	4	30
C	12DCP	1,2-DICHLOROPROPANE	1080	180	108	1000	70	130	1050	180	105	1000	70	130	3	30
B	DBCM	DIBROMOCHLOROMETHANE	945	50	94	1000	70	130	949	50	95	1000	70	130	1	30
C	112TCA	1,1,2-TRICHLOROETHANE	926	75	93	1000	70	130	927	75	93	1000	70	130	0	30
C	PCE	TETRACHLOROETHENE	976	50	98	1000	70	130	924	50	92	1000	70	130	6	30
C	CB	CHLOROBENZENE	974	50	97	1000	70	130	921	50	92	1000	70	130	5	30
F	TCTFM	TRICHLOROFLUOROMETHANE	848	250	85	1000	70	139	806	250	81	1000	70	139	5	30
ADD	12DCA	1,2-DICHLOROETHANE	904	50	90	1000	70	130	907	50	91	1000	70	130	1	30
C	111TCA	1,1,1-TRICHLOROETHANE	904	50	90	1000	70	130	849	50	85	1000	70	130	6	30
B	BDCM	BROMODICHLOROMETHANE	914	50	91	1000	70	130	902	50	90	1000	70	130	1	30
C	T13DCP	TRANS-1,3-DICHLOROPROPENE	891	50	89	1000	70	130	870	50	87	1000	70	130	2	30
C	C13DCP	CIS-1,3-DICHLOROPROPENE	934	50	93	1000	70	130	909	50	91	1000	70	130	2	30
B	BF	BROMOFORM	912	200	91	1000	70	130	953	200	95	1000	70	130	4	30
C	1122PCA	1,1,2,2-TETRACHLOROETHANE	895	50	90	1000	70	130	915	50	92	1000	70	130	2	30
A	B	BENZENE	954	50	95	1000	70	130	922	50	92	1000	70	130	3	30
A	T	TOLUENE	910	75	91	1000	70	130	875	75	88	1000	70	130	3	30
A	EB	ETHYLBENZENE	903	50	90	1000	70	130	866	50	87	1000	70	130	3	30
B	BM	BROMOMETHANE	820	100	82	1000	57	147	780	100	78	1000	57	147	5	30
C	VC	VINYL CHLORIDE	1010	100	101	1000	67	130	869	100	87	1000	67	130	15	30
C	CE	CHLOROETHANE	851	100	85	1000	50	151	806	100	81	1000	50	151	5	30
C	11DCE	1,1-DICHLOROETHENE	914	50	91	1000	65	135	859	50	86	1000	65	135	6	30
C	T12DCE	TRANS-1,2-DICHLOROETHENE	985	75	98	1000	70	130	940	75	94	1000	70	130	4	30
C	TCE	TRICHLOROETHENE	969	50	97	1000	70	130	904	50	90	1000	70	130	7	30
C	12DCB	1,2-DICHLOROBENZENE	898	250	90	1000	70	130	918	250	92	1000	70	130	2	30
C	13DCB	1,3-DICHLOROBENZENE	927	250	93	1000	70	130	940	250	94	1000	70	130	1	30
C	14DCB	1,4-DICHLOROBENZENE	923	250	92	1000	70	130	930	250	93	1000	70	130	1	30
		METHYL TERT BUTYL ETHER	891	100	89	1000	66	130	885	100	88	1000	66	130	1	30
A	MPX	P/M-XYLENE	1930	100	96	2000	70	130	1850	100	92	2000	70	130	4	30
A	OX	O-XYLENE	1890	100	94	2000	70	130	1830	100	91	2000	70	130	3	30
C	C12DCE	CIS-1,2-DICHLOROETHENE	983	50	98	1000	70	130	947	50	95	1000	70	130	3	30
C	123TCP	1,2,3-TRICHLOROPROPANE	853	500	85	1000	68	130	859	500	86	1000	68	130	1	30
A	STY	STYRENE	1840	100	92	2000	70	130	1810	100	90	2000	70	130	2	30
F	DCFM	DICHLORODIFLUOROMETHANE	759	500	76	1000	30	146	684	500	68	1000	30	146	11	30
O	ACE	ACETONE	1300	1800	130	1000	54	140	1230	1800	123	1000	54	140	6	30
O	MEK	2-BUTANONE	1150	500	115	1000	70	130	1170	500	117	1000	70	130	2	30
O	MIBK	4-METHYL-2-PENTANONE	944	500	94	1000	70	130	969	500	97	1000	70	130	3	30
O	THF	TETRAHYDROFURAN	1110	1000	111	1000	66	130	1100	1000	110	1000	66	130	1	30
ADD	12DBE	1,2-DIBROMOETHANE	934	200	93	1000	70	130	934	200	93	1000	70	130	0	30
C	1112PCA	1,1,1,2-TETRACHLOROETHANE	971	50	97	1000	70	130	939	50	94	1000	70	130	3	30
A	BUTB	N-BUTYLBENZENE	884	50	88	1000	70	130	865	50	86	1000	70	130	2	30
A	TBB	TERT-BUTYLBENZENE	843	250	84	1000	70	130	828	250	83	1000	70	130	1	30
		O-CHLOROTOLUENE	848	250	85	1000	70	130	822	250	82	1000	70	130	4	30
C	HCB	HEXACHLOROBUTADIENE	838	250	84	1000	67	130	845	250	84	1000	67	130	0	30
A	IPB	ISOPROPYLBENZENE	857	50	86	1000	70	130	845	50	84	1000	70	130	2	30
		P-ISOPROPYLTOLUENE	849	50	85	1000	70	130	833	50	83	1000	70	130	2	30
A	N0	NAPHTHALENE	842	250	84	1000	70	130	873	250	87	1000	70	130	4	30
A	PROPB	N-PROPYLBENZENE	862	50	86	1000	70	130	856	50	86	1000	70	130	0	30
C	124TCB	1,2,4-TRICHLOROBENZENE	925	250	92	1000	70	130	941	250	94	1000	70	130	2	30
A	135TMB	1,3,5-TRIMETHYLBENZENE	832	250	83	1000	70	130	830	250	83	1000	70	130	0	30
A	124TMB	1,2,4-TRIMETHYLBENZENE	829	250	83	1000	70	130	828	250	83	1000	70	130	0	30
		ETHYL ETHER	838	250	84	1000	67	130	833	250	83	1000	67	130	1	30

Surrogates (% Recovery)		
1,2-DICHLOROETHANE-D4	95	93
TOLUENE-D8	98	95
4-BROMOFLUOROBENZENE	87	87
DIBROMOFLUOROMETHANE	102	103

Project Name:
Project Number: JALK FEE

Client ID	S-16-B26		S-16-B30	
Lab ID	L1634114-02		L1634114-06	
Matrix	SOIL		SOIL	
Matrix Description				
Reference Method	8260C		8260C	
Batch ID	WG947526		WG947526	
Date Collected	10/18/2016		10/18/2016	
Date Received	10/20/2016		10/20/2016	
Date Prepped	10/30/2016		10/30/2016	
Date Analyzed	10/30/2016		10/30/2016	
Sample Size(wet)	7.6	g	7.2	g
% Solid	84.8		83.3	
File ID	V17161030A19		V17161030A24	
Units	ug/kg		ug/kg	
Final Volume	0.1		0.1	
Dilution	1		1	
Reporting Limit	120		140	

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL
C	DCM	METHYLENE CHLORIDE		U	1200		U	1400
C	11DCA	1,1-DICHLOROETHANE		U	190		U	200
C	CF	CHLOROFORM		U	190		U	200
C	CT	CARBON TETRACHLORIDE		U	120		U	140
C	12DCP	1,2-DICHLOROPROPANE		U	440		U	470
B	DBCM	DIBROMOCHLOROMETHANE		U	120		U	140
C	112TCA	1,1,2-TRICHLOROETHANE		U	190		U	200
C	PCE	TETRACHLOROETHENE	2600		120	950		140
C	CB	CHLOROBENZENE		U	120		U	140
F	TCTFM	TRICHLOROFLUOROMETHANE		U	630		U	680
ADD	12DCA	1,2-DICHLOROETHANE		U	120		U	140
C	111TCA	1,1,1-TRICHLOROETHANE		U	120		U	140
B	BDCM	BROMODICHLOROMETHANE		U	120		U	140
C	T13DCP	TRANS-1,3-DICHLOROPROPENE		U	120		U	140
C	C13DCP	CIS-1,3-DICHLOROPROPENE		U	120		U	140
B	BF	BROMOFORM		U	500		U	540
C	1122PCA	1,1,2,2-TETRACHLOROETHANE		U	120		U	140
A	B	BENZENE		U	120		U	140
A	T	TOLUENE		U	190		U	200
A	EB	ETHYLBENZENE		U	120		U	140
B	BM	BROMOMETHANE		U	250		U	270
C	VC	VINYL CHLORIDE		U	250		U	270
C	CE	CHLOROETHANE		U	250		U	270
C	11DCE	1,1-DICHLOROETHENE		U	120		U	140
C	T12DCE	TRANS-1,2-DICHLOROETHENE		U	190		U	200
C	TCE	TRICHLOROETHENE		U	120		U	140
C	12DCB	1,2-DICHLOROBENZENE		U	630		U	680
C	13DCB	1,3-DICHLOROBENZENE		U	630		U	680
C	14DCB	1,4-DICHLOROBENZENE		U	630		U	680
		METHYL TERT BUTYL ETHER		U	250		U	270
A	MPX	P/M-XYLENE		U	250		U	270
A	OX	O-XYLENE		U	250		U	270
C	C12DCE	CIS-1,2-DICHLOROETHENE	53	J	120		U	140
C	123TCP	1,2,3-TRICHLOROPROPANE		U	1200		U	1400
A	STY	STYRENE		U	250		U	270
F	DCFM	DICHLORODIFLUOROMETHANE		U	1200		U	1400
O	ACE	ACETONE		U	4500		U	4900
O	MEK	2-BUTANONE		U	1200		U	1400
O	MIBK	4-METHYL-2-PENTANONE		U	1200		U	1400
O	THF	TETRAHYDROFURAN		U	2500		U	2700
ADD	12DBE	1,2-DIBROMOETHANE		U	500		U	540
C	1112PCA	1,1,1,2-TETRACHLOROETHANE		U	120		U	140
A	BUTB	N-BUTYLBENZENE		U	120		U	140
A	TBB	TERT-BUTYLBENZENE		U	630		U	680
		O-CHLOROTOLUENE		U	630		U	680
C	HCB	HEXACHLOROBUTADIENE		U	630		U	680
A	IPB	ISOPROPYLBENZENE		U	120		U	140
		P-ISOPROPYLTOLUENE		U	120		U	140
A	N0	NAPHTHALENE	140	J	630	100	J	680
A	PROPB	N-PROPYLBENZENE		U	120		U	140
C	124TCB	1,2,4-TRICHLOROBENZENE		U	630		U	680
A	135TMB	1,3,5-TRIMETHYLBENZENE		U	630		U	680
A	124TMB	1,2,4-TRIMETHYLBENZENE		U	630		U	680
		ETHYL ETHER		U	630		U	680

Surrogates (% Recovery)		
1,2-DICHLOROETHANE-D4	78	80
TOLUENE-D8	96	98
4-BROMOFLUOROBENZENE	89	88
DIBROMOFLUOROMETHANE	96	98

Project Name:
Project Number: JALK FEE

Client ID	Laboratory Method Bl
Lab ID	WG947514-5
Matrix	SOIL
Matrix Description	
Reference Method	8260C
Batch ID	WG947514
Date Collected	NA
Date Received	10/31/2016
Date Prepped	10/28/2016
Date Analyzed	10/28/2016
Sample Size(wet)	5 g
% Solid	100
File ID	V17161028A05
Units	ug/kg
Final Volume	5
Dilution	1
Reporting Limit	1.0

Class	Abbrev	Analytes	Result		SSRL
C	DCM	METHYLENE CHLORIDE		U	10
C	11DCA	1,1-DICHLOROETHANE		U	1.5
C	CF	CHLOROFORM		U	1.5
C	CT	CARBON TETRACHLORIDE		U	1.0
C	12DCP	1,2-DICHLOROPROPANE		U	3.5
B	DBCM	DIBROMOCHLOROMETHANE		U	1.0
C	112TCA	1,1,2-TRICHLOROETHANE		U	1.5
C	PCE	TETRACHLOROETHENE		U	1.0
C	CB	CHLOROBENZENE		U	1.0
F	TCTFM	TRICHLOROFLUOROMETHANE		U	5.0
ADD	12DCA	1,2-DICHLOROETHANE		U	1.0
C	111TCA	1,1,1-TRICHLOROETHANE		U	1.0
B	BDCM	BROMODICHLOROMETHANE		U	1.0
C	T13DCP	TRANS-1,3-DICHLOROPROPENE		U	1.0
C	C13DCP	CIS-1,3-DICHLOROPROPENE		U	1.0
B	BF	BROMOFORM		U	4.0
C	1122PCA	1,1,2,2-TETRACHLOROETHANE		U	1.0
A	B	BENZENE	0.12	J	1.0
A	T	TOLUENE	0.20	J	1.5
A	EB	ETHYLBENZENE		U	1.0
B	BM	BROMOMETHANE	0.43	J	2.0
C	VC	VINYL CHLORIDE		U	2.0
C	CE	CHLOROETHANE		U	2.0
C	11DCE	1,1-DICHLOROETHENE		U	1.0
C	T12DCE	TRANS-1,2-DICHLOROETHENE		U	1.5
C	TCE	TRICHLOROETHENE		U	1.0
C	12DCB	1,2-DICHLOROBENZENE		U	5.0
C	13DCB	1,3-DICHLOROBENZENE		U	5.0
C	14DCB	1,4-DICHLOROBENZENE		U	5.0
		METHYL TERT BUTYL ETHER		U	2.0
A	MPX	P/M-XYLENE		U	2.0
A	OX	O-XYLENE		U	2.0
C	C12DCE	CIS-1,2-DICHLOROETHENE		U	1.0
C	123TCP	1,2,3-TRICHLOROPROPANE		U	10
A	STY	STYRENE		U	2.0
F	DCFM	DICHLORODIFLUOROMETHANE		U	10
O	ACE	ACETONE		U	36
O	MEK	2-BUTANONE		U	10
O	MIBK	4-METHYL-2-PENTANONE		U	10
O	THF	TETRAHYDROFURAN		U	20
ADD	12DBE	1,2-DIBROMOETHANE		U	4.0
C	1112PCA	1,1,1,2-TETRACHLOROETHANE		U	1.0
A	BUTB	N-BUTYLBENZENE		U	1.0
A	TBB	TERT-BUTYLBENZENE		U	5.0
		O-CHLOROTOLUENE		U	5.0
C	HCB	HEXACHLOROBUTADIENE		U	5.0
A	IPB	ISOPROPYLBENZENE		U	1.0
		P-ISOPROPYLTOLUENE		U	1.0
A	N0	NAPHTHALENE	0.16	J	5.0
A	PROPB	N-PROPYLBENZENE		U	1.0
C	124TCB	1,2,4-TRICHLOROBENZENE		U	5.0
A	135TMB	1,3,5-TRIMETHYLBENZENE		U	5.0
A	124TMB	1,2,4-TRIMETHYLBENZENE		U	5.0
		ETHYL ETHER		U	5.0

Surrogates (% Recovery)	
1,2-DICHLOROETHANE-D4	84
TOLUENE-D8	98
4-BROMOFLUOROBENZENE	89
DIBROMOFLUOROMETHANE	98

Project Name:
Project Number: JALK FEE

Client ID	Laboratory Control S	LCS Duplicate
Lab ID	WG947514-3	WG947514-4
Matrix	SOIL	SOIL
Matrix Description		
Reference Method	8260C	8260C
Batch ID	WG947514	WG947514
Date Collected	NA	NA
Date Received	10/31/2016	10/31/2016
Date Prepped	10/28/2016	10/28/2016
Date Analyzed	10/28/2016	10/28/2016
Sample Size(wet)	5 g	5 g
% Solid	100	100
File ID	V17161028A01	V17161028A02
Units	%	%
Final Volume	5	5
Dilution	1	1
Reporting Limit	1.0	1.0

Class	Abbrev	Analytes	Result	SSRL	% REC	Spike Conc.	Lower Limit	Upper Limit	Result	SSRL	% REC	Spike Conc.	Lower Limit	Upper Limit	RPD	RPD Limit
C	DCM	METHYLENE CHLORIDE	23	10	113	20	70	130	22	10	109	20	70	130	4	30
C	11DCA	1,1-DICHLOROETHANE	22	1.5	111	20	70	130	21	1.5	105	20	70	130	6	30
C	CF	CHLOROFORM	20	1.5	99	20	70	130	19	1.5	95	20	70	130	4	30
C	CT	CARBON TETRACHLORIDE	17	1.0	84	20	70	130	16	1.0	80	20	70	130	5	30
C	12DCP	1,2-DICHLOROPROPANE	24	3.5	119	20	70	130	23	3.5	115	20	70	130	3	30
B	DBCM	DIBROMOCHLOROMETHANE	20	1.0	100	20	70	130	20	1.0	101	20	70	130	1	30
C	112TCA	1,1,2-TRICHLOROETHANE	22	1.5	109	20	70	130	22	1.5	108	20	70	130	1	30
C	PCE	TETRACHLOROETHENE	21	1.0	103	20	70	130	20	1.0	99	20	70	130	4	30
C	CB	CHLOROBENZENE	21	1.0	107	20	70	130	21	1.0	103	20	70	130	4	30
F	TCTFM	TRICHLOROFLUOROMETHANE	16	5.0	80	20	70	139	15	5.0	76	20	70	139	5	30
ADD	12DCA	1,2-DICHLOROETHANE	17	1.0	87	20	70	130	17	1.0	86	20	70	130	1	30
C	111TCA	1,1,1-TRICHLOROETHANE	17	1.0	86	20	70	130	16	1.0	82	20	70	130	5	30
B	BDCM	BROMODICHLOROMETHANE	19	1.0	95	20	70	130	18	1.0	91	20	70	130	4	30
C	T13DCP	TRANS-1,3-DICHLOROPROPENE	20	1.0	98	20	70	130	19	1.0	94	20	70	130	4	30
C	C13DCP	CIS-1,3-DICHLOROPROPENE	21	1.0	103	20	70	130	20	1.0	98	20	70	130	5	30
B	BF	BROMOFORM	20	4.0	102	20	70	130	20	4.0	101	20	70	130	1	30
C	1122PCA	1,1,2,2-TETRACHLOROETHANE	22	1.0	107	20	70	130	21	1.0	107	20	70	130	0	30
A	B	BENZENE	21	1.0	105	20	70	130	20	1.0	100	20	70	130	5	30
A	T	TOLUENE	20	1.5	102	20	70	130	20	1.5	98	20	70	130	4	30
A	EB	ETHYLBENZENE	20	1.0	99	20	70	130	19	1.0	94	20	70	130	5	30
B	BM	BROMOMETHANE	22	2.0	111	20	57	147	19	2.0	96	20	57	147	14	30
C	VC	VINYL CHLORIDE	22	2.0	108	20	67	130	20	2.0	101	20	67	130	7	30
C	CE	CHLOROETHANE	22	2.0	112	20	50	151	20	2.0	101	20	50	151	10	30
C	11DCE	1,1-DICHLOROETHENE	21	1.0	105	20	65	135	19	1.0	96	20	65	135	9	30
C	T12DCE	TRANS-1,2-DICHLOROETHENE	22	1.5	110	20	70	130	20	1.5	102	20	70	130	8	30
C	TCE	TRICHLOROETHENE	20	1.0	100	20	70	130	19	1.0	97	20	70	130	3	30
C	12DCB	1,2-DICHLOROBENZENE	21	5.0	104	20	70	130	20	5.0	100	20	70	130	4	30
C	13DCB	1,3-DICHLOROBENZENE	21	5.0	106	20	70	130	20	5.0	102	20	70	130	4	30
C	14DCB	1,4-DICHLOROBENZENE	21	5.0	105	20	70	130	21	5.0	103	20	70	130	2	30
		METHYL TERT BUTYL ETHER	20	2.0	98	20	66	130	19	2.0	94	20	66	130	4	30
A	MPX	P/M-XYLENE	42	2.0	104	40	70	130	40	2.0	101	40	70	130	3	30
A	OX	O-XYLENE	41	2.0	103	40	70	130	40	2.0	100	40	70	130	3	30
C	C12DCE	CIS-1,2-DICHLOROETHENE	22	1.0	108	20	70	130	21	1.0	107	20	70	130	1	30
C	123TCP	1,2,3-TRICHLOROPROPANE	19	10	96	20	68	130	19	10	93	20	68	130	3	30
A	STY	STYRENE	41	2.0	101	40	70	130	39	2.0	98	40	70	130	3	30
F	DCFM	DICHLORODIFLUOROMETHANE	13	10	66	20	30	146	13	10	63	20	30	146	5	30
O	ACE	ACETONE	27	36	136	20	54	140	25	36	127	20	54	140	7	30
O	MEK	2-BUTANONE	23	10	117	20	70	130	24	10	118	20	70	130	1	30
O	MIBK	4-METHYL-2-PENTANONE	22	10	109	20	70	130	21	10	104	20	70	130	5	30
O	THF	TETRAHYDROFURAN	24	20	121	20	66	130	22	20	110	20	66	130	10	30
ADD	12DBE	1,2-DIBROMOETHANE	21	4.0	106	20	70	130	21	4.0	105	20	70	130	1	30
C	1112PCA	1,1,1,2-TETRACHLOROETHANE	21	1.0	103	20	70	130	20	1.0	98	20	70	130	5	30
A	BUTB	N-BUTYLBENZENE	20	1.0	101	20	70	130	19	1.0	95	20	70	130	6	30
A	TBB	TERT-BUTYLBENZENE	19	5.0	96	20	70	130	18	5.0	91	20	70	130	5	30
		O-CHLOROTOLUENE	19	5.0	96	20	70	130	18	5.0	92	20	70	130	4	30
C	HCB	HEXACHLOROBUTADIENE	20	5.0	97	20	67	130	19	5.0	92	20	67	130	5	30
A	IPB	ISOPROPYLBENZENE	20	1.0	98	20	70	130	19	1.0	94	20	70	130	4	30
		P-ISOPROPYLTOLUENE	19	1.0	96	20	70	130	19	1.0	93	20	70	130	3	30
A	N0	NAPHTHALENE	20	5.0	98	20	70	130	20	5.0	98	20	70	130	0	30
A	PROPB	N-PROPYLBENZENE	20	1.0	98	20	70	130	19	1.0	94	20	70	130	4	30
C	124TCB	1,2,4-TRICHLOROBENZENE	21	5.0	104	20	70	130	20	5.0	102	20	70	130	2	30
A	135TMB	1,3,5-TRIMETHYLBENZENE	19	5.0	95	20	70	130	18	5.0	91	20	70	130	4	30
A	124TMB	1,2,4-TRIMETHYLBENZENE	19	5.0	95	20	70	130	18	5.0	90	20	70	130	5	30
		ETHYL ETHER	22	5.0	110	20	67	130	21	5.0	103	20	67	130	7	30

Surrogates (% Recovery)		
1,2-DICHLOROETHANE-D4	82	81
TOLUENE-D8	100	99
4-BROMOFLUOROBENZENE	89	89
DIBROMOFLUOROMETHANE	98	100

Project Name:
Project Number: JALK FEE

Client ID	S-16-B26	S-16-B26
Lab ID	L1634114-02	WG947514-6
Matrix	SOIL	SOIL
Matrix Description		
Reference Method	8260C	8260C
Batch ID	WG947514	WG947514
Date Collected	10/18/2016	NA
Date Received	10/20/2016	10/31/2016
Date Prepped	10/28/2016	10/28/2016
Date Analyzed	10/28/2016	10/28/2016
Sample Size(wet)	7.4 g	8.6 g
% Solid	84.8	84.8
File ID	V17161028A15	V17161028A16
Units	ug/kg	ug/kg
Final Volume	5	5
Dilution	1	1
Reporting Limit	0.8	0.68

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	RPD	RPD Limit	
C	DCM	METHYLENE CHLORIDE		U	8.0		U	6.8		30	NC
C	11DCA	1,1-DICHLOROETHANE		U	1.2		U	1.0		30	NC
C	CF	CHLOROFORM	1.4		1.2	1.1		1.0	26	30	
C	CT	CARBON TETRACHLORIDE		U	0.80		U	0.68		30	NC
C	12DCP	1,2-DICHLOROPROPANE		U	2.8		U	2.4		30	NC
B	DBCM	DIBROMOCHLOROMETHANE		U	0.80		U	0.68		30	NC
C	112TCA	1,1,2-TRICHLOROETHANE		U	1.2		U	1.0		30	NC
C	PCE	TETRACHLOROETHENE	4900	E	0.80	3100	E	0.68	47		Q
C	CB	CHLOROBENZENE	0.54	J	0.80	0.39	J	0.68		30	NC
F	TCTFM	TRICHLOROFLUOROMETHANE		U	4.0	0.28	J	3.4		30	X
ADD	12DCA	1,2-DICHLOROETHANE		U	0.80		U	0.68		30	NC
C	111TCA	1,1,1-TRICHLOROETHANE		U	0.80		U	0.68		30	NC
B	BDCM	BROMODICHLOROMETHANE		U	0.80		U	0.68		30	NC
C	T13DCP	TRANS-1,3-DICHLOROPROPENE		U	0.80		U	0.68		30	NC
C	C13DCP	CIS-1,3-DICHLOROPROPENE		U	0.80		U	0.68		30	NC
B	BF	BROMOFORM		U	3.2		U	2.7		30	NC
C	1122PCA	1,1,2,2-TETRACHLOROETHANE		U	0.80		U	0.68		30	NC
A	B	BENZENE	0.50	J	0.80	0.21	J	0.68		30	NC
A	T	TOLUENE	0.35	J	1.2	0.19	J	1.0		30	NC
A	EB	ETHYLBENZENE		U	0.80		U	0.68		30	NC
B	BM	BROMOMETHANE		U	1.6		U	1.4		30	NC
C	VC	VINYL CHLORIDE		U	1.6		U	1.4		30	NC
C	CE	CHLOROETHANE		U	1.6		U	1.4		30	NC
C	11DCE	1,1-DICHLOROETHENE		U	0.80		U	0.68		30	NC
C	T12DCE	TRANS-1,2-DICHLOROETHENE	0.61	J	1.2	0.37	J	1.0		30	NC
C	TCE	TRICHLOROETHENE	33		0.80	22		0.68	39	30	Q
C	12DCB	1,2-DICHLOROBENZENE		U	4.0		U	3.4		30	NC
C	13DCB	1,3-DICHLOROBENZENE		U	4.0		U	3.4		30	NC
C	14DCB	1,4-DICHLOROBENZENE	0.20	J	4.0		U	3.4		30	X
		METHYL TERT BUTYL ETHER		U	1.6		U	1.4		30	NC
A	MPX	P/M-XYLENE	0.30	J	1.6		U	1.4		30	X
A	OX	O-XYLENE		U	1.6		U	1.4		30	NC
C	C12DCE	CIS-1,2-DICHLOROETHENE	100		0.80	76		0.68	28	30	
C	123TCP	1,2,3-TRICHLOROPROPANE		U	8.0		U	6.8		30	NC
A	STY	STYRENE		U	1.6		U	1.4		30	NC
F	DCFM	DICHLORODIFLUOROMETHANE	0.79	J	8.0	2.3	J	6.8		30	NC
O	ACE	ACETONE	6.8	J	29	4.8	J	25		30	NC
O	MEK	2-BUTANONE		U	8.0		U	6.8		30	NC
O	MIBK	4-METHYL-2-PENTANONE		U	8.0		U	6.8		30	NC
O	THF	TETRAHYDROFURAN		U	16		U	14		30	NC
ADD	12DBE	1,2-DIBROMOETHANE		U	3.2		U	2.7		30	NC
C	1112PCA	1,1,1,2-TETRACHLOROETHANE	5.4		0.80	4.5		0.68	19	30	
A	BUTB	N-BUTYLBENZENE		U	0.80		U	0.68		30	NC
A	TBB	TERT-BUTYLBENZENE		U	4.0		U	3.4		30	NC
		O-CHLOROTOLUENE		U	4.0		U	3.4		30	NC
C	HCB	HEXACHLOROBUTADIENE		U	4.0		U	3.4		30	NC
A	IPB	ISOPROPYLBENZENE		U	0.80		U	0.68		30	NC
		P-ISOPROPYLTOLUENE		U	0.80		U	0.68		30	NC
A	N0	NAPHTHALENE	0.12	J	4.0		U	3.4		30	X
A	PROPB	N-PROPYLBENZENE		U	0.80		U	0.68		30	NC
C	124TCB	1,2,4-TRICHLOROBENZENE		U	4.0		U	3.4		30	NC
A	135TMB	1,3,5-TRIMETHYLBENZENE		U	4.0		U	3.4		30	NC
A	124TMB	1,2,4-TRIMETHYLBENZENE	0.13	J	4.0		U	3.4		30	X
		ETHYL ETHER		U	4.0		U	3.4		30	NC

Surrogates (% Recovery)		
1,2-DICHLOROETHANE-D4	90	90
TOLUENE-D8	93	94
4-BROMOFLUOROBENZENE	90	89
DIBROMOFLUOROMETHANE	99	101

Project Name:
Project Number: JALK FEE

Client ID	S-16-B26	S-14-B27	S-16-B30	S-6-B28	S-9-B32
Lab ID	L1634114-02	L1634114-04	L1634114-06	L1634114-07	L1634114-12D
Matrix	SOIL	SOIL	SOIL	SOIL	SOIL
Matrix Description					
Reference Method	8260C	8260C	8260C	8260C	8260C
Batch ID	WG947514	WG947526	WG947514	WG947514	WG947526
Date Collected	10/18/2016	10/18/2016	10/18/2016	10/19/2016	10/19/2016
Date Received	10/20/2016	10/20/2016	10/20/2016	10/21/2016	10/21/2016
Date Prepped	10/28/2016	10/30/2016	10/28/2016	10/28/2016	10/30/2016
Date Analyzed	10/28/2016	10/30/2016	10/28/2016	10/28/2016	10/30/2016
Sample Size(wet)	7.4 g	7.7 g	6.8 g	6.8 g	9 g
% Solid	84.8	96.5	83.3	84.6	87.6
File ID	V17161028A15	V17161030A20	V17161028A21	V17161028A22	V17161030A21
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Final Volume	5	0.1	5	5	0.005
Dilution	1	1	1	1	20
Reporting Limit	0.8	100	0.88	0.87	2000

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	Result		SSRL	Result		SSRL	Result		SSRL
C	DCM	METHYLENE CHLORIDE		U	8.0		U	1000		U	8.8		U	8.7		U	20000
C	11DCA	1,1-DICHLOROETHANE		U	1.2		U	150		U	1.3		U	1.3		U	3100
C	CF	CHLOROFORM	1.4		1.2		U	150		U	1.3		U	1.3		U	3100
C	CT	CARBON TETRACHLORIDE		U	0.80		U	100		U	0.88		U	0.87		U	2000
C	12DCP	1,2-DICHLOROPROPANE		U	2.8		U	360		U	3.1		U	3.0		U	7200
B	DBCM	DIBROMOCHLOROMETHANE		U	0.80		U	100		U	0.88		U	0.87		U	2000
C	112TCA	1,1,2-TRICHLOROETHANE		U	1.2		U	150		U	1.3		U	1.3		U	3100
C	PCE	TETRACHLOROETHENE	4900	E	0.80	62000	D	410	1100	E	0.88	3.0		0.87	1100000	D	10000
C	CB	CHLOROBENZENE	0.54	J	0.80		U	100		U	0.88		U	0.87		U	2000
F	TCTFM	TRICHLOROFLUOROMETHANE		U	4.0		U	510		U	4.4		U	4.3		U	10000
ADD	12DCA	1,2-DICHLOROETHANE		U	0.80		U	100		U	0.88		U	0.87		U	2000
C	111TCA	1,1,1-TRICHLOROETHANE		U	0.80		U	100		U	0.88		U	0.87		U	2000
B	BDCM	BROMODICHLOROMETHANE		U	0.80		U	100		U	0.88		U	0.87		U	2000
C	T13DCP	TRANS-1,3-DICHLOROPROPENE		U	0.80		U	100		U	0.88		U	0.87		U	2000
C	C13DCP	CIS-1,3-DICHLOROPROPENE		U	0.80		U	100		U	0.88		U	0.87		U	2000
B	BF	BROMOFORM		U	3.2		U	410		U	3.5		U	3.5		U	8200
C	1122PCA	1,1,2,2-TETRACHLOROETHANE		U	0.80		U	100		U	0.88		U	0.87		U	2000
A	B	BENZENE	0.50	J	0.80	75	JD	410		U	0.88		U	0.87		U	2000
A	T	TOLUENE	0.35	J	1.2		U	150		U	1.3	0.17	J	1.3		U	3100
A	EB	ETHYLBENZENE		U	0.80		U	100		U	0.88		U	0.87		U	2000
B	BM	BROMOMETHANE		U	1.6		U	200		U	1.8		U	1.7		U	4100
C	VC	VINYL CHLORIDE		U	1.6		U	200		U	1.8		U	1.7		U	4100
C	CE	CHLOROETHANE		U	1.6		U	200		U	1.8		U	1.7		U	4100
C	11DCE	1,1-DICHLOROETHENE		U	0.80		U	100		U	0.88		U	0.87		U	2000
C	T12DCE	TRANS-1,2-DICHLOROETHENE	0.61	J	1.2		U	150		U	1.3		U	1.3		U	3100
C	TCE	TRICHLOROETHENE	33		0.80		U	100	5.3		0.88	0.40	J	0.87	440	J	2000
C	12DCB	1,2-DICHLOROBENZENE		U	4.0		U	510		U	4.4		U	4.3		U	10000
C	13DCB	1,3-DICHLOROBENZENE		U	4.0		U	510		U	4.4		U	4.3		U	10000
C	14DCB	1,4-DICHLOROBENZENE	0.20	J	4.0		U	510		U	4.4		U	4.3		U	10000
		METHYL TERT BUTYL ETHER		U	1.6		U	200		U	1.8		U	1.7		U	4100
A	MPX	P/M-XYLENE	0.30	J	1.6		U	200		U	1.8		U	1.7		U	4100
A	OX	O-XYLENE		U	1.6		U	200		U	1.8		U	1.7		U	4100
C	C12DCE	CIS-1,2-DICHLOROETHENE	100		0.80		U	100	1.7		0.88		U	0.87		U	2000
C	123TCP	1,2,3-TRICHLOROPROPANE		U	8.0		U	1000		U	8.8		U	8.7		U	20000
A	STY	STYRENE		U	1.6		U	200		U	1.8		U	1.7		U	4100
F	DCFM	DICHLORODIFLUOROMETHANE	0.79	J	8.0		U	1000		U	8.8		U	8.7		U	20000
O	ACE	ACETONE	6.8	J	29		U	3700		U	32		U	31		U	74000
O	MEK	2-BUTANONE		U	8.0		U	1000		U	8.8		U	8.7		U	20000
O	MIBK	4-METHYL-2-PENTANONE		U	8.0		U	1000		U	8.8		U	8.7		U	20000
O	THF	TETRAHYDROFURAN		U	16		U	2000		U	18		U	17		U	41000
ADD	12DBE	1,2-DIBROMOETHANE		U	3.2		U	410		U	3.5		U	3.5		U	8200
C	1112PCA	1,1,1,2-TETRACHLOROETHANE	5.4		0.80		U	100		U	0.88		U	0.87		U	2000
A	BUTB	N-BUTYLBENZENE		U	0.80		U	100		U	0.88		U	0.87		U	2000
A	TBB	TERT-BUTYLBENZENE		U	4.0		U	510		U	4.4		U	4.3		U	10000
		O-CHLOROTOLUENE		U	4.0		U	510		U	4.4		U	4.3		U	10000
C	HCB	HEXACHLOROBUTADIENE		U	4.0		U	510		U	4.4		U	4.3		U	10000
A	IPB	ISOPROPYLBENZENE		U	0.80		U	100		U	0.88		U	0.87		U	2000
		P-ISOPROPYLTOLUENE		U	0.80		U	100		U	0.88		U	0.87		U	2000
A	N0	NAPHTHALENE	0.12	J	4.0	110	J	510		U	4.4		U	4.3	1800	J	10000
A	PROPB	N-PROPYLBENZENE		U	0.80		U	100		U	0.88		U	0.87		U	2000
C	124TCB	1,2,4-TRICHLOROBENZENE		U	4.0		U	510		U	4.4		U	4.3		U	10000
A	135TMB	1,3,5-TRIMETHYLBENZENE		U	4.0		U	510		U	4.4		U	4.3		U	10000
A	124TMB	1,2,4-TRIMETHYLBENZENE	0.13	J	4.0		U	510		U	4.4		U	4.3		U	10000
		ETHYL ETHER		U	4.0		U	510		U	4.4		U	4.3		U	10000

Surrogates (% Recovery)					
1,2-DICHLOROETHANE-D4	90	79	90	93	80
TOLUENE-D8	93	97	95	96	97
4-BROMOFLUOROBENZENE	90	92	89	88	89
DIBROMOFLUOROMETHANE	99	98	101	101	97

Project Name:
Project Number: JALK FEE

Client ID	S-8-B24	S-5-B34	S-9-B34	S-3-B35	S-5-B36
Lab ID	L1634114-15	L1634114-20	L1634114-21	L1634114-22	L1634114-23D
Matrix	SOIL	SOIL	SOIL	SOIL	SOIL
Matrix Description					
Reference Method	8260C	8260C	8260C	8260C	8260C
Batch ID	WG947514	WG947526	WG947526	WG947526	WG947526
Date Collected	10/20/2016	10/20/2016	10/20/2016	10/20/2016	10/21/2016
Date Received	10/22/2016	10/22/2016	10/22/2016	10/22/2016	10/22/2016
Date Prepped	10/28/2016	10/30/2016	10/30/2016	10/30/2016	10/30/2016
Date Analyzed	10/28/2016	10/30/2016	10/30/2016	10/30/2016	10/30/2016
Sample Size(wet)	8.7 g	8.4 g	7.7 g	8.4 g	7.5 g
% Solid	88.5	92	91.1	92.8	89.6
File ID	V17161028A23	V17161030A22	V17161030A23	V17161030A25	V17161030A26
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Final Volume	5	0.1	0.1	0.1	0.025
Dilution	1	1	1	1	4
Reporting Limit	0.65	100	110	100	470

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	Result		SSRL	Result		SSRL	Result		SSRL
C	DCM	METHYLENE CHLORIDE		U	6.5		U	1000		U	1100		U	1000		U	4700
C	11DCA	1,1-DICHLOROETHANE		U	0.97		U	150		U	170		U	150		U	700
C	CF	CHLOROFORM		U	0.97		U	150		U	170		U	150		U	700
C	CT	CARBON TETRACHLORIDE		U	0.65		U	100		U	110		U	100		U	470
C	12DCP	1,2-DICHLOROPROPANE		U	2.3		U	350		U	390		U	350		U	1600
B	DBCM	DIBROMOCHLOROMETHANE		U	0.65		U	100		U	110		U	100		U	470
C	112TCA	1,1,2-TRICHLOROETHANE		U	0.97		U	150		U	170		U	150		U	700
C	PCE	TETRACHLOROETHENE	38		0.65	61000	D	400	59000	D	450	35000	D	200	180000	D	2300
C	CB	CHLOROBENZENE		U	0.65		U	100		U	110		U	100		U	470
F	TCTFM	TRICHLOROFLUOROMETHANE		U	3.2		U	510		U	560		U	500		U	2300
ADD	12DCA	1,2-DICHLOROETHANE		U	0.65		U	100		U	110		U	100		U	470
C	111TCA	1,1,1-TRICHLOROETHANE		U	0.65		U	100		U	110		U	100		U	470
B	BDCM	BROMODICHLOROMETHANE		U	0.65		U	100		U	110		U	100		U	470
C	T13DCP	TRANS-1,3-DICHLOROPROPENE		U	0.65		U	100		U	110		U	100		U	470
C	C13DCP	CIS-1,3-DICHLOROPROPENE		U	0.65		U	100		U	110		U	100		U	470
B	BF	BROMOFORM		U	2.6		U	400		U	450		U	400		U	1900
C	1122PCA	1,1,2,2-TETRACHLOROETHANE		U	0.65		U	100		U	110		U	100		U	470
A	B	BENZENE		U	0.65		U	100		U	110		U	100		U	470
A	T	TOLUENE		U	0.97		U	150		U	170		U	150		U	700
A	EB	ETHYLBENZENE		U	0.65		U	100		U	110		U	100		U	470
B	BM	BROMOMETHANE		U	1.3		U	200		U	220		U	200		U	940
C	VC	VINYL CHLORIDE		U	1.3		U	200		U	220		U	200		U	940
C	CE	CHLOROETHANE		U	1.3		U	200		U	220		U	200		U	940
C	11DCE	1,1-DICHLOROETHENE		U	0.65		U	100		U	110		U	100		U	470
C	T12DCE	TRANS-1,2-DICHLOROETHENE		U	0.97		U	150		U	170		U	150		U	700
C	TCE	TRICHLOROETHENE	0.87		0.65	2500		100	2000		110	77	J	100	560		470
C	12DCB	1,2-DICHLOROBENZENE		U	3.2		U	510		U	560		U	500		U	2300
C	13DCB	1,3-DICHLOROBENZENE		U	3.2		U	510		U	560		U	500		U	2300
C	14DCB	1,4-DICHLOROBENZENE		U	3.2		U	510		U	560		U	500		U	2300
		METHYL TERT BUTYL ETHER		U	1.3		U	200		U	220		U	200		U	940
A	MPX	P/M-XYLENE		U	1.3		U	200		U	220		U	200		U	940
A	OX	O-XYLENE		U	1.3		U	200		U	220		U	200		U	940
C	C12DCE	CIS-1,2-DICHLOROETHENE	0.40	J	0.65	2500		100	1300		110		U	100	200	J	470
C	123TCP	1,2,3-TRICHLOROPROPANE		U	6.5		U	1000		U	1100		U	1000		U	4700
A	STY	STYRENE		U	1.3		U	200		U	220		U	200		U	940
F	DCFM	DICHLORODIFLUOROMETHANE		U	6.5		U	1000		U	1100		U	1000		U	4700
O	ACE	ACETONE		U	23		U	3600		U	4000		U	3600		U	17000
O	MEK	2-BUTANONE		U	6.5		U	1000		U	1100		U	1000		U	4700
O	MIBK	4-METHYL-2-PENTANONE		U	6.5		U	1000		U	1100		U	1000		U	4700
O	THF	TETRAHYDROFURAN		U	13		U	2000		U	2200		U	2000		U	9400
ADD	12DBE	1,2-DIBROMOETHANE		U	2.6		U	400		U	450		U	400		U	1900
C	1112PCA	1,1,1,2-TETRACHLOROETHANE		U	0.65		U	100		U	110		U	100		U	470
A	BUTB	N-BUTYLBENZENE		U	0.65		U	100		U	110		U	100		U	470
A	TBB	TERT-BUTYLBENZENE		U	3.2		U	510		U	560		U	500		U	2300
		O-CHLOROTOLUENE		U	3.2		U	510		U	560		U	500		U	2300
C	HCB	HEXACHLOROBUTADIENE		U	3.2		U	510		U	560		U	500		U	2300
A	IPB	ISOPROPYLBENZENE		U	0.65		U	100		U	110		U	100		U	470
		P-ISOPROPYLTOLUENE		U	0.65		U	100		U	110		U	100		U	470
A	N0	NAPHTHALENE		U	3.2	94	J	510	92	J	560	67	J	500	310	J	2300
A	PROPB	N-PROPYLBENZENE		U	0.65		U	100		U	110		U	100		U	470
C	124TCB	1,2,4-TRICHLOROBENZENE		U	3.2		U	510		U	560		U	500		U	2300
A	135TMB	1,3,5-TRIMETHYLBENZENE		U	3.2		U	510		U	560		U	500		U	2300
A	124TMB	1,2,4-TRIMETHYLBENZENE		U	3.2		U	510		U	560		U	500		U	2300
		ETHYL ETHER		U	3.2		U	510		U	560		U	500		U	2300

Surrogates (% Recovery)					
1,2-DICHLOROETHANE-D4	95	78	79	80	81
TOLUENE-D8	95	98	96	96	97
4-BROMOFLUOROBENZENE	89	89	88	88	90
DIBROMOFLUOROMETHANE	102	96	95	96	98

List of Potential Qualifiers

A: Spectra identified as "Aldol Condensation Product".

B: The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
C: Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
D: Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
E: Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
G: The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.
H: The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
I: The lower value for the two columns has been reported due to obvious interference.
J: Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
J: Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
M: Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
ND: Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
ND: Not detected at the reporting limit (RL) for the sample.
NJ: Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
P: The RPD between the results for the two columns exceeds the method-specified criteria.
Q: The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
R: Analytical results are from sample re-analysis.
RE: Analytical results are from sample re-extraction.
S: Analytical results are from modified screening analysis.
U: Not detected at the reported detection limit for the sample.

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Method Blank
Lab ID	VS102816B03
Matrix	Soil
Reference Method	PIANO
Batch ID	VS102816B03
Date Collected	N/A
Date Received	N/A
Date Prepped	10/28/2016
Date Analyzed	10/28/2016
Sample Size (wet)	5
% Solid	100.00
File ID	V4011065.D
Units	µg/Kg
Final Volume	5
Dilution	1
Reporting Limit	0.100

Class	Abbrev	Analytes	Result	SSRL
I	IP	Isopentane	U	0.100
O	1P	1-Pentene	U	0.100
O	2M1B	2-Methyl-1-butene	U	0.100
P	C5	Pentane	U	0.100
O	T2P	2-Pentene (trans)	U	0.100
O	C2P	2-Pentene (cis)	U	0.100
OX	TBA	Tertiary butanol	U	0.100
N	CYP	Cyclopentane	U	0.100
I	23DMB	2,3-Dimethylbutane	U	0.100
I	2MP	2-Methylpentane	U	0.100
OX	MTBE	MTBE	U	0.100
I	3MP	3-Methylpentane	U	0.100
O	1HEX	1-Hexene	U	0.100
P	C6	Hexane	U	0.100
OX	DIPE	Diisopropyl Ether (DIPE)	U	0.100
OX	ETBE	Ethyl Tertiary Butyl Ether (ETBE)	U	0.100
I	22DMP	2,2-Dimethylpentane	U	0.100
N	MCYP	Methylcyclopentane	U	0.100
I	24DMP	2,4-Dimethylpentane	U	0.100
ADD	12DCA	1,2-Dichloroethane	U	0.100
N	CH	Cyclohexane	U	0.100
		2-Methylhexane	U	0.100
A	B	Benzene	U	0.100
I	23DMP	2,3-Dimethylpentane	U	0.100
S	THIO	Thiophene	U	0.100
I	3MH	3-Methylhexane	U	0.100
OX	TAME	TAME	U	0.100
O	1H	1-Heptene/1,2-DMCP (trans)[1]	U	0.100
I	ISO	Isooctane	U	0.100
P	C7	Heptane	U	0.100
		Methylcyclohexane	U	0.100
I	25DMH	2,5-Dimethylhexane	U	0.100
I	24DMH	2,4-Dimethylhexane	U	0.100
I	223TMP	2,2,3-Trimethylpentane	U	0.100
I	234TMP	2,3,4-Trimethylpentane	U	0.100
I	233TMP	2,3,3-Trimethylpentane	U	0.100
I	23DMH	2,3-Dimethylhexane	U	0.100
I	3EH	3-Ethylhexane	U	0.100
I	2MHEP	2-Methylheptane	U	0.100
I	3MHEP	3-Methylheptane	U	0.100
A	T	Toluene	U	0.100
S	2MTHIO	2-Methylthiophene	U	0.100
S	3MTHIO	3-Methylthiophene	U	0.100
O	1O	1-Octene	U	0.100
P	C8	Octane	U	0.100

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Method Blank
Lab ID	VS102816B03
Matrix	Soil
Reference Method	PIANO
Batch ID	VS102816B03
Date Collected	N/A
Date Received	N/A
Date Prepped	10/28/2016
Date Analyzed	10/28/2016
Sample Size (wet)	5
% Solid	100.00
File ID	V4011065.D
Units	µg/Kg
Final Volume	5
Dilution	1
Reporting Limit	0.100

Class	Abbrev	Analytes	Result		SSRL
ADD	12DBE	1,2-Dibromoethane		U	0.100
A	EB	Ethylbenzene		U	0.100
S	2ETHIO	2-Ethylthiophene		U	0.100
A	MPX	p/m-Xylene		U	0.100
O	1N	1-Nonene		U	0.100
P	C9	Nonane		U	0.100
A	STY	Styrene		U	0.100
A	OX	o-Xylene		U	0.100
A	IPB	Isopropylbenzene		U	0.100
A	PROPB	n-Propylbenzene		U	0.100
A	1M3EB	1-Methyl-3-ethylbenzene		U	0.100
A	1M4EB	1-Methyl-4-ethylbenzene		U	0.100
A	135TMB	1,3,5-Trimethylbenzene		U	0.100
O	1D	1-Decene		U	0.100
A	1M2EB	1-Methyl-2-ethylbenzene		U	0.100
P	C10	Decane	0.180	J	0.100
A	124TMB	1,2,4-Trimethylbenzene		U	0.100
A	SECBUT	sec-Butylbenzene		U	0.100
A	1M3IPB	1-Methyl-3-isopropylbenzene		U	0.100
A	1M4IPB	1-Methyl-4-isopropylbenzene		U	0.100
A	1M2IPB	1-Methyl-2-isopropylbenzene		U	0.100
A	IN	Indan		U	0.100
A	1M3PB	1-Methyl-3-propylbenzene		U	0.100
A	1M4PB	1-Methyl-4-propylbenzene		U	0.100
A	BUTB	n-Butylbenzene		U	0.100
A	12DM4EB	1,2-Dimethyl-4-ethylbenzene		U	0.100
A	12DEB	1,2-Diethylbenzene		U	0.100
A	1M2PB	1-Methyl-2-propylbenzene		U	0.100
A	14DM2EB	1,4-Dimethyl-2-ethylbenzene		U	0.100
P	C11	Undecane		U	0.100
A	13DM4EB	1,3-Dimethyl-4-ethylbenzene		U	0.100
A	13DM5EB	1,3-Dimethyl-5-ethylbenzene		U	0.100
A	13DM2EB	1,3-Dimethyl-2-ethylbenzene		U	0.100
A	12DM3EB	1,2-Dimethyl-3-ethylbenzene		U	0.100
A	1245TMP	1,2,4,5-Tetramethylbenzene		U	0.100
A	PENTB	Pentylbenzene		U	0.100
P	C12	Dodecane		U	0.100
2	N0	Naphthalene		U	0.100
2	BT0	Benzothiophene		U	0.100
ADD	MMT	MMT		U	0.100
P	C13	Tridecane		U	0.100
A	2MN	2-Methylnaphthalene		U	0.100
A	1MN	1-Methylnaphthalene		U	0.100

Surrogates (% Recovery)	
Dibromofluoromethane	98
Toluene-d8	93
4-Bromofluorobenzene	98

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Laboratory Control Sample
Lab ID	VS102816LCS02
Matrix	Soil
Reference Method	PIANO
Batch ID	VS102816B03
Date Collected	N/A
Date Received	N/A
Date Prepped	10/28/2016
Date Analyzed	10/28/2016
Sample Size (wet)	5
% Solid	100.00
File ID	V4011061.D
Units	µg/Kg
Final Volume	5
Dilution	1
Reporting Limit	0.100

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
O	1P	1-Pentene	15.2	S	0.100	76	20.0	50	130
P	C5	Pentane	12.4	S	0.100	62	20.0	50	130
OX	TBA	Tertiary butanol	84.3	S	0.100	84	100	50	130
N	CYP	Cyclopentane	16.7	S	0.100	83	20.0	50	130
I	2MP	2-Methylpentane	16.6	S	0.100	83	20.0	50	130
OX	MTBE	MTBE	19.1	S	0.100	96	20.0	50	130
I	3MP	3-Methylpentane	17.4	S	0.100	87	20.0	50	130
O	1HEX	1-Hexene	16.4	S	0.100	82	20.0	50	130
P	C6	Hexane	16.6	S	0.100	83	20.0	50	130
OX	DIPE	Diisopropyl Ether (DIPE)	17.5	S	0.100	87	20.0	50	130
OX	ETBE	Ethyl Tertiary Butyl Ether (ETBE)	18.1	S	0.100	91	20.0	50	130
N	MCYP	Methylcyclopentane	17.4	S	0.100	87	20.0	50	130
I	24DMP	2,4-Dimethylpentane	17.0	S	0.100	85	20.0	50	130
N	CH	Cyclohexane	18.0	S	0.100	90	20.0	50	130
		2-Methylhexane	17.3	S	0.100	86	20.0	50	130
A	B	Benzene	20.1	S	0.100	100	20.0	50	130
I	23DMP	2,3-Dimethylpentane	18.0	S	0.100	90	20.0	50	130
I	3MH	3-Methylhexane	16.4	S	0.100	82	20.0	50	130
OX	TAME	TAME	17.7	S	0.100	89	20.0	50	130
I	ISO	Isooctane	17.5	S	0.100	87	20.0	50	130
P	C7	Heptane	17.0	S	0.100	85	20.0	50	130
		Methylcyclohexane	19.1	S	0.100	96	20.0	50	130
I	2MHEP	2-Methylheptane	17.3	S	0.100	86	20.0	50	130
I	3MHEP	3-Methylheptane	16.6	S	0.100	83	20.0	50	130
A	T	Toluene	19.5	S	0.100	97	20.0	50	130
P	C8	Octane	16.7	S	0.100	83	20.0	50	130
A	EB	Ethylbenzene	18.9	S	0.100	94	20.0	50	130
A	MPX	p/m-Xylene	38.0	S	0.100	95	40.0	50	130
P	C9	Nonane	15.6	S	0.100	78	20.0	50	130
A	OX	o-Xylene	18.4	S	0.100	92	20.0	50	130
A	IPB	Isopropylbenzene	19.4	S	0.100	97	20.0	50	130
A	PROPB	n-Propylbenzene	18.8	S	0.100	94	20.0	50	130
A	1M3EB	1-Methyl-3-ethylbenzene	18.9	S	0.100	94	20.0	50	130
A	1M4EB	1-Methyl-4-ethylbenzene	18.7	S	0.100	94	20.0	50	130
A	135TMB	1,3,5-Trimethylbenzene	19.1	S	0.100	96	20.0	50	130
O	1D	1-Decene	18.3	S	0.100	92	20.0	50	130
A	1M2EB	1-Methyl-2-ethylbenzene	19.2	S	0.100	96	20.0	50	130
P	C10	Decane	15.8	S	0.100	79	20.0	50	130
A	124TMB	1,2,4-Trimethylbenzene	18.6	S	0.100	93	20.0	50	130
A	SECBUT	sec-Butylbenzene	18.7	S	0.100	93	20.0	50	130
A	1M4PB	1-Methyl-4-propylbenzene	18.1	S	0.100	91	20.0	50	130
A	BUTB	n-Butylbenzene	17.9	S	0.100	90	20.0	50	130
A	12DEB	1,2-Diethylbenzene	18.9	S	0.100	94	20.0	50	130
P	C11	Undecane	16.6	S	0.100	83	20.0	50	130
A	PENTB	Pentylbenzene	17.0	S	0.100	85	20.0	50	130
P	C12	Dodecane	17.4	S	0.100	87	20.0	50	130

Surrogates (% Recovery)	
Dibromofluoromethane	93
Toluene-d8	94
4-Bromofluorobenzene	96

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Laboratory Control Sample Dup
Lab ID	VS102816LCSD02
Matrix	Soil
Reference Method	PIANO
Batch ID	VS102816B03
Date Collected	N/A
Date Received	N/A
Date Prepped	10/28/2016
Date Analyzed	10/28/2016
Sample Size (wet)	5
% Solid	100.00
File ID	V4011062.D
Units	µg/Kg
Final Volume	5
Dilution	1
Reporting Limit	0.100

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit	RPD	RPD Limit
O	1P	1-Pentene	15.2	S	0.100	76	20.0	50	130	0	30
P	C5	Pentane	13.2	S	0.100	66	20.0	50	130	6	30
OX	TBA	Tertiary butanol	77.3	S	0.100	77	100	50	130	9	30
N	CYP	Cyclopentane	16.8	S	0.100	84	20.0	50	130	1	30
I	2MP	2-Methylpentane	16.4	S	0.100	82	20.0	50	130	2	30
OX	MTBE	MTBE	19.5	S	0.100	97	20.0	50	130	2	30
I	3MP	3-Methylpentane	17.5	S	0.100	87	20.0	50	130	0	30
O	1HEX	1-Hexene	16.5	S	0.100	82	20.0	50	130	1	30
P	C6	Hexane	16.8	S	0.100	84	20.0	50	130	1	30
OX	DIPE	Diisopropyl Ether (DIPE)	17.7	S	0.100	89	20.0	50	130	1	30
OX	ETBE	Ethyl Tertiary Butyl Ether (ETBE)	18.6	S	0.100	93	20.0	50	130	3	30
N	MCYP	Methylcyclopentane	17.8	S	0.100	89	20.0	50	130	2	30
I	24DMP	2,4-Dimethylpentane	17.7	S	0.100	88	20.0	50	130	4	30
N	CH	Cyclohexane	17.9	S	0.100	89	20.0	50	130	1	30
		2-Methylhexane	17.5	S	0.100	87	20.0	50	130	1	30
A	B	Benzene	20.3	S	0.100	101	20.0	50	130	1	30
I	23DMP	2,3-Dimethylpentane	18.4	S	0.100	92	20.0	50	130	3	30
I	3MH	3-Methylhexane	17.3	S	0.100	86	20.0	50	130	5	30
OX	TAME	TAME	18.0	S	0.100	90	20.0	50	130	2	30
I	ISO	Isooctane	17.7	S	0.100	89	20.0	50	130	2	30
P	C7	Heptane	17.0	S	0.100	85	20.0	50	130	0	30
		Methylcyclohexane	19.8	S	0.100	99	20.0	50	130	3	30
I	2MHEP	2-Methylheptane	17.9	S	0.100	89	20.0	50	130	3	30
I	3MHEP	3-Methylheptane	16.7	S	0.100	83	20.0	50	130	1	30
A	T	Toluene	19.7	S	0.100	99	20.0	50	130	1	30
P	C8	Octane	16.8	S	0.100	84	20.0	50	130	0	30
A	EB	Ethylbenzene	19.3	S	0.100	96	20.0	50	130	2	30
A	MPX	p/m-Xylene	38.8	S	0.100	97	40.0	50	130	2	30
P	C9	Nonane	15.8	S	0.100	79	20.0	50	130	1	30
A	OX	o-Xylene	19.0	S	0.100	95	20.0	50	130	3	30
A	IPB	Isopropylbenzene	20.0	S	0.100	100	20.0	50	130	3	30
A	PROPB	n-Propylbenzene	19.2	S	0.100	96	20.0	50	130	2	30
A	1M3EB	1-Methyl-3-ethylbenzene	19.5	S	0.100	97	20.0	50	130	3	30
A	1M4EB	1-Methyl-4-ethylbenzene	19.1	S	0.100	96	20.0	50	130	2	30
A	135TMB	1,3,5-Trimethylbenzene	19.9	S	0.100	100	20.0	50	130	4	30
O	1D	1-Decene	20.0	S	0.100	100	20.0	50	130	9	30
A	1M2EB	1-Methyl-2-ethylbenzene	19.5	S	0.100	97	20.0	50	130	2	30
P	C10	Decane	15.9	S	0.100	79	20.0	50	130	0	30
A	124TMB	1,2,4-Trimethylbenzene	19.2	S	0.100	96	20.0	50	130	3	30
A	SECBUT	sec-Butylbenzene	19.3	S	0.100	96	20.0	50	130	3	30
A	1M4PB	1-Methyl-4-propylbenzene	18.6	S	0.100	93	20.0	50	130	3	30
A	BUTB	n-Butylbenzene	18.4	S	0.100	92	20.0	50	130	3	30
A	12DEB	1,2-Diethylbenzene	19.4	S	0.100	97	20.0	50	130	2	30
P	C11	Undecane	16.7	S	0.100	84	20.0	50	130	1	30
A	PENTB	Pentylbenzene	17.2	S	0.100	86	20.0	50	130	1	30
P	C12	Dodecane	17.1	S	0.100	86	20.0	50	130	2	30

Surrogates (% Recovery)	
Dibromofluoromethane	95
Toluene-d8	93
4-Bromofluorobenzene	98

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	S-16-B26	S-16-B30	S-6-B28	S-8-B24
Lab ID	1610008-02	1610008-06	1610008-07	1610008-15
Matrix	Soil	Soil	Soil	Soil
Reference Method	PIANO	PIANO	PIANO	PIANO
Batch ID	VS102816B03	VS102816B03	VS102816B03	VS102816B03
Date Collected	10/18/2016	10/18/2016	10/19/2016	10/20/2016
Date Received	10/20/2016	10/20/2016	10/21/2016	10/22/2016
Date Prepped	10/28/2016	10/28/2016	10/28/2016	10/28/2016
Date Analyzed	10/28/2016	10/28/2016	10/28/2016	10/28/2016
Sample Size (wet)	6.6	7.31	6.53	6.5
% Solid	84.78	83.26	84.58	88.49
File ID	V4011066.D	V4011067.D	V4011068.D	V4011069.D
Units	µg/Kg	µg/Kg	µg/Kg	µg/Kg
Final Volume	5	5	5	5
Dilution	1	1	1	1
Reporting Limit	0.0900	0.0800	0.0900	0.0900

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	Result		SSRL	Result		SSRL
I	IP	Isopentane		U	0.0900		U	0.0800		U	0.0900		U	0.0900
O	1P	1-Pentene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
O	2M1B	2-Methyl-1-butene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
P	C5	Pentane		U	0.0900		U	0.0800		U	0.0900		U	0.0900
O	T2P	2-Pentene (trans)		U	0.0900		U	0.0800		U	0.0900		U	0.0900
O	C2P	2-Pentene (cis)		U	0.0900		U	0.0800		U	0.0900		U	0.0900
OX	TBA	Tertiary butanol		U	0.0900		U	0.0800		U	0.0900		U	0.0900
N	CYP	Cyclopentane		U	0.0900		U	0.0800		U	0.0900		U	0.0900
I	23DMB	2,3-Dimethylbutane		U	0.0900		U	0.0800		U	0.0900		U	0.0900
I	2MP	2-Methylpentane		U	0.0900		U	0.0800		U	0.0900		U	0.0900
OX	MTBE	MTBE		U	0.0900		U	0.0800		U	0.0900		U	0.0900
I	3MP	3-Methylpentane		U	0.0900		U	0.0800		U	0.0900		U	0.0900
O	1HEX	1-Hexene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
P	C6	Hexane		U	0.0900		U	0.0800		U	0.0900		U	0.0900
OX	DIPE	Diisopropyl Ether (DIPE)		U	0.0900		U	0.0800		U	0.0900		U	0.0900
OX	ETBE	Ethyl Tertiary Butyl Ether (ETBE)		U	0.0900		U	0.0800		U	0.0900		U	0.0900
I	22DMP	2,2-Dimethylpentane		U	0.0900		U	0.0800		U	0.0900		U	0.0900
N	MCYP	Methylcyclopentane		U	0.0900		U	0.0800		U	0.0900		U	0.0900
I	24DMP	2,4-Dimethylpentane		U	0.0900		U	0.0800		U	0.0900		U	0.0900
ADD	12DCA	1,2-Dichloroethane		U	0.0900		U	0.0800		U	0.0900		U	0.0900
N	CH	Cyclohexane		U	0.0900		U	0.0800		U	0.0900		U	0.0900
		2-Methylhexane		U	0.0900		U	0.0800		U	0.0900		U	0.0900
A	B	Benzene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
I	23DMP	2,3-Dimethylpentane		U	0.0900		U	0.0800		U	0.0900		U	0.0900
S	THIO	Thiophene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
I	3MH	3-Methylhexane		U	0.0900		U	0.0800		U	0.0900		U	0.0900
OX	TAME	TAME		U	0.0900		U	0.0800		U	0.0900		U	0.0900
O	1H	1-Heptene/1,2-DMCP (trans)[1]		U	0.0900		U	0.0800		U	0.0900		U	0.0900
I	ISO	Isooctane		U	0.0900		U	0.0800		U	0.0900		U	0.0900
P	C7	Heptane		U	0.0900		U	0.0800		U	0.0900		U	0.0900
		Methylcyclohexane		U	0.0900		U	0.0800		U	0.0900		U	0.0900
I	25DMH	2,5-Dimethylhexane		U	0.0900		U	0.0800		U	0.0900		U	0.0900
I	24DMH	2,4-Dimethylhexane		U	0.0900		U	0.0800		U	0.0900		U	0.0900
I	223TMP	2,2,3-Trimethylpentane		U	0.0900		U	0.0800		U	0.0900		U	0.0900
I	234TMP	2,3,4-Trimethylpentane		U	0.0900		U	0.0800		U	0.0900		U	0.0900
I	233TMP	2,3,3-Trimethylpentane		U	0.0900		U	0.0800		U	0.0900		U	0.0900
I	23DMH	2,3-Dimethylhexane		U	0.0900		U	0.0800		U	0.0900		U	0.0900
I	3EH	3-Ethylhexane		U	0.0900		U	0.0800		U	0.0900		U	0.0900
I	2MHEP	2-Methylheptane		U	0.0900		U	0.0800		U	0.0900		U	0.0900
I	3MHEP	3-Methylheptane		U	0.0900		U	0.0800		U	0.0900		U	0.0900
A	T	Toluene	0.360	J	0.0900	0.340	J	0.0800	0.280	J	0.0900		U	0.0900
S	2MTHIO	2-Methylthiophene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
S	3MTHIO	3-Methylthiophene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
O	1O	1-Octene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
P	C8	Octane		U	0.0900		U	0.0800		U	0.0900		U	0.0900

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	S-16-B26	S-16-B30	S-6-B28	S-8-B24
Lab ID	1610008-02	1610008-06	1610008-07	1610008-15
Matrix	Soil	Soil	Soil	Soil
Reference Method	PIANO	PIANO	PIANO	PIANO
Batch ID	VS102816B03	VS102816B03	VS102816B03	VS102816B03
Date Collected	10/18/2016	10/18/2016	10/19/2016	10/20/2016
Date Received	10/20/2016	10/20/2016	10/21/2016	10/22/2016
Date Prepped	10/28/2016	10/28/2016	10/28/2016	10/28/2016
Date Analyzed	10/28/2016	10/28/2016	10/28/2016	10/28/2016
Sample Size (wet)	6.6	7.31	6.53	6.5
% Solid	84.78	83.26	84.58	88.49
File ID	V4011066.D	V4011067.D	V4011068.D	V4011069.D
Units	µg/Kg	µg/Kg	µg/Kg	µg/Kg
Final Volume	5	5	5	5
Dilution	1	1	1	1
Reporting Limit	0.0900	0.0800	0.0900	0.0900

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	Result		SSRL	Result		SSRL
ADD	12DBE	1,2-Dibromoethane		U	0.0900		U	0.0800		U	0.0900		U	0.0900
A	EB	Ethylbenzene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
S	2ETHIO	2-Ethylthiophene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
A	MPX	p/m-Xylene	0.260	J	0.0900	0.310	J	0.0800		U	0.0900		U	0.0900
O	1N	1-Nonene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
P	C9	Nonane		U	0.0900		U	0.0800		U	0.0900		U	0.0900
A	STY	Styrene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
A	OX	o-Xylene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
A	IPB	Isopropylbenzene	0.350	J	0.0900	0.170	J	0.0800		U	0.0900		U	0.0900
A	PROPB	n-Propylbenzene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
A	1M3EB	1-Methyl-3-ethylbenzene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
A	1M4EB	1-Methyl-4-ethylbenzene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
A	135TMB	1,3,5-Trimethylbenzene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
O	1D	1-Decene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
A	1M2EB	1-Methyl-2-ethylbenzene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
P	C10	Decane	0.240	JB	0.0900		U	0.0800		U	0.0900		U	0.0900
A	124TMB	1,2,4-Trimethylbenzene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
A	SECBUT	sec-Butylbenzene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
A	1M3IPB	1-Methyl-3-isopropylbenzene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
A	1M4IPB	1-Methyl-4-isopropylbenzene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
A	1M2IPB	1-Methyl-2-isopropylbenzene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
A	IN	Indan		U	0.0900		U	0.0800		U	0.0900		U	0.0900
A	1M3PB	1-Methyl-3-propylbenzene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
A	1M4PB	1-Methyl-4-propylbenzene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
A	BUTB	n-Butylbenzene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
A	12DM4EB	1,2-Dimethyl-4-ethylbenzene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
A	12DEB	1,2-Diethylbenzene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
A	1M2PB	1-Methyl-2-propylbenzene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
A	14DM2EB	1,4-Dimethyl-2-ethylbenzene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
P	C11	Undecane		U	0.0900		U	0.0800		U	0.0900		U	0.0900
A	13DM4EB	1,3-Dimethyl-4-ethylbenzene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
A	13DM5EB	1,3-Dimethyl-5-ethylbenzene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
A	13DM2EB	1,3-Dimethyl-2-ethylbenzene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
A	12DM3EB	1,2-Dimethyl-3-ethylbenzene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
A	1245TMP	1,2,4,5-Tetramethylbenzene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
A	PENTB	Pentylbenzene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
P	C12	Dodecane	0.160	J	0.0900	0.120	J	0.0800		U	0.0900		U	0.0900
2	N0	Naphthalene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
2	BT0	Benzothiophene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
ADD	MMT	MMT		U	0.0900		U	0.0800		U	0.0900		U	0.0900
P	C13	Tridecane		U	0.0900		U	0.0800		U	0.0900		U	0.0900
A	2MN	2-Methylnaphthalene		U	0.0900		U	0.0800		U	0.0900		U	0.0900
A	1MN	1-Methylnaphthalene		U	0.0900		U	0.0800		U	0.0900		U	0.0900

Surrogates (% Recovery)				
Dibromofluoromethane	96	98	98	98
Toluene-d8	90	92	93	93
4-Bromofluorobenzene	96	98	96	97

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Method Blank
Lab ID	VS102816B02
Matrix	Soil
Reference Method	PIANO High
Batch ID	VS102816B02
Date Collected	N/A
Date Received	N/A
Date Prepped	10/28/2016
Date Analyzed	10/28/2016
Sample Size (wet)	15
% Solid	100.00
File ID	V4011064.D
Units	µg/Kg
Final Volume	5
Dilution	1
Reporting Limit	5.00

Class	Abbrev	Analytes	Result	SSRL
I	IP	Isopentane	U	5.00
O	1P	1-Pentene	U	5.00
O	2M1B	2-Methyl-1-butene	U	5.00
P	C5	Pentane	U	5.00
O	T2P	2-Pentene (trans)	U	5.00
O	C2P	2-Pentene (cis)	U	5.00
OX	TBA	Tertiary butanol	U	5.00
N	CYP	Cyclopentane	U	5.00
I	23DMB	2,3-Dimethylbutane	U	5.00
I	2MP	2-Methylpentane	U	5.00
OX	MTBE	MTBE	U	5.00
I	3MP	3-Methylpentane	U	5.00
O	1HEX	1-Hexene	U	5.00
P	C6	Hexane	U	5.00
OX	DIPE	Diisopropyl Ether (DIPE)	U	5.00
OX	ETBE	Ethyl Tertiary Butyl Ether (ETBE)	U	5.00
I	22DMP	2,2-Dimethylpentane	U	5.00
N	MCYP	Methylcyclopentane	U	5.00
I	24DMP	2,4-Dimethylpentane	U	5.00
ADD	12DCA	1,2-Dichloroethane	U	5.00
N	CH	Cyclohexane	U	5.00
		2-Methylhexane	U	5.00
A	B	Benzene	U	5.00
I	23DMP	2,3-Dimethylpentane	U	5.00
S	THIO	Thiophene	U	5.00
I	3MH	3-Methylhexane	U	5.00
OX	TAME	TAME	U	5.00
O	1H	1-Heptene/1,2-DMCP (trans)[1]	U	5.00
I	ISO	Isooctane	U	5.00
P	C7	Heptane	U	5.00
		Methylcyclohexane	U	5.00
I	25DMH	2,5-Dimethylhexane	U	5.00
I	24DMH	2,4-Dimethylhexane	U	5.00
I	223TMP	2,2,3-Trimethylpentane	U	5.00
I	234TMP	2,3,4-Trimethylpentane	U	5.00
I	233TMP	2,3,3-Trimethylpentane	U	5.00
I	23DMH	2,3-Dimethylhexane	U	5.00
I	3EH	3-Ethylhexane	U	5.00
I	2MHEP	2-Methylheptane	U	5.00
I	3MHEP	3-Methylheptane	U	5.00
A	T	Toluene	U	5.00
S	2MTHIO	2-Methylthiophene	U	5.00
S	3MTHIO	3-Methylthiophene	U	5.00
O	1O	1-Octene	U	5.00
P	C8	Octane	U	5.00

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Method Blank
Lab ID	VS102816B02
Matrix	Soil
Reference Method	PIANO High
Batch ID	VS102816B02
Date Collected	N/A
Date Received	N/A
Date Prepped	10/28/2016
Date Analyzed	10/28/2016
Sample Size (wet)	15
% Solid	100.00
File ID	V4011064.D
Units	µg/Kg
Final Volume	5
Dilution	1
Reporting Limit	5.00

Class	Abbrev	Analytes	Result		SSRL
ADD	12DBE	1,2-Dibromoethane		U	5.00
A	EB	Ethylbenzene	12.8	J	5.00
S	2ETHIO	2-Ethylthiophene		U	5.00
A	MPX	p/m-Xylene		U	5.00
O	1N	1-Nonene		U	5.00
P	C9	Nonane		U	5.00
A	STY	Styrene		U	5.00
A	OX	o-Xylene		U	5.00
A	IPB	Isopropylbenzene		U	5.00
A	PROPB	n-Propylbenzene		U	5.00
A	1M3EB	1-Methyl-3-ethylbenzene		U	5.00
A	1M4EB	1-Methyl-4-ethylbenzene		U	5.00
A	135TMB	1,3,5-Trimethylbenzene		U	5.00
O	1D	1-Decene		U	5.00
A	1M2EB	1-Methyl-2-ethylbenzene		U	5.00
P	C10	Decane	10.6	J	5.00
A	124TMB	1,2,4-Trimethylbenzene		U	5.00
A	SECBUT	sec-Butylbenzene		U	5.00
A	1M3IPB	1-Methyl-3-isopropylbenzene		U	5.00
A	1M4IPB	1-Methyl-4-isopropylbenzene		U	5.00
A	1M2IPB	1-Methyl-2-isopropylbenzene		U	5.00
A	IN	Indan		U	5.00
A	1M3PB	1-Methyl-3-propylbenzene		U	5.00
A	1M4PB	1-Methyl-4-propylbenzene		U	5.00
A	BUTB	n-Butylbenzene		U	5.00
A	12DM4EB	1,2-Dimethyl-4-ethylbenzene		U	5.00
A	12DEB	1,2-Diethylbenzene		U	5.00
A	1M2PB	1-Methyl-2-propylbenzene		U	5.00
A	14DM2EB	1,4-Dimethyl-2-ethylbenzene		U	5.00
P	C11	Undecane		U	5.00
A	13DM4EB	1,3-Dimethyl-4-ethylbenzene		U	5.00
A	13DM5EB	1,3-Dimethyl-5-ethylbenzene		U	5.00
A	13DM2EB	1,3-Dimethyl-2-ethylbenzene		U	5.00
A	12DM3EB	1,2-Dimethyl-3-ethylbenzene		U	5.00
A	1245TMP	1,2,4,5-Tetramethylbenzene		U	5.00
A	PENTB	Pentylbenzene		U	5.00
P	C12	Dodecane		U	5.00
2	N0	Naphthalene		U	5.00
2	BT0	Benzothiophene		U	5.00
ADD	MMT	MMT		U	5.00
P	C13	Tridecane		U	5.00
A	2MN	2-Methylnaphthalene	14.4	J	5.00
A	1MN	1-Methylnaphthalene	7.00	J	5.00

Surrogates (% Recovery)		
2-Bromo-1-chloropropane	90	
1-Chloro-2-fluorobenzene	96	
1,4-Dichlorobutane	68	§
Dibromofluoromethane	96	
Toluene-d8	94	
4-Bromofluorobenzene	97	

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Laboratory Control Sample
Lab ID	VS102816LCS02
Matrix	Soil
Reference Method	PIANO
Batch ID	VS102816B03
Date Collected	N/A
Date Received	N/A
Date Prepped	10/28/2016
Date Analyzed	10/28/2016
Sample Size (wet)	15
% Solid	100.00
File ID	V4011061.D
Units	µg/Kg
Final Volume	5
Dilution	1
Reporting Limit	5.0

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
O	1P	1-Pentene	759	S	15.0	76	1000	50	130
P	C5	Pentane	618	S	15.0	62	1000	50	130
OX	TBA	Tertiary butanol	4220	S	15.0	84	5000	50	130
N	CYP	Cyclopentane	833	S	15.0	83	1000	50	130
I	2MP	2-Methylpentane	832	S	15.0	83	1000	50	130
OX	MTBE	MTBE	957	S	15.0	96	1000	50	130
I	3MP	3-Methylpentane	872	S	15.0	87	1000	50	130
O	1HEX	1-Hexene	819	S	15.0	82	1000	50	130
P	C6	Hexane	830	S	15.0	83	1000	50	130
OX	DIPE	Diisopropyl Ether (DIPE)	873	S	15.0	87	1000	50	130
OX	ETBE	Ethyl Tertiary Butyl Ether (ETBE)	907	S	15.0	91	1000	50	130
N	MCYP	Methylcyclopentane	872	S	15.0	87	1000	50	130
I	24DMP	2,4-Dimethylpentane	852	S	15.0	85	1000	50	130
N	CH	Cyclohexane	899	S	15.0	90	1000	50	130
		2-Methylhexane	864	S	15.0	86	1000	50	130
A	B	Benzene	1000	S	15.0	100	1000	50	130
I	23DMP	2,3-Dimethylpentane	899	S	15.0	90	1000	50	130
I	3MH	3-Methylhexane	818	S	15.0	82	1000	50	130
OX	TAME	TAME	886	S	15.0	89	1000	50	130
I	ISO	Isooctane	874	S	15.0	87	1000	50	130
P	C7	Heptane	851	S	15.0	85	1000	50	130
		Methylcyclohexane	957	S	15.0	96	1000	50	130
I	2MHEP	2-Methylheptane	863	S	15.0	86	1000	50	130
I	3MHEP	3-Methylheptane	829	S	15.0	83	1000	50	130
A	T	Toluene	973	S	15.0	97	1000	50	130
P	C8	Octane	834	S	15.0	83	1000	50	130
A	EB	Ethylbenzene	943	S	15.0	94	1000	50	130
A	MPX	p/m-Xylene	1900	S	15.0	95	2000	50	130
P	C9	Nonane	778	S	15.0	78	1000	50	130
A	OX	o-Xylene	922	S	15.0	92	1000	50	130
A	IPB	Isopropylbenzene	971	S	15.0	97	1000	50	130
A	PROPB	n-Propylbenzene	942	S	15.0	94	1000	50	130
A	1M3EB	1-Methyl-3-ethylbenzene	945	S	15.0	94	1000	50	130
A	1M4EB	1-Methyl-4-ethylbenzene	935	S	15.0	94	1000	50	130
A	135TMB	1,3,5-Trimethylbenzene	955	S	15.0	96	1000	50	130
O	1D	1-Decene	915	S	15.0	92	1000	50	130
A	1M2EB	1-Methyl-2-ethylbenzene	958	S	15.0	96	1000	50	130
P	C10	Decane	792	S	15.0	79	1000	50	130
A	124TMB	1,2,4-Trimethylbenzene	928	S	15.0	93	1000	50	130
A	SECBUT	sec-Butylbenzene	934	S	15.0	93	1000	50	130
A	1M4PB	1-Methyl-4-propylbenzene	906	S	15.0	91	1000	50	130
A	BUTB	n-Butylbenzene	895	S	15.0	90	1000	50	130
A	12DEB	1,2-Diethylbenzene	945	S	15.0	94	1000	50	130
P	C11	Undecane	829	S	15.0	83	1000	50	130
A	PENTB	Pentylbenzene	850	S	15.0	85	1000	50	130
P	C12	Dodecane	872	S	15.0	87	1000	50	130

Surrogates (% Recovery)		
2-Bromo-1-chloropropane		N/A
1-Chloro-2-fluorobenzene		N/A
1,4-Dichlorobutane		N/A
Dibromofluoromethane	93	
Toluene-d8	94	
4-Bromofluorobenzene	96	

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Laboratory Control Sample Dup
Lab ID	VS102816LCSD02
Matrix	Soil
Reference Method	PIANO
Batch ID	VS102816B03
Date Collected	N/A
Date Received	N/A
Date Prepped	10/28/2016
Date Analyzed	10/28/2016
Sample Size (wet)	15
% Solid	100.00
File ID	V4011062.D
Units	µg/Kg
Final Volume	5
Dilution	1
Reporting Limit	5.0

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit	RPD	RPD Limit
O	1P	1-Pentene	759	S	15.0	76	1000	50	130	0	30
P	C5	Pentane	658	S	15.0	66	1000	50	130	6	30
OX	TBA	Tertiary butanol	3860	S	15.0	77	5000	50	130	9	30
N	CYP	Cyclopentane	841	S	15.0	84	1000	50	130	1	30
I	2MP	2-Methylpentane	818	S	15.0	82	1000	50	130	2	30
OX	MTBE	MTBE	974	S	15.0	97	1000	50	130	2	30
I	3MP	3-Methylpentane	873	S	15.0	87	1000	50	130	0	30
O	1HEX	1-Hexene	824	S	15.0	82	1000	50	130	1	30
P	C6	Hexane	840	S	15.0	84	1000	50	130	1	30
OX	DIPE	Diisopropyl Ether (DIPE)	886	S	15.0	89	1000	50	130	1	30
OX	ETBE	Ethyl Tertiary Butyl Ether (ETBE)	931	S	15.0	93	1000	50	130	3	30
N	MCYP	Methylcyclopentane	889	S	15.0	89	1000	50	130	2	30
I	24DMP	2,4-Dimethylpentane	884	S	15.0	88	1000	50	130	4	30
N	CH	Cyclohexane	894	S	15.0	89	1000	50	130	1	30
		2-Methylhexane	873	S	15.0	87	1000	50	130	1	30
A	B	Benzene	1010	S	15.0	101	1000	50	130	1	30
I	23DMP	2,3-Dimethylpentane	922	S	15.0	92	1000	50	130	3	30
I	3MH	3-Methylhexane	864	S	15.0	86	1000	50	130	5	30
OX	TAME	TAME	902	S	15.0	90	1000	50	130	2	30
I	ISO	Isooctane	887	S	15.0	89	1000	50	130	2	30
P	C7	Heptane	848	S	15.0	85	1000	50	130	0	30
		Methylcyclohexane	988	S	15.0	99	1000	50	130	3	30
I	2MHEP	2-Methylheptane	894	S	15.0	89	1000	50	130	3	30
I	3MHEP	3-Methylheptane	834	S	15.0	83	1000	50	130	1	30
A	T	Toluene	985	S	15.0	99	1000	50	130	1	30
P	C8	Octane	838	S	15.0	84	1000	50	130	0	30
A	EB	Ethylbenzene	963	S	15.0	96	1000	50	130	2	30
A	MPX	p/m-Xylene	1940	S	15.0	97	2000	50	130	2	30
P	C9	Nonane	790	S	15.0	79	1000	50	130	1	30
A	OX	o-Xylene	952	S	15.0	95	1000	50	130	3	30
A	IPB	Isopropylbenzene	1000	S	15.0	100	1000	50	130	3	30
A	PROPB	n-Propylbenzene	960	S	15.0	96	1000	50	130	2	30
A	1M3EB	1-Methyl-3-ethylbenzene	975	S	15.0	97	1000	50	130	3	30
A	1M4EB	1-Methyl-4-ethylbenzene	955	S	15.0	96	1000	50	130	2	30
A	135TMB	1,3,5-Trimethylbenzene	996	S	15.0	100	1000	50	130	4	30
O	1D	1-Decene	1000	S	15.0	100	1000	50	130	9	30
A	1M2EB	1-Methyl-2-ethylbenzene	974	S	15.0	97	1000	50	130	2	30
P	C10	Decane	795	S	15.0	80	1000	50	130	0	30
A	124TMB	1,2,4-Trimethylbenzene	958	S	15.0	96	1000	50	130	3	30
A	SECBUT	sec-Butylbenzene	963	S	15.0	96	1000	50	130	3	30
A	1M4PB	1-Methyl-4-propylbenzene	929	S	15.0	93	1000	50	130	3	30
A	BUTB	n-Butylbenzene	921	S	15.0	92	1000	50	130	3	30
A	12DEB	1,2-Diethylbenzene	967	S	15.0	97	1000	50	130	2	30
P	C11	Undecane	835	S	15.0	84	1000	50	130	1	30
A	PENTB	Pentylbenzene	861	S	15.0	86	1000	50	130	1	30
P	C12	Dodecane	856	S	15.0	86	1000	50	130	2	30

Surrogates (% Recovery)		
2-Bromo-1-chloropropane		N/A
1-Chloro-2-fluorobenzene		N/A
1,4-Dichlorobutane		N/A
Dibromofluoromethane	95	
Toluene-d8	93	
4-Bromofluorobenzene	98	

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Gasoline Reference Oil - LD-7
Lab ID	VS102816LD701
Matrix	Oil
Reference Method	PIANO High
Batch ID	N/A
Date Collected	N/A
Date Received	N/A
Date Prepped	10/28/2016
Date Analyzed	10/28/2016
Sample Size (wet)	0.1004
% Solid	100.00
File ID	V4011063.D
Units	mg/Kg
Final Volume	5
Dilution	100
Reporting Limit	49.8

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
I	IP	Isopentane	25300		49.8	81	31223.00	65	135
O	1P	1-Pentene		U	49.8				
O	2M1B	2-Methyl-1-butene		U	49.8				
P	C5	Pentane	20200		49.8	75	26748.00	65	135
O	T2P	2-Pentene (trans)	211	J	49.8				
O	C2P	2-Pentene (cis)		U	49.8				
OX	TBA	Tertiary butanol		U	49.8				
N	CYP	Cyclopentane	3720		49.8	91	4090.00	65	135
I	23DMB	2,3-Dimethylbutane	7870		49.8	93	8480.00	65	135
I	2MP	2-Methylpentane	25700		49.8	76	33695.00	65	135
OX	MTBE	MTBE		U	49.8				
I	3MP	3-Methylpentane	16900		49.8	82	20693.00	65	135
O	1HEX	1-Hexene		U	49.8				
P	C6	Hexane	26600		49.8	85	31248.00	65	135
OX	DIPE	Diisopropyl Ether (DIPE)		U	49.8				
OX	ETBE	Ethyl Tertiary Butyl Ether (ETBE)		U	49.8				
I	22DMP	2,2-Dimethylpentane	3360		49.8	85	3933.00	65	135
N	MCYP	Methylcyclopentane	22700		49.8	83	27356.00	65	135
I	24DMP	2,4-Dimethylpentane	4580		49.8	81	5652.00	65	135
ADD	12DCA	1,2-Dichloroethane		U	49.8				
N	CH	Cyclohexane	38500		49.8	87	44344.00	65	135
		2-Methylhexane	16100		49.8	81	19898.00	65	135
A	B	Benzene	3250		49.8	95	3408.00	65	135
I	23DMP	2,3-Dimethylpentane	6700		49.8	91	7333.00	65	135
S	THIO	Thiophene		U	49.8				
I	3MH	3-Methylhexane	16800		49.8	84	19898.00	65	135
OX	TAME	TAME		U	49.8				
O	1H	1-Heptene/1,2-DMCP (trans)[1]	11700		49.8	87	13444.00	65	135
I	ISO	Isooctane	10700		49.8	83	12819.00	65	135
P	C7	Heptane	26600		49.8	79	33718.00	65	135
		Methylcyclohexane	86900		49.8	87	99570.00	65	135
I	25DMH	2,5-Dimethylhexane	4200		49.8	86	4910.00	65	135
I	24DMH	2,4-Dimethylhexane	5170		49.8	83	6202.00	65	135
I	223TMP	2,2,3-Trimethylpentane	564	J	49.8				
I	234TMP	2,3,4-Trimethylpentane	3800		49.8	78	4894.00	65	135
I	233TMP	2,3,3-Trimethylpentane	2390		49.8	77	3110.00	65	135
I	23DMH	2,3-Dimethylhexane	3700		49.8	79	4700.00	65	135
I	3EH	3-Ethylhexane	1770		49.8	82	2163.00	65	135
I	2MHEP	2-Methylheptane	14400		49.8	85	16966.00	65	135
I	3MHEP	3-Methylheptane	11000		49.8	79	13911.00	65	135
A	T	Toluene	2190		49.8	91	2400.00	65	135
S	2MTHIO	2-Methylthiophene		U	49.8				
S	3MTHIO	3-Methylthiophene		U	49.8				
O	1O	1-Octene		U	49.8				
P	C8	Octane	24500		49.8	77	31798.00	65	135

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Gasoline Reference Oil - LD-7
Lab ID	VS102816LD701
Matrix	Oil
Reference Method	PIANO High
Batch ID	N/A
Date Collected	N/A
Date Received	N/A
Date Prepped	10/28/2016
Date Analyzed	10/28/2016
Sample Size (wet)	0.1004
% Solid	100.00
File ID	V4011063.D
Units	mg/Kg
Final Volume	5
Dilution	100
Reporting Limit	49.8

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
ADD	12DBE	1,2-Dibromoethane		U	49.8				
A	EB	Ethylbenzene	4990		49.8	89	5610.00	65	135
S	2ETHIO	2-Ethylthiophene		U	49.8				
A	MPX	p/m-Xylene	15700		49.8	91	17224.00	65	135
O	1N	1-Nonene		U	49.8				
P	C9	Nonane	20500		49.8	89	23088.00	65	135
A	STY	Styrene		U	49.8				
A	OX	o-Xylene	6460		49.8	91	7075.00	65	135
A	IPB	Isopropylbenzene	1070		49.8	90	1184.00	65	135
A	PROPB	n-Propylbenzene	1350		49.8	87	1555.00	65	135
A	1M3EB	1-Methyl-3-ethylbenzene	4100		49.8	87	4712.00	65	135
A	1M4EB	1-Methyl-4-ethylbenzene	1940		49.8	94	2069.00	65	135
A	135TMB	1,3,5-Trimethylbenzene	4660		49.8	94	4982.00	65	135
O	1D	1-Decene		U	49.8				
A	1M2EB	1-Methyl-2-ethylbenzene	1710		49.8	93	1844.00	65	135
P	C10	Decane	11100		49.8	75	14859.00	65	135
A	124TMB	1,2,4-Trimethylbenzene	8570		49.8	91	9407.00	65	135
A	SECBUT	sec-Butylbenzene	311	J	49.8				
A	1M3IPB	1-Methyl-3-isopropylbenzene	575	J	49.8				
A	1M4IPB	1-Methyl-4-isopropylbenzene	293	J	49.8				
A	1M2IPB	1-Methyl-2-isopropylbenzene	114	J	49.8				
A	IN	Indan	762	J	49.8				
A	1M3PB	1-Methyl-3-propylbenzene	1170		49.8	94	1255.00	65	135
A	1M4PB	1-Methyl-4-propylbenzene	588	J	49.8				
A	BUTB	n-Butylbenzene	420	J	49.8				
A	12DM4EB	1,2-Dimethyl-4-ethylbenzene	1470		49.8	94	1559.00	65	135
A	12DEB	1,2-Diethylbenzene	130	J	49.8				
A	1M2PB	1-Methyl-2-propylbenzene	388	J	49.8				
A	14DM2EB	1,4-Dimethyl-2-ethylbenzene	822	J	49.8				
P	C11	Undecane	3520		49.8	89	3952.00	65	135
A	13DM4EB	1,3-Dimethyl-4-ethylbenzene	847	J	49.8				
A	13DM5EB	1,3-Dimethyl-5-ethylbenzene	1510		49.8	92	1642.00	65	135
A	13DM2EB	1,3-Dimethyl-2-ethylbenzene	157	J	49.8				
A	12DM3EB	1,2-Dimethyl-3-ethylbenzene	460	J	49.8				
A	1245TMP	1,2,4,5-Tetramethylbenzene	1270		49.8	86	1477.00	65	135
A	PENTB	Pentylbenzene	310	J	49.8				
P	C12	Dodecane	2010		49.8	83	2437.00	65	135
2	N0	Naphthalene	7460		49.8	94	7917.00	65	135
2	BT0	Benzothiophene		U	49.8				
ADD	MMT	MMT		U	49.8				
P	C13	Tridecane	677	J	49.8				
A	2MN	2-Methylnaphthalene	8030		49.8	101	7963.00	65	135
A	1MN	1-Methylnaphthalene	4030		49.8	92	4383.00	65	135

Surrogates (% Recovery)	
Dibromofluoromethane	94
Toluene-d8	93
4-Bromofluorobenzene	96

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	S-14-B27	S-9-B32
Lab ID	1610008-04	1610008-12
Matrix	Soil	Soil
Reference Method	PIANO High	PIANO High
Batch ID	VS102816B02	VS102816B02
Date Collected	10/18/2016	10/19/2016
Date Received	10/20/2016	10/21/2016
Date Prepped	10/28/2016	10/28/2016
Date Analyzed	10/28/2016	10/28/2016
Sample Size (wet)	7.13	7.31
% Solid	96.48	87.62
File ID	V4011070.D	V4011071.D
Units	µg/Kg	µg/Kg
Final Volume	5	5
Dilution	1	1
Reporting Limit	11.1	12.4

Class	Abbrev	Analytes	Result	SSRL	Result	SSRL
I	IP	Isopentane	U	11.1	U	12.4
O	1P	1-Pentene	U	11.1	U	12.4
O	2M1B	2-Methyl-1-butene	U	11.1	U	12.4
P	C5	Pentane	U	11.1	U	12.4
O	T2P	2-Pentene (trans)	U	11.1	U	12.4
O	C2P	2-Pentene (cis)	U	11.1	U	12.4
OX	TBA	Tertiary butanol	U	11.1	U	12.4
N	CYP	Cyclopentane	U	11.1	U	12.4
I	23DMB	2,3-Dimethylbutane	U	11.1	U	12.4
I	2MP	2-Methylpentane	U	11.1	U	12.4
OX	MTBE	MTBE	U	11.1	U	12.4
I	3MP	3-Methylpentane	U	11.1	U	12.4
O	1HEX	1-Hexene	U	11.1	U	12.4
P	C6	Hexane	U	11.1	U	12.4
OX	DIPE	Diisopropyl Ether (DIPE)	U	11.1	U	12.4
OX	ETBE	Ethyl Tertiary Butyl Ether (ETBE)	U	11.1	U	12.4
I	22DMP	2,2-Dimethylpentane	U	11.1	U	12.4
N	MCYP	Methylcyclopentane	U	11.1	U	12.4
I	24DMP	2,4-Dimethylpentane	U	11.1	U	12.4
ADD	12DCA	1,2-Dichloroethane	U	11.1	U	12.4
N	CH	Cyclohexane	U	11.1	U	12.4
		2-Methylhexane	U	11.1	U	12.4
A	B	Benzene	U	11.1	U	12.4
I	23DMP	2,3-Dimethylpentane	U	11.1	U	12.4
S	THIO	Thiophene	U	11.1	U	12.4
I	3MH	3-Methylhexane	U	11.1	U	12.4
OX	TAME	TAME	U	11.1	U	12.4
O	1H	1-Heptene/1,2-DMCP (trans)[1]	U	11.1	U	12.4
I	ISO	Isooctane	U	11.1	U	12.4
P	C7	Heptane	U	11.1	U	12.4
		Methylcyclohexane	U	11.1	U	12.4
I	25DMH	2,5-Dimethylhexane	U	11.1	U	12.4
I	24DMH	2,4-Dimethylhexane	U	11.1	U	12.4
I	223TMP	2,2,3-Trimethylpentane	U	11.1	U	12.4
I	234TMP	2,3,4-Trimethylpentane	U	11.1	U	12.4
I	233TMP	2,3,3-Trimethylpentane	U	11.1	U	12.4
I	23DMH	2,3-Dimethylhexane	U	11.1	U	12.4
I	3EH	3-Ethylhexane	U	11.1	U	12.4
I	2MHEP	2-Methylheptane	U	11.1	U	12.4
I	3MHEP	3-Methylheptane	U	11.1	U	12.4
A	T	Toluene	U	11.1	U	12.4
S	2MTHIO	2-Methylthiophene	U	11.1	U	12.4
S	3MTHIO	3-Methylthiophene	U	11.1	U	12.4
O	1O	1-Octene	U	11.1	U	12.4
P	C8	Octane	U	11.1	U	12.4

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	S-14-B27	S-9-B32
Lab ID	1610008-04	1610008-12
Matrix	Soil	Soil
Reference Method	PIANO High	PIANO High
Batch ID	VS102816B02	VS102816B02
Date Collected	10/18/2016	10/19/2016
Date Received	10/20/2016	10/21/2016
Date Prepped	10/28/2016	10/28/2016
Date Analyzed	10/28/2016	10/28/2016
Sample Size (wet)	7.13	7.31
% Solid	96.48	87.62
File ID	V4011070.D	V4011071.D
Units	µg/Kg	µg/Kg
Final Volume	5	5
Dilution	1	1
Reporting Limit	11.1	12.4

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL
ADD	12DBE	1,2-Dibromoethane		U	11.1		U	12.4
A	EB	Ethylbenzene	33.4	JB	11.1	35.5	JB	12.4
S	2ETHIO	2-Ethylthiophene		U	11.1		U	12.4
A	MPX	p/m-Xylene		U	11.1		U	12.4
O	1N	1-Nonene		U	11.1		U	12.4
P	C9	Nonane		U	11.1		U	12.4
A	STY	Styrene		U	11.1		U	12.4
A	OX	o-Xylene		U	11.1		U	12.4
A	IPB	Isopropylbenzene		U	11.1		U	12.4
A	PROPB	n-Propylbenzene		U	11.1		U	12.4
A	1M3EB	1-Methyl-3-ethylbenzene		U	11.1		U	12.4
A	1M4EB	1-Methyl-4-ethylbenzene		U	11.1		U	12.4
A	135TMB	1,3,5-Trimethylbenzene		U	11.1		U	12.4
O	1D	1-Decene		U	11.1		U	12.4
A	1M2EB	1-Methyl-2-ethylbenzene		U	11.1		U	12.4
P	C10	Decane		U	11.1		U	12.4
A	124TMB	1,2,4-Trimethylbenzene		U	11.1		U	12.4
A	SECBUT	sec-Butylbenzene		U	11.1		U	12.4
A	1M3IPB	1-Methyl-3-isopropylbenzene		U	11.1		U	12.4
A	1M4IPB	1-Methyl-4-isopropylbenzene		U	11.1		U	12.4
A	1M2IPB	1-Methyl-2-isopropylbenzene		U	11.1		U	12.4
A	IN	Indan		U	11.1		U	12.4
A	1M3PB	1-Methyl-3-propylbenzene		U	11.1		U	12.4
A	1M4PB	1-Methyl-4-propylbenzene		U	11.1		U	12.4
A	BUTB	n-Butylbenzene		U	11.1		U	12.4
A	12DM4EB	1,2-Dimethyl-4-ethylbenzene		U	11.1		U	12.4
A	12DEB	1,2-Diethylbenzene		U	11.1		U	12.4
A	1M2PB	1-Methyl-2-propylbenzene		U	11.1		U	12.4
A	14DM2EB	1,4-Dimethyl-2-ethylbenzene		U	11.1		U	12.4
P	C11	Undecane		U	11.1		U	12.4
A	13DM4EB	1,3-Dimethyl-4-ethylbenzene		U	11.1		U	12.4
A	13DM5EB	1,3-Dimethyl-5-ethylbenzene		U	11.1		U	12.4
A	13DM2EB	1,3-Dimethyl-2-ethylbenzene		U	11.1		U	12.4
A	12DM3EB	1,2-Dimethyl-3-ethylbenzene		U	11.1		U	12.4
A	1245TMP	1,2,4,5-Tetramethylbenzene		U	11.1		U	12.4
A	PENTB	Pentylbenzene		U	11.1		U	12.4
P	C12	Dodecane		U	11.1		U	12.4
2	N0	Naphthalene		U	11.1		U	12.4
2	BT0	Benzothiophene		U	11.1		U	12.4
ADD	MMT	MMT		U	11.1		U	12.4
P	C13	Tridecane		U	11.1		U	12.4
A	2MN	2-Methylnaphthalene		U	11.1		U	12.4
A	1MN	1-Methylnaphthalene		U	11.1		U	12.4

Surrogates (% Recovery)		
2-Bromo-1-chloropropane	100	104
1-Chloro-2-fluorobenzene	103	108
1,4-Dichlorobutane	74	77
Dibromofluoromethane	96	97
Toluene-d8	92	92
4-Bromofluorobenzene	98	99

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	S-5-B34	S-9-B34	S-3-B35	S-5-B36
Lab ID	1610008-20	1610008-21	1610008-22	1610008-23
Matrix	Soil	Soil	Soil	Soil
Reference Method	PIANO High	PIANO High	PIANO High	PIANO High
Batch ID	VS102816B02	VS102816B02	VS102816B02	VS102816B02
Date Collected	10/20/2016	10/20/2016	10/20/2016	10/21/2016
Date Received	10/22/2016	10/22/2016	10/22/2016	10/22/2016
Date Prepped	10/28/2016	10/28/2016	10/28/2016	10/28/2016
Date Analyzed	10/29/2016	10/29/2016	10/29/2016	10/29/2016
Sample Size (wet)	6.25	6.1	6.19	7.81
% Solid	92.01	91.08	92.76	89.64
File ID	V4011072.D	V4011073.D	V4011074.D	V4011075.D
Units	µg/Kg	µg/Kg	µg/Kg	µg/Kg
Final Volume	5	5	5	5
Dilution	1	1	1	1
Reporting Limit	13.5	14.0	13.4	11.3

Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL
I	IP	Isopentane	U	13.5	U	14.0	U	13.4	U	11.3
O	1P	1-Pentene	U	13.5	U	14.0	U	13.4	U	11.3
O	2M1B	2-Methyl-1-butene	U	13.5	U	14.0	U	13.4	U	11.3
P	C5	Pentane	U	13.5	U	14.0	U	13.4	U	11.3
O	T2P	2-Pentene (trans)	U	13.5	U	14.0	U	13.4	U	11.3
O	C2P	2-Pentene (cis)	U	13.5	U	14.0	U	13.4	U	11.3
OX	TBA	Tertiary butanol	U	13.5	U	14.0	U	13.4	U	11.3
N	CYP	Cyclopentane	U	13.5	U	14.0	U	13.4	U	11.3
I	23DMB	2,3-Dimethylbutane	U	13.5	U	14.0	U	13.4	U	11.3
I	2MP	2-Methylpentane	U	13.5	U	14.0	U	13.4	U	11.3
OX	MTBE	MTBE	U	13.5	U	14.0	U	13.4	U	11.3
I	3MP	3-Methylpentane	U	13.5	U	14.0	U	13.4	U	11.3
O	1HEX	1-Hexene	U	13.5	U	14.0	U	13.4	U	11.3
P	C6	Hexane	U	13.5	U	14.0	U	13.4	U	11.3
OX	DIPE	Diisopropyl Ether (DIPE)	U	13.5	U	14.0	U	13.4	U	11.3
OX	ETBE	Ethyl Tertiary Butyl Ether (ETBE)	U	13.5	U	14.0	U	13.4	U	11.3
I	22DMP	2,2-Dimethylpentane	U	13.5	U	14.0	U	13.4	U	11.3
N	MCYP	Methylcyclopentane	U	13.5	U	14.0	U	13.4	U	11.3
I	24DMP	2,4-Dimethylpentane	U	13.5	U	14.0	U	13.4	U	11.3
ADD	12DCA	1,2-Dichloroethane	U	13.5	U	14.0	U	13.4	U	11.3
N	CH	Cyclohexane	U	13.5	U	14.0	U	13.4	U	11.3
		2-Methylhexane	U	13.5	U	14.0	U	13.4	U	11.3
A	B	Benzene	U	13.5	U	14.0	U	13.4	U	11.3
I	23DMP	2,3-Dimethylpentane	U	13.5	U	14.0	U	13.4	U	11.3
S	THIO	Thiophene	U	13.5	U	14.0	U	13.4	U	11.3
I	3MH	3-Methylhexane	U	13.5	U	14.0	U	13.4	U	11.3
OX	TAME	TAME	U	13.5	U	14.0	U	13.4	U	11.3
O	1H	1-Heptene/1,2-DMCP (trans)[1]	U	13.5	U	14.0	U	13.4	U	11.3
I	ISO	Isooctane	U	13.5	U	14.0	U	13.4	U	11.3
P	C7	Heptane	U	13.5	U	14.0	U	13.4	U	11.3
		Methylcyclohexane	U	13.5	U	14.0	U	13.4	U	11.3
I	25DMH	2,5-Dimethylhexane	U	13.5	U	14.0	U	13.4	U	11.3
I	24DMH	2,4-Dimethylhexane	U	13.5	U	14.0	U	13.4	U	11.3
I	223TMP	2,2,3-Trimethylpentane	U	13.5	U	14.0	U	13.4	U	11.3
I	234TMP	2,3,4-Trimethylpentane	U	13.5	U	14.0	U	13.4	U	11.3
I	233TMP	2,3,3-Trimethylpentane	U	13.5	U	14.0	U	13.4	U	11.3
I	23DMH	2,3-Dimethylhexane	U	13.5	U	14.0	U	13.4	U	11.3
I	3EH	3-Ethylhexane	U	13.5	U	14.0	U	13.4	U	11.3
I	2MHEP	2-Methylheptane	U	13.5	U	14.0	U	13.4	U	11.3
I	3MHEP	3-Methylheptane	U	13.5	U	14.0	U	13.4	U	11.3
A	T	Toluene	U	13.5	U	14.0	U	13.4	U	11.3
S	2MTHIO	2-Methylthiophene	U	13.5	U	14.0	U	13.4	U	11.3
S	3MTHIO	3-Methylthiophene	U	13.5	U	14.0	U	13.4	U	11.3
O	1O	1-Octene	U	13.5	U	14.0	U	13.4	U	11.3
P	C8	Octane	U	13.5	U	14.0	U	13.4	U	11.3

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	S-5-B34	S-9-B34	S-3-B35	S-5-B36
Lab ID	1610008-20	1610008-21	1610008-22	1610008-23
Matrix	Soil	Soil	Soil	Soil
Reference Method	PIANO High	PIANO High	PIANO High	PIANO High
Batch ID	VS102816B02	VS102816B02	VS102816B02	VS102816B02
Date Collected	10/20/2016	10/20/2016	10/20/2016	10/21/2016
Date Received	10/22/2016	10/22/2016	10/22/2016	10/22/2016
Date Prepped	10/28/2016	10/28/2016	10/28/2016	10/28/2016
Date Analyzed	10/29/2016	10/29/2016	10/29/2016	10/29/2016
Sample Size (wet)	6.25	6.1	6.19	7.81
% Solid	92.01	91.08	92.76	89.64
File ID	V4011072.D	V4011073.D	V4011074.D	V4011075.D
Units	µg/Kg	µg/Kg	µg/Kg	µg/Kg
Final Volume	5	5	5	5
Dilution	1	1	1	1
Reporting Limit	13.5	14.0	13.4	11.3

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	Result		SSRL	Result		SSRL
ADD	12DBE	1,2-Dibromoethane		U	13.5		U	14.0		U	13.4		U	11.3
A	EB	Ethylbenzene	38.8	JB	13.5	38.3	JB	14.0	39.3	JB	13.4	31.4	JB	11.3
S	2ETHIO	2-Ethylthiophene		U	13.5		U	14.0		U	13.4		U	11.3
A	MPX	p/m-Xylene		U	13.5		U	14.0		U	13.4		U	11.3
O	1N	1-Nonene		U	13.5		U	14.0		U	13.4		U	11.3
P	C9	Nonane		U	13.5		U	14.0		U	13.4		U	11.3
A	STY	Styrene		U	13.5		U	14.0		U	13.4		U	11.3
A	OX	o-Xylene		U	13.5		U	14.0		U	13.4		U	11.3
A	IPB	Isopropylbenzene		U	13.5		U	14.0		U	13.4		U	11.3
A	PROPB	n-Propylbenzene		U	13.5		U	14.0		U	13.4		U	11.3
A	1M3EB	1-Methyl-3-ethylbenzene		U	13.5		U	14.0		U	13.4		U	11.3
A	1M4EB	1-Methyl-4-ethylbenzene		U	13.5		U	14.0		U	13.4		U	11.3
A	135TMB	1,3,5-Trimethylbenzene		U	13.5		U	14.0		U	13.4		U	11.3
O	1D	1-Decene		U	13.5		U	14.0		U	13.4		U	11.3
A	1M2EB	1-Methyl-2-ethylbenzene		U	13.5		U	14.0		U	13.4		U	11.3
P	C10	Decane		U	13.5		U	14.0		U	13.4		U	11.3
A	124TMB	1,2,4-Trimethylbenzene		U	13.5		U	14.0		U	13.4		U	11.3
A	SECBUT	sec-Butylbenzene		U	13.5		U	14.0		U	13.4		U	11.3
A	1M3IPB	1-Methyl-3-isopropylbenzene		U	13.5		U	14.0		U	13.4		U	11.3
A	1M4IPB	1-Methyl-4-isopropylbenzene		U	13.5		U	14.0		U	13.4		U	11.3
A	1M2IPB	1-Methyl-2-isopropylbenzene		U	13.5		U	14.0		U	13.4		U	11.3
A	IN	Indan		U	13.5		U	14.0		U	13.4		U	11.3
A	1M3PB	1-Methyl-3-propylbenzene		U	13.5		U	14.0		U	13.4		U	11.3
A	1M4PB	1-Methyl-4-propylbenzene		U	13.5		U	14.0		U	13.4		U	11.3
A	BUTB	n-Butylbenzene		U	13.5		U	14.0		U	13.4		U	11.3
A	12DM4EB	1,2-Dimethyl-4-ethylbenzene		U	13.5		U	14.0		U	13.4		U	11.3
A	12DEB	1,2-Diethylbenzene		U	13.5		U	14.0		U	13.4		U	11.3
A	1M2PB	1-Methyl-2-propylbenzene		U	13.5		U	14.0		U	13.4		U	11.3
A	14DM2EB	1,4-Dimethyl-2-ethylbenzene		U	13.5		U	14.0		U	13.4		U	11.3
P	C11	Undecane		U	13.5		U	14.0		U	13.4		U	11.3
A	13DM4EB	1,3-Dimethyl-4-ethylbenzene		U	13.5		U	14.0		U	13.4		U	11.3
A	13DM5EB	1,3-Dimethyl-5-ethylbenzene		U	13.5		U	14.0		U	13.4		U	11.3
A	13DM2EB	1,3-Dimethyl-2-ethylbenzene		U	13.5		U	14.0		U	13.4		U	11.3
A	12DM3EB	1,2-Dimethyl-3-ethylbenzene		U	13.5		U	14.0		U	13.4		U	11.3
A	1245TMP	1,2,4,5-Tetramethylbenzene		U	13.5		U	14.0		U	13.4		U	11.3
A	PENTB	Pentylbenzene		U	13.5		U	14.0		U	13.4		U	11.3
P	C12	Dodecane		U	13.5		U	14.0		U	13.4		U	11.3
2	N0	Naphthalene		U	13.5		U	14.0		U	13.4		U	11.3
2	BT0	Benzothiophene		U	13.5		U	14.0		U	13.4		U	11.3
ADD	MMT	MMT		U	13.5		U	14.0		U	13.4		U	11.3
P	C13	Tridecane		U	13.5		U	14.0		U	13.4		U	11.3
A	2MN	2-Methylnaphthalene		U	13.5		U	14.0		U	13.4		U	11.3
A	1MN	1-Methylnaphthalene		U	13.5		U	14.0		U	13.4		U	11.3

Surrogates (% Recovery)				
2-Bromo-1-chloropropane	100	97	115	102
1-Chloro-2-fluorobenzene	104	100	116	104
1,4-Dichlorobutane	75	71	82	73
Dibromofluoromethane	96	96	95	96
Toluene-d8	93	92	91	93
4-Bromofluorobenzene	99	98	98	94

U: The analyte was analyzed for but not detected at the sample specific level reported.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
E: Estimated value, exceeds the upper limit of calibration.
NA: Not Applicable
D: Secondary Dilution Performed
D1: Tertiary Dilution Performed
ª: Value outside of QC Limits.
§: Surrogate value outside of acceptable range.
X: It is not possible to calculate RPD, one result is below the detection limit, the other is above reporting limit.
G: Matrix Interference.
P: Greater than 40% RPD between the two columns, the higher value is reported according to the method.
I: Due to interference, the lower value is reported.
N: Spike recovery outside control limits.
E: Estimated due to Interference. (Metals)
¤: Duplicate outside control limits.
P: Spike compound. (Metals)
J: Below CRDL, Project DL, or RL but greater than or equal to MDL
C: Sample concentration is > 4 times the spike level, recovery limits do not apply. (Metals)
S: Spike Compound. (Organics)
§: RPD criteria not applicable to results less than 5 times the reporting limit. (Metals)
T: Tentatively identified corexit compound.
C: Co-elution.
Z: Result not surrogate corrected.
DL: Surrogate result diluted out of sample.
W: Matrix interference may be present based on chemical reasonableness evaluation.

Project Name:
Project Number: JALK FEE

Client ID	Laboratory Method Bl		Laboratory Method Bl	
Lab ID	WG945616-1		WG946969-1	
Matrix	SOIL		SOIL	
Matrix Description				
Reference Method	4500CN-CE		4500CN-CE	
Batch ID	WG945616		WG946969	
Date Collected	NA		NA	
Date Received	10/25/2016		10/27/2016	
Date Prepped	10/25/2016		10/27/2016	
Date Analyzed	10/26/2016		10/28/2016	
Sample Size(wet)	1.0387	g	1.0842	g
% Solid	100		100	
File ID	161026-H.TXT		161028-c2.txt	
Units	mg/kg		mg/kg	
Final Volume	1		1	
Dilution	1		1	
Reporting Limit	0.93		0.85	

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL
		CYANIDE, TOTAL		U	0.93		U	0.85

Project Name:
Project Number: JALK FEE

Client ID	Laboratory Control S
Lab ID	WG945616-2
Matrix	SOIL
Matrix Description	
Reference Method	4500CN-CE
Batch ID	WG945616
Date Collected	NA
Date Received	10/25/2016
Date Prepped	10/25/2016
Date Analyzed	10/26/2016
Sample Size(wet)	0.2024 g
% Solid	100
File ID	161026-H.TXT
Units	%
Final Volume	1
Dilution	1
Reporting Limit	

Class	Abbrev	Analytes	Result	SSRL	% REC	Spike Conc.	Lower Limit	Upper Limit
		CYANIDE, TOTAL	60		115	52.2	80	120

Project Name:
Project Number: JALK FEE

Client ID	Laboratory Control S
Lab ID	WG946969-2
Matrix	SOIL
Matrix Description	
Reference Method	4500CN-CE
Batch ID	WG946969
Date Collected	NA
Date Received	10/27/2016
Date Prepped	10/27/2016
Date Analyzed	10/28/2016
Sample Size(wet)	0.2 g
% Solid	100
File ID	161028-c2.txt
Units	%
Final Volume	1
Dilution	1
Reporting Limit	

Class	Abbrev	Analytes	Result	SSRL	% REC	Spike Conc.	Lower Limit	Upper Limit	
		CYANIDE, TOTAL	68		130	52.2	80	120	Q

Project Name:
Project Number: JALK FEE

Client ID	S-16-B26	S-16-B26
Lab ID	L1634114-02	WG945616-3
Matrix	SOIL	SOIL
Matrix Description		
Reference Method	4500CN-CE	4500CN-CE
Batch ID	WG945616	WG945616
Date Collected	10/18/2016	NA
Date Received	10/20/2016	10/25/2016
Date Prepped	10/25/2016	10/25/2016
Date Analyzed	10/26/2016	10/26/2016
Sample Size(wet)	1.0619 g	1.0006 g
% Solid	84.8	84.8
File ID	161026-H.TXT	161026-H.TXT
Units	mg/kg	mg/kg
Final Volume	1	1
Dilution	1	1
Reporting Limit	1.1	1.2

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	RPD	RPD Limit	
		CYANIDE, TOTAL		U	1.1	0.26	J	1.2		35	X

Project Name:
Project Number: JALK FEE

Client ID	S-8-B24		S-8-B24	
Lab ID	L1634114-15		WG946969-3	
Matrix	SOIL		SOIL	
Matrix Description				
Reference Method	4500CN-CE		4500CN-CE	
Batch ID	WG946969		WG946969	
Date Collected	10/20/2016		NA	
Date Received	10/22/2016		10/27/2016	
Date Prepped	10/27/2016		10/27/2016	
Date Analyzed	10/28/2016		10/28/2016	
Sample Size(wet)	1.0263	g	1.0143	g
% Solid	88.5		88.5	
File ID	161028-c2.txt		161028-C.TXT	
Units	mg/kg		mg/kg	
Final Volume	1		1	
Dilution	1		1	
Reporting Limit	1.1		1.1	

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	RPD	RPD Limit	
		CYANIDE, TOTAL		U	1.1		U	1.1		35	X

Project Name:
Project Number: JALK FEE

Client ID	S-14-B27		S-14-B27	
Lab ID	L1634114-04		WG945616-4	
Matrix	SOIL		SOIL	
Matrix Description				
Reference Method	4500CN-CE		4500CN-CE	
Batch ID	WG945616		WG945616	
Date Collected	10/18/2016		NA	
Date Received	10/20/2016		10/25/2016	
Date Prepped	10/25/2016		10/25/2016	
Date Analyzed	10/26/2016		10/26/2016	
Sample Size(wet)	1.0134	g	1.0477	g
% Solid	96.5		96.5	
File ID	161026-H.TXT		161026-H.TXT	
Units	mg/kg		%	
Final Volume	1		1	
Dilution	1		1	
Reporting Limit	1.0		0.99	

Class	Abbrev	Analytes	Result		SSRL	Result	SSRL	% REC	Spike Conc.	Lower Limit	Upper Limit
		CYANIDE, TOTAL		U	1.0	7.3	0.99	74	9.9	65	135

Project Name:
Project Number: JALK FEE

Client ID	S-8-B24	S-8-B24
Lab ID	L1634114-15	WG946969-4
Matrix	SOIL	SOIL
Matrix Description		
Reference Method	4500CN-CE	4500CN-CE
Batch ID	WG946969	WG946969
Date Collected	10/20/2016	NA
Date Received	10/22/2016	10/27/2016
Date Prepped	10/27/2016	10/27/2016
Date Analyzed	10/28/2016	10/28/2016
Sample Size(wet)	1.0263 g	1.0827 g
% Solid	88.5	88.5
File ID	161028-c2.txt	161028-C.TXT
Units	mg/kg	%
Final Volume	1	1
Dilution	1	1
Reporting Limit	1.1	1.0

Class	Abbrev	Analytes	Result		SSRL	Result	SSRL	% REC	Spike Conc.	Lower Limit	Upper Limit
		CYANIDE, TOTAL		U	1.1	11	1.0	100	10	65	135

Project Name:
Project Number: JALK FEE

		Client ID	S-16-B26			S-14-B27			S-16-B30			S-6-B28		
		Lab ID	L1634114-02			L1634114-04			L1634114-06			L1634114-07		
		Matrix	SOIL			SOIL			SOIL			SOIL		
		Matrix Description												
		Reference Method	4500CN-CE			4500CN-CE			4500CN-CE			4500CN-CE		
		Batch ID	WG945616			WG945616			WG945616			WG945616		
		Date Collected	10/18/2016			10/18/2016			10/18/2016			10/19/2016		
		Date Received	10/20/2016			10/20/2016			10/20/2016			10/21/2016		
		Date Prepped	10/25/2016			10/25/2016			10/25/2016			10/25/2016		
		Date Analyzed	10/26/2016			10/26/2016			10/26/2016			10/26/2016		
		Sample Size(wet)	1.0619	g		1.0134	g		1.0845	g		1.0243	g	
		% Solid	84.8			96.5			83.3			84.6		
		File ID	161026-H.TXT			161026-H.TXT			161026-H.TXT			161026-h1.txt		
		Units	mg/kg			mg/kg			mg/kg			mg/kg		
		Final Volume	1			1			1			1		
		Dilution	1			1			1			1		
		Reporting Limit	1.1			1.0			1.1			1.2		
Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	Result		SSRL	Result		SSRL
		CYANIDE, TOTAL		U	1.1		U	1.0		U	1.1		U	1.2

Project Name:
Project Number: JALK FEE

		Client ID	S-9-B32			S-8-B24			S-5-B34			S-9-B34		
		Lab ID	L1634114-12			L1634114-15			L1634114-20			L1634114-21		
		Matrix	SOIL			SOIL			SOIL			SOIL		
		Matrix Description												
		Reference Method	4500CN-CE			4500CN-CE			4500CN-CE			4500CN-CE		
		Batch ID	WG945616			WG946969			WG945616			WG945616		
		Date Collected	10/19/2016			10/20/2016			10/20/2016			10/20/2016		
		Date Received	10/21/2016			10/22/2016			10/22/2016			10/22/2016		
		Date Prepped	10/25/2016			10/27/2016			10/25/2016			10/25/2016		
		Date Analyzed	10/26/2016			10/28/2016			10/26/2016			10/26/2016		
		Sample Size(wet)	1.0962	g		1.0263	g		1.0123	g		1.064	g	
		% Solid	87.6			88.5			92			91.1		
		File ID	161026-h1.txt			161028-c2.txt			161026-h1.txt			161026-h1.txt		
		Units	mg/kg			mg/kg			mg/kg			mg/kg		
		Final Volume	1			1			1			1		
		Dilution	1			1			1			1		
		Reporting Limit	1.0			1.1			1.1			1.0		
Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	Result		SSRL	Result		SSRL
		CYANIDE, TOTAL		U	1.0		U	1.1		U	1.1		U	1.0

Project Name:
Project Number: JALK FEE

Client ID	S-3-B35		S-5-B36		S-10-B33	
Lab ID	L1634114-22		L1634114-23		L1634114-28	
Matrix	SOIL		SOIL		SOIL	
Matrix Description						
Reference Method	4500CN-CE		4500CN-CE		4500CN-CE	
Batch ID	WG945616		WG945616		WG945616	
Date Collected	10/20/2016		10/21/2016		10/21/2016	
Date Received	10/22/2016		10/22/2016		10/22/2016	
Date Prepped	10/25/2016		10/25/2016		10/25/2016	
Date Analyzed	10/26/2016		10/26/2016		10/26/2016	
Sample Size(wet)	1.0304	g	1.0908	g	1.0528	g
% Solid	92.8		89.6		87.4	
File ID	161026-h1.txt		161026-h1.txt		161026-h1.txt	
Units	mg/kg		mg/kg		mg/kg	
Final Volume	1		1		1	
Dilution	1		1		1	
Reporting Limit	1.0		1.0		1.1	

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	Result		SSRL
		CYANIDE, TOTAL		U	1.0		U	1.0		U	1.1

Project Name:
Project Number: JALK FEE

Client ID	Laboratory Method Bl	Laboratory Method Bl	Laboratory Method Bl	Laboratory Method Bl
Lab ID	WG945382-1	WG945382-1	WG945385-1	WG945387-1
Matrix	SOIL	SOIL	SOIL	SOIL
Matrix Description				
Reference Method	6020A	6020A	6020A	6020A
Batch ID	WG945382	WG945382	WG945385	WG945387
Date Collected	NA	NA	NA	NA
Date Received	10/25/2016	10/25/2016	10/25/2016	10/25/2016
Date Prepped	10/26/2016	10/26/2016	10/26/2016	10/26/2016
Date Analyzed	10/27/2016	10/31/2016	10/31/2016	10/28/2016
Sample Size(wet)	1 g	1 g	1 g	1 g
% Solid	100	100	100	100
File ID				
Units	mg/kg	mg/kg	mg/kg	mg/kg
Final Volume	50	50	50	50
Dilution	2	2	2	2
Reporting Limit	0.020	0.050	0.050	0.500

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	Result		SSRL	Result		SSRL
Metals	Al	ALUMINUM, TOTAL		U	10.0									
Metals	Sb	ANTIMONY, TOTAL							0.016	J	0.050			
Metals	As	ARSENIC, TOTAL		U	0.050									
Metals	Ba	BARIUM, TOTAL		U	0.300									
Metals	Be	BERYLLIUM, TOTAL		U	0.030									
Metals	B	BORON, TOTAL	0.102	J	0.500									
Metals	Cd	CADMIUM, TOTAL		U	0.020									
Metals	Ca	CALCIUM, TOTAL		U	50.0									
Metals	Cr	CHROMIUM, TOTAL		U	0.200									
Metals	Co	COBALT, TOTAL		U	0.050									
Metals	Cu	COPPER, TOTAL		U	0.200									
Metals	Fe	IRON, TOTAL		U	20.0									
Metals	Pb	LEAD, TOTAL		U	0.060									
Metals	Mg	MAGNESIUM, TOTAL		U	10.0									
Metals	Mn	MANGANESE, TOTAL		U	0.200									
Metals	Mo	MOLYBDENUM, TOTAL				0.049	J	0.050						
Metals	Ni	NICKEL, TOTAL		U	0.100									
Metals	K	POTASSIUM, TOTAL	1.94	J	10.0									
Metals	Se	SELENIUM, TOTAL	0.031	J	0.100									
Metals	Ag	SILVER, TOTAL								U	0.050			
Metals	Na	SODIUM, TOTAL	1.13	J	10.0									
Metals	Sr	STRONTIUM, TOTAL		U	0.100									
Metals	Tl	THALLIUM, TOTAL		U	0.020									
Metals	Sn	TIN, TOTAL								U	0.100			
Metals	Ti	TITANIUM, TOTAL				0.032	J	0.050						
Metals	W	TUNGSTEN, TOTAL											U	0.500
Metals	V	VANADIUM, TOTAL		U	0.100									
Metals	Zn	ZINC, TOTAL		U	1.00									

Project Name:
Project Number: JALK FEE

Client ID	Laboratory Control S	Laboratory Control S
Lab ID	WG945382-2	WG945382-2
Matrix	SOIL	SOIL
Matrix Description		
Reference Method	6020A	6020A
Batch ID	WG945382	WG945382
Date Collected	NA	NA
Date Received	10/25/2016	10/25/2016
Date Prepped	10/26/2016	10/26/2016
Date Analyzed	10/27/2016	10/31/2016
Sample Size(wet)	1.06 g	1.06 g
% Solid	100	100
File ID		
Units	%	%
Final Volume	50	50
Dilution	10	50
Reporting Limit	0.0943	1.18

Class	Abbrev	Analytes	Result	SSRL	% REC	Spike Conc.	Lower Limit	Upper Limit	Result	SSRL	% REC	Spike Conc.
Metals	Al	ALUMINUM, TOTAL	5140	47.2	67	7620	75	125				
Metals	Sb	ANTIMONY, TOTAL										
Metals	As	ARSENIC, TOTAL	134	0.236	98	137	75	125				
Metals	Ba	BARIUM, TOTAL	193	1.42	98	197	75	125				
Metals	Be	BERYLLIUM, TOTAL	92.9	0.142	101	91.8	75	125				
Metals	B	BORON, TOTAL	110	2.36	92	119	75	125				
Metals	Cd	CADMIUM, TOTAL	87.6	0.094	106	82.6	75	125				
Metals	Ca	CALCIUM, TOTAL	4810	236	90	5370	75	125				
Metals	Cr	CHROMIUM, TOTAL	136	0.943	101	135	75	125				
Metals	Co	COBALT, TOTAL	155	0.236	107	145	75	125				
Metals	Cu	COPPER, TOTAL	172	0.943	105	163	75	125				
Metals	Fe	IRON, TOTAL	9330	94.3	66	14200	75	125				
Metals	Pb	LEAD, TOTAL	139	0.283	101	138	75	125				
Metals	Mg	MAGNESIUM, TOTAL	2120	47.2	85	2490	75	125				
Metals	Mn	MANGANESE, TOTAL	289	0.943	99	292	75	125				
Metals	Mo	MOLYBDENUM, TOTAL							105	1.18	96	109
Metals	Ni	NICKEL, TOTAL	134	0.472	110	122	75	125				
Metals	K	POTASSIUM, TOTAL	1720	47.2	76	2260	75	125				
Metals	Se	SELENIUM, TOTAL	167	0.472	99	168	75	125				
Metals	Ag	SILVER, TOTAL										
Metals	Na	SODIUM, TOTAL	759	47.2	92	820	75	125				
Metals	Sr	STRONTIUM, TOTAL	98.6	0.472	100	99	75	125				
Metals	Tl	THALLIUM, TOTAL	138	0.094	104	133	75	125				
Metals	Sn	TIN, TOTAL										
Metals	Ti	TITANIUM, TOTAL							248	1.18	83	298
Metals	W	TUNGSTEN, TOTAL										
Metals	V	VANADIUM, TOTAL	100	0.472	92	108	75	125				
Metals	Zn	ZINC, TOTAL	188	4.72	103	183	75	125				

Project Name:
Project Number: JALK FEE

Client ID	Laboratory Control S	Laboratory Control S
Lab ID	WG945385-2	WG945387-2
Matrix	SOIL	SOIL
Matrix Description		
Reference Method	6020A	6020A
Batch ID	WG945385	WG945387
Date Collected	NA	NA
Date Received	10/25/2016	10/25/2016
Date Prepped	10/26/2016	10/26/2016
Date Analyzed	10/31/2016	10/28/2016
Sample Size(wet)	0.96 g	1 g
% Solid	100	100
File ID		
Units	%	%
Final Volume	50	50
Dilution	10	2
Reporting Limit	0.26	0.5

Class	Abbrev	Analytes	Lower Limit	Upper Limit	Result	SSRL	% REC	Spike Conc.	Lower Limit	Upper Limit	Result	SSRL	% REC	Spike Conc.	Lower Limit	Upper Limit
Metals	Al	ALUMINUM, TOTAL														
Metals	Sb	ANTIMONY, TOTAL			203	0.260	198	102	75	125						
Metals	As	ARSENIC, TOTAL														
Metals	Ba	BARIUM, TOTAL														
Metals	Be	BERYLLIUM, TOTAL														
Metals	B	BORON, TOTAL														
Metals	Cd	CADMIUM, TOTAL														
Metals	Ca	CALCIUM, TOTAL														
Metals	Cr	CHROMIUM, TOTAL														
Metals	Co	COBALT, TOTAL														
Metals	Cu	COPPER, TOTAL														
Metals	Fe	IRON, TOTAL														
Metals	Pb	LEAD, TOTAL														
Metals	Mg	MAGNESIUM, TOTAL														
Metals	Mn	MANGANESE, TOTAL														
Metals	Mo	MOLYBDENUM, TOTAL	75	125												
Metals	Ni	NICKEL, TOTAL														
Metals	K	POTASSIUM, TOTAL														
Metals	Se	SELENIUM, TOTAL														
Metals	Ag	SILVER, TOTAL			27.3	0.260	105	26.1	75	125						
Metals	Na	SODIUM, TOTAL														
Metals	Sr	STRONTIUM, TOTAL														
Metals	Tl	THALLIUM, TOTAL														
Metals	Sn	TIN, TOTAL			135	0.521	112	120	75	125						
Metals	Ti	TITANIUM, TOTAL	75	125												
Metals	W	TUNGSTEN, TOTAL									97.0	0.500	97	100	75	125
Metals	V	VANADIUM, TOTAL														
Metals	Zn	ZINC, TOTAL														

Project Name:
Project Number: JALK FEE

Client ID	S-16-B26	S-16-B26
Lab ID	L1634114-02	WG945382-3
Matrix	SOIL	SOIL
Matrix Description		
Reference Method	6020A	6020A
Batch ID	WG945382	WG945382
Date Collected	10/18/2016	NA
Date Received	10/20/2016	10/25/2016
Date Prepped	10/26/2016	10/26/2016
Date Analyzed	10/27/2016	10/27/2016
Sample Size(wet)	1.97 g	2 g
% Solid	84.8	84.8
File ID		
Units	mg/kg	mg/kg
Final Volume	50	50
Dilution	2	2
Reporting Limit	0.012	0.012

Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	RPD	RPD Limit	
Metals	Al	ALUMINUM, TOTAL							
Metals	Sb	ANTIMONY, TOTAL							
Metals	As	ARSENIC, TOTAL	1.12	0.030	1.07	0.030	5	20	
Metals	Ba	BARIUM, TOTAL	128	0.180	140	0.177	9	20	
Metals	Be	BERYLLIUM, TOTAL	0.438	0.018	0.418	0.018	5	20	
Metals	B	BORON, TOTAL	3.68	0.299	3.72	0.295	1	20	
Metals	Cd	CADMIUM, TOTAL	0.046	0.012	0.060	0.012	27	20	Q
Metals	Ca	CALCIUM, TOTAL							
Metals	Cr	CHROMIUM, TOTAL	23.8	0.120	23.2	0.118	3	20	
Metals	Co	COBALT, TOTAL	9.42	0.030	10.2	0.030	8	20	
Metals	Cu	COPPER, TOTAL	24.4	0.120	25.2	0.118	3	20	
Metals	Fe	IRON, TOTAL							
Metals	Pb	LEAD, TOTAL	4.28	0.036	5.48	0.035	25	20	Q
Metals	Mg	MAGNESIUM, TOTAL							
Metals	Mn	MANGANESE, TOTAL							
Metals	Mo	MOLYBDENUM, TOTAL							
Metals	Ni	NICKEL, TOTAL	20.0	0.060	20.8	0.059	4	20	
Metals	K	POTASSIUM, TOTAL							
Metals	Se	SELENIUM, TOTAL	0.069	0.060	0.041 J	0.059		20	NC
Metals	Ag	SILVER, TOTAL							
Metals	Na	SODIUM, TOTAL							
Metals	Sr	STRONTIUM, TOTAL	48.4	0.060	50.4	0.059	4	20	
Metals	Tl	THALLIUM, TOTAL	0.140	0.012	0.133	0.012	5	20	
Metals	Sn	TIN, TOTAL							
Metals	Ti	TITANIUM, TOTAL							
Metals	W	TUNGSTEN, TOTAL							
Metals	V	VANADIUM, TOTAL	27.8	0.060	27.4	0.059	1	20	
Metals	Zn	ZINC, TOTAL	75.9	0.599	75.6	0.590	0	20	

Project Name:
Project Number: JALK FEE

Client ID	S-16-B26	S-16-B26	S-16-B26	S-16-B26
Lab ID	L1634114-02	WG945382-3	L1634114-02	WG945382-3
Matrix	SOIL	SOIL	SOIL	SOIL
Matrix Description				
Reference Method	6020A	6020A	6020A	6020A
Batch ID	WG945382	WG945382	WG945382	WG945382
Date Collected	10/18/2016	NA	10/18/2016	NA
Date Received	10/20/2016	10/25/2016	10/20/2016	10/25/2016
Date Prepped	10/26/2016	10/26/2016	10/26/2016	10/26/2016
Date Analyzed	10/27/2016	10/27/2016	10/27/2016	10/27/2016
Sample Size(wet)	1.97 g	2 g	1.97 g	2 g
% Solid	84.8	84.8	84.8	84.8
File ID				
Units	mg/kg	mg/kg	mg/kg	mg/kg
Final Volume	50	50	50	50
Dilution	10	10	50	50
Reporting Limit	0.599	0.590	150	147

Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	RPD	RPD Limit		Result	SSRL	Result	SSRL	RPD	RPD Limit
Metals	Al	ALUMINUM, TOTAL								12800	150	12600	147	2	20
Metals	Sb	ANTIMONY, TOTAL													
Metals	As	ARSENIC, TOTAL													
Metals	Ba	BARIUM, TOTAL													
Metals	Be	BERYLLIUM, TOTAL													
Metals	B	BORON, TOTAL													
Metals	Cd	CADMIUM, TOTAL													
Metals	Ca	CALCIUM, TOTAL								5260	748	5320	737	1	20
Metals	Cr	CHROMIUM, TOTAL													
Metals	Co	COBALT, TOTAL													
Metals	Cu	COPPER, TOTAL													
Metals	Fe	IRON, TOTAL								23400	299	22600	295	3	20
Metals	Pb	LEAD, TOTAL													
Metals	Mg	MAGNESIUM, TOTAL								11900	150	11900	147	0	20
Metals	Mn	MANGANESE, TOTAL	420	0.599	575	0.590	31	20	Q						
Metals	Mo	MOLYBDENUM, TOTAL													
Metals	Ni	NICKEL, TOTAL													
Metals	K	POTASSIUM, TOTAL								4160	150	4080	147	2	20
Metals	Se	SELENIUM, TOTAL													
Metals	Ag	SILVER, TOTAL													
Metals	Na	SODIUM, TOTAL								403	150	393	147	3	20
Metals	Sr	STRONTIUM, TOTAL													
Metals	Tl	THALLIUM, TOTAL													
Metals	Sn	TIN, TOTAL													
Metals	Ti	TITANIUM, TOTAL													
Metals	W	TUNGSTEN, TOTAL													
Metals	V	VANADIUM, TOTAL													
Metals	Zn	ZINC, TOTAL													

Project Name:
Project Number: JALK FEE

Client ID	S-16-B26	S-16-B26	S-16-B26	S-16-B26
Lab ID	L1634114-02	WG945382-3	L1634114-02	WG945382-3
Matrix	SOIL	SOIL	SOIL	SOIL
Matrix Description				
Reference Method	6020A	6020A	6020A	6020A
Batch ID	WG945382	WG945382	WG945382	WG945382
Date Collected	10/18/2016	NA	10/18/2016	NA
Date Received	10/20/2016	10/25/2016	10/20/2016	10/25/2016
Date Prepped	10/26/2016	10/26/2016	10/26/2016	10/26/2016
Date Analyzed	10/31/2016	10/31/2016	10/31/2016	10/31/2016
Sample Size(wet)	1.97 g	2 g	1.97 g	2 g
% Solid	84.8	84.8	84.8	84.8
File ID				
Units	mg/kg	mg/kg	mg/kg	mg/kg
Final Volume	50	50	50	50
Dilution	2	2	50	50
Reporting Limit	0.030	0.030	0.748	0.737

Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	RPD	RPD Limit	Result	SSRL	Result	SSRL	RPD	RPD Limit
Metals	Al	ALUMINUM, TOTAL												
Metals	Sb	ANTIMONY, TOTAL												
Metals	As	ARSENIC, TOTAL												
Metals	Ba	BARIUM, TOTAL												
Metals	Be	BERYLLIUM, TOTAL												
Metals	B	BORON, TOTAL												
Metals	Cd	CADMIUM, TOTAL												
Metals	Ca	CALCIUM, TOTAL												
Metals	Cr	CHROMIUM, TOTAL												
Metals	Co	COBALT, TOTAL												
Metals	Cu	COPPER, TOTAL												
Metals	Fe	IRON, TOTAL												
Metals	Pb	LEAD, TOTAL												
Metals	Mg	MAGNESIUM, TOTAL												
Metals	Mn	MANGANESE, TOTAL												
Metals	Mo	MOLYBDENUM, TOTAL	0.091	0.030	0.096	0.030	5	20						
Metals	Ni	NICKEL, TOTAL												
Metals	K	POTASSIUM, TOTAL												
Metals	Se	SELENIUM, TOTAL												
Metals	Ag	SILVER, TOTAL												
Metals	Na	SODIUM, TOTAL												
Metals	Sr	STRONTIUM, TOTAL												
Metals	Tl	THALLIUM, TOTAL												
Metals	Sn	TIN, TOTAL												
Metals	Ti	TITANIUM, TOTAL							869	0.748	825	0.737	5	20
Metals	W	TUNGSTEN, TOTAL												
Metals	V	VANADIUM, TOTAL												
Metals	Zn	ZINC, TOTAL												

Project Name:
Project Number: JALK FEE

Client ID	S-16-B26	S-16-B26	S-16-B26	S-16-B26
Lab ID	L1634114-02	WG945385-3	L1634114-02	WG945387-3
Matrix	SOIL	SOIL	SOIL	SOIL
Matrix Description				
Reference Method	6020A	6020A	6020A	6020A
Batch ID	WG945385	WG945385	WG945387	WG945387
Date Collected	10/18/2016	NA	10/18/2016	NA
Date Received	10/20/2016	10/25/2016	10/20/2016	10/25/2016
Date Prepped	10/26/2016	10/26/2016	10/26/2016	10/26/2016
Date Analyzed	10/31/2016	10/31/2016	10/31/2016	10/31/2016
Sample Size(wet)	2.02 g	1.84 g	1.97 g	2 g
% Solid	84.8	84.8	84.8	84.8
File ID				
Units	mg/kg	mg/kg	mg/kg	mg/kg
Final Volume	50	50	50	50
Dilution	2	2	10	10
Reporting Limit	0.029	0.032	1.50	1.47

Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	RPD	RPD Limit		Result	SSRL	Result	SSRL	RPD	RPD Limit	
Metals	Al	ALUMINUM, TOTAL														
Metals	Sb	ANTIMONY, TOTAL	0.808	0.029	0.629	0.032	25	20	Q							
Metals	As	ARSENIC, TOTAL														
Metals	Ba	BARIUM, TOTAL														
Metals	Be	BERYLLIUM, TOTAL														
Metals	B	BORON, TOTAL														
Metals	Cd	CADMIUM, TOTAL														
Metals	Ca	CALCIUM, TOTAL														
Metals	Cr	CHROMIUM, TOTAL														
Metals	Co	COBALT, TOTAL														
Metals	Cu	COPPER, TOTAL														
Metals	Fe	IRON, TOTAL														
Metals	Pb	LEAD, TOTAL														
Metals	Mg	MAGNESIUM, TOTAL														
Metals	Mn	MANGANESE, TOTAL														
Metals	Mo	MOLYBDENUM, TOTAL														
Metals	Ni	NICKEL, TOTAL														
Metals	K	POTASSIUM, TOTAL														
Metals	Se	SELENIUM, TOTAL														
Metals	Ag	SILVER, TOTAL	0.146	0.029	0.148	0.032	1	20								
Metals	Na	SODIUM, TOTAL														
Metals	Sr	STRONTIUM, TOTAL														
Metals	Tl	THALLIUM, TOTAL														
Metals	Sn	TIN, TOTAL	0.537	0.058	0.456	0.064	16	20								
Metals	Ti	TITANIUM, TOTAL														
Metals	W	TUNGSTEN, TOTAL								0.356 J	1.50	0.380 J	1.47		20	NC
Metals	V	VANADIUM, TOTAL														
Metals	Zn	ZINC, TOTAL														

Project Name:
Project Number: JALK FEE

Client ID	S-16-B26	S-16-B26
Lab ID	L1634114-02	WG945382-4
Matrix	SOIL	SOIL
Matrix Description		
Reference Method	6020A	6020A
Batch ID	WG945382	WG945382
Date Collected	10/18/2016	NA
Date Received	10/20/2016	10/25/2016
Date Prepped	10/26/2016	10/26/2016
Date Analyzed	10/27/2016	10/27/2016
Sample Size(wet)	1.97 g	1.86 g
% Solid	84.8	84.8
File ID		
Units	mg/kg	%
Final Volume	50	50
Dilution	2	2
Reporting Limit	0.012	0.0127

Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	% REC	Spike Conc.	Lower Limit	Upper Limit	
Metals	Al	ALUMINUM, TOTAL									
Metals	Sb	ANTIMONY, TOTAL									
Metals	As	ARSENIC, TOTAL	1.12	0.030	130	0.0317	102	127	75	125	
Metals	Ba	BARIUM, TOTAL	128	0.180	285	0.19	124	127	75	125	
Metals	Be	BERYLLIUM, TOTAL	0.438	0.018	62.2	0.019	97	63.4	75	125	
Metals	B	BORON, TOTAL	3.68	0.299	98.0	0.317	74	127	75	125	Q
Metals	Cd	CADMIUM, TOTAL	0.046	0.012	65.2	0.0127	103	63.4	75	125	
Metals	Ca	CALCIUM, TOTAL									
Metals	Cr	CHROMIUM, TOTAL	23.8	0.120	158	0.127	106	127	75	125	
Metals	Co	COBALT, TOTAL	9.42	0.030	135	0.0317	99	127	75	125	
Metals	Cu	COPPER, TOTAL	24.4	0.120	150	0.127	99	127	75	125	
Metals	Fe	IRON, TOTAL									
Metals	Pb	LEAD, TOTAL	4.28	0.036	111	0.038	84	127	75	125	
Metals	Mg	MAGNESIUM, TOTAL									
Metals	Mn	MANGANESE, TOTAL									
Metals	Mo	MOLYBDENUM, TOTAL									
Metals	Ni	NICKEL, TOTAL	20.0	0.060	148	0.0634	101	127	75	125	
Metals	K	POTASSIUM, TOTAL									
Metals	Se	SELENIUM, TOTAL	0.069	0.060	134	0.0634	106	127	75	125	
Metals	Ag	SILVER, TOTAL									
Metals	Na	SODIUM, TOTAL									
Metals	Sr	STRONTIUM, TOTAL	48.4	0.060	189	0.0634	111	127	75	125	
Metals	Tl	THALLIUM, TOTAL	0.140	0.012	105	0.0127	83	127	75	125	
Metals	Sn	TIN, TOTAL									
Metals	Ti	TITANIUM, TOTAL									
Metals	W	TUNGSTEN, TOTAL									
Metals	V	VANADIUM, TOTAL	27.8	0.060	161	0.0634	105	127	75	125	
Metals	Zn	ZINC, TOTAL	75.9	0.599	199	0.634	97	127	75	125	

Project Name:
Project Number: JALK FEE

Client ID	S-16-B26	S-16-B26	S-16-B26	S-16-B26
Lab ID	L1634114-02	WG945382-4	L1634114-02	WG945382-4
Matrix	SOIL	SOIL	SOIL	SOIL
Matrix Description				
Reference Method	6020A	6020A	6020A	6020A
Batch ID	WG945382	WG945382	WG945382	WG945382
Date Collected	10/18/2016	NA	10/18/2016	NA
Date Received	10/20/2016	10/25/2016	10/20/2016	10/25/2016
Date Prepped	10/26/2016	10/26/2016	10/26/2016	10/26/2016
Date Analyzed	10/27/2016	10/27/2016	10/27/2016	10/27/2016
Sample Size(wet)	1.97 g	1.86 g	1.97 g	1.86 g
% Solid	84.8	84.8	84.8	84.8
File ID				
Units	mg/kg	%	mg/kg	%
Final Volume	50	50	50	50
Dilution	10	10	50	50
Reporting Limit	0.599	0.634	150	158

Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	% REC	Spike Conc.	Lower Limit	Upper Limit	Result	SSRL	Result	SSRL	% REC	Spike Conc.	Lower Limit	Upper Limit
Metals	Al	ALUMINUM, TOTAL									12800	150	13600	158	126	634	75	125 Q
Metals	Sb	ANTIMONY, TOTAL																
Metals	As	ARSENIC, TOTAL																
Metals	Ba	BARIUM, TOTAL																
Metals	Be	BERYLLIUM, TOTAL																
Metals	B	BORON, TOTAL																
Metals	Cd	CADMIUM, TOTAL																
Metals	Ca	CALCIUM, TOTAL									5260	748	6010	792	118	634	75	125
Metals	Cr	CHROMIUM, TOTAL																
Metals	Co	COBALT, TOTAL																
Metals	Cu	COPPER, TOTAL																
Metals	Fe	IRON, TOTAL									23400	299	24500	317	174	634	75	125 Q
Metals	Pb	LEAD, TOTAL																
Metals	Mg	MAGNESIUM, TOTAL									11900	150	13200	158	205	634	75	125 Q
Metals	Mn	MANGANESE, TOTAL	420	0.599	1210	0.634	609	127	75	125 Q								
Metals	Mo	MOLYBDENUM, TOTAL																
Metals	Ni	NICKEL, TOTAL																
Metals	K	POTASSIUM, TOTAL									4160	150	4700	158	85	634	75	125
Metals	Se	SELENIUM, TOTAL																
Metals	Ag	SILVER, TOTAL																
Metals	Na	SODIUM, TOTAL									403	150	987	158	92	634	75	125
Metals	Sr	STRONTIUM, TOTAL																
Metals	Tl	THALLIUM, TOTAL																
Metals	Sn	TIN, TOTAL																
Metals	Ti	TITANIUM, TOTAL																
Metals	W	TUNGSTEN, TOTAL																
Metals	V	VANADIUM, TOTAL																
Metals	Zn	ZINC, TOTAL																

Project Name:
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		Client ID	S-16-B26		S-16-B26						S-16-B26		S-16-B26						
		Lab ID	L1634114-02		WG945382-4						L1634114-02		WG945382-4						
		Matrix	SOIL		SOIL						SOIL		SOIL						
		Matrix Description																	
		Reference Method	6020A		6020A						6020A		6020A						
		Batch ID	WG945382		WG945382						WG945382		WG945382						
		Date Collected	10/18/2016		NA						10/18/2016		NA						
		Date Received	10/20/2016		10/25/2016						10/20/2016		10/25/2016						
		Date Prepped	10/26/2016		10/26/2016						10/26/2016		10/26/2016						
		Date Analyzed	10/31/2016		10/31/2016						10/31/2016		10/31/2016						
		Sample Size(wet)	1.97 g		1.86 g						1.97 g		1.86 g						
		% Solid	84.8		84.8						84.8		84.8						
		File ID																	
		Units	mg/kg		%						mg/kg		%						
		Final Volume	50		50						50		50						
		Dilution	2		2						50		50						
		Reporting Limit	0.030		0.0317						0.748		0.792						
Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	% REC	Spike Conc.	Lower Limit	Upper Limit	Result	SSRL	Result	SSRL	% REC	Spike Conc.	Lower Limit	Upper Limit	
Metals	Al	ALUMINUM, TOTAL																	
Metals	Sb	ANTIMONY, TOTAL																	
Metals	As	ARSENIC, TOTAL																	
Metals	Ba	BARIUM, TOTAL																	
Metals	Be	BERYLLIUM, TOTAL																	
Metals	B	BORON, TOTAL																	
Metals	Cd	CADMIUM, TOTAL																	
Metals	Ca	CALCIUM, TOTAL																	
Metals	Cr	CHROMIUM, TOTAL																	
Metals	Co	COBALT, TOTAL																	
Metals	Cu	COPPER, TOTAL																	
Metals	Fe	IRON, TOTAL																	
Metals	Pb	LEAD, TOTAL																	
Metals	Mg	MAGNESIUM, TOTAL																	
Metals	Mn	MANGANESE, TOTAL																	
Metals	Mo	MOLYBDENUM, TOTAL	0.091	0.030	110	0.0317	87	127	75	125									
Metals	Ni	NICKEL, TOTAL																	
Metals	K	POTASSIUM, TOTAL																	
Metals	Se	SELENIUM, TOTAL																	
Metals	Ag	SILVER, TOTAL																	
Metals	Na	SODIUM, TOTAL																	
Metals	Sr	STRONTIUM, TOTAL																	
Metals	Tl	THALLIUM, TOTAL																	
Metals	Sn	TIN, TOTAL																	
Metals	Ti	TITANIUM, TOTAL									869	0.748	930	0.792	48	127	75	125	Q
Metals	W	TUNGSTEN, TOTAL																	
Metals	V	VANADIUM, TOTAL																	
Metals	Zn	ZINC, TOTAL																	

Project Name:
Project Number: JALK FEE

		Client ID	S-16-B26		S-16-B26						S-16-B26		S-16-B26					
		Lab ID	L1634114-02		WG945385-4						L1634114-02		WG945387-4					
		Matrix	SOIL		SOIL						SOIL		SOIL					
		Matrix Description																
		Reference Method	6020A		6020A						6020A		6020A					
		Batch ID	WG945385		WG945385						WG945387		WG945387					
		Date Collected	10/18/2016		NA						10/18/2016		NA					
		Date Received	10/20/2016		10/25/2016						10/20/2016		10/25/2016					
		Date Prepped	10/26/2016		10/26/2016						10/26/2016		10/26/2016					
		Date Analyzed	10/31/2016		10/31/2016						10/31/2016		10/31/2016					
		Sample Size(wet)	2.02 g		1.85 g						1.97 g		1.97 g					
		% Solid	84.8		84.8						84.8		84.8					
		File ID																
		Units	mg/kg		%						mg/kg		%					
		Final Volume	50		50						50		50					
		Dilution	2		2						10		10					
		Reporting Limit	0.029		0.0319						1.50		1.5					
Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	% REC	Spike Conc.	Lower Limit	Upper Limit	Result	SSRL	Result	SSRL	% REC	Spike Conc.	Lower Limit	Upper Limit
Metals	Al	ALUMINUM, TOTAL																
Metals	Sb	ANTIMONY, TOTAL	0.808	0.029	2.07	0.0319	99	1.27	75	125								
Metals	As	ARSENIC, TOTAL																
Metals	Ba	BARIUM, TOTAL																
Metals	Be	BERYLLIUM, TOTAL																
Metals	B	BORON, TOTAL																
Metals	Cd	CADMIUM, TOTAL																
Metals	Ca	CALCIUM, TOTAL																
Metals	Cr	CHROMIUM, TOTAL																
Metals	Co	COBALT, TOTAL																
Metals	Cu	COPPER, TOTAL																
Metals	Fe	IRON, TOTAL																
Metals	Pb	LEAD, TOTAL																
Metals	Mg	MAGNESIUM, TOTAL																
Metals	Mn	MANGANESE, TOTAL																
Metals	Mo	MOLYBDENUM, TOTAL																
Metals	Ni	NICKEL, TOTAL																
Metals	K	POTASSIUM, TOTAL																
Metals	Se	SELENIUM, TOTAL																
Metals	Ag	SILVER, TOTAL	0.146	0.029	1.65	0.0319	118	1.27	75	125								
Metals	Na	SODIUM, TOTAL																
Metals	Sr	STRONTIUM, TOTAL																
Metals	Tl	THALLIUM, TOTAL																
Metals	Sn	TIN, TOTAL	0.537	0.058	306	0.0637	95.8	319	75	125								
Metals	Ti	TITANIUM, TOTAL																
Metals	W	TUNGSTEN, TOTAL									0.356 J	1.50	47.2	1.5	79	59.9	75	125
Metals	V	VANADIUM, TOTAL																
Metals	Zn	ZINC, TOTAL																

Project Name:
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Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL
		Client ID	S-16-B26		S-16-B26		S-16-B26		S-16-B26		S-16-B26		S-16-B26	
		Lab ID	L1634114-02		L1634114-02		L1634114-02		L1634114-02		L1634114-02		L1634114-02	
		Matrix	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
		Matrix Description												
		Reference Method	6020A		6020A		6020A		6020A		6020A		6020A	
		Batch ID	WG945382		WG945382		WG945382		WG945382		WG945382		WG945385	
		Date Collected	10/18/2016		10/18/2016		10/18/2016		10/18/2016		10/18/2016		10/18/2016	
		Date Received	10/20/2016		10/20/2016		10/20/2016		10/20/2016		10/20/2016		10/20/2016	
		Date Prepped	10/26/2016		10/26/2016		10/26/2016		10/26/2016		10/26/2016		10/26/2016	
		Date Analyzed	10/27/2016		10/27/2016		10/27/2016		10/31/2016		10/31/2016		10/31/2016	
		Sample Size(wet)	1.97 g		1.97 g		1.97 g		1.97 g		1.97 g		2.02 g	
		% Solid	84.8		84.8		84.8		84.8		84.8		84.8	
		File ID												
		Units	mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
		Final Volume	50		50		50		50		50		50	
		Dilution	2		10		50		2		50		2	
		Reporting Limit	0.012		0.599		150		0.030		0.748		0.029	
Metals	Al	ALUMINUM, TOTAL					12800	150						
Metals	Sb	ANTIMONY, TOTAL											0.808	0.029
Metals	As	ARSENIC, TOTAL	1.12	0.030										
Metals	Ba	BARIUM, TOTAL	128	0.180										
Metals	Be	BERYLLIUM, TOTAL	0.438	0.018										
Metals	B	BORON, TOTAL	3.68	0.299										
Metals	Cd	CADMIUM, TOTAL	0.046	0.012										
Metals	Ca	CALCIUM, TOTAL					5260	748						
Metals	Cr	CHROMIUM, TOTAL	23.8	0.120										
Metals	Co	COBALT, TOTAL	9.42	0.030										
Metals	Cu	COPPER, TOTAL	24.4	0.120										
Metals	Fe	IRON, TOTAL					23400	299						
Metals	Pb	LEAD, TOTAL	4.28	0.036										
Metals	Mg	MAGNESIUM, TOTAL					11900	150						
Metals	Mn	MANGANESE, TOTAL			420	0.599								
Metals	Mo	MOLYBDENUM, TOTAL							0.091	0.030				
Metals	Ni	NICKEL, TOTAL	20.0	0.060										
Metals	K	POTASSIUM, TOTAL					4160	150						
Metals	Se	SELENIUM, TOTAL	0.069	0.060										
Metals	Ag	SILVER, TOTAL											0.146	0.029
Metals	Na	SODIUM, TOTAL					403	150						
Metals	Sr	STRONTIUM, TOTAL	48.4	0.060										
Metals	Tl	THALLIUM, TOTAL	0.140	0.012										
Metals	Sn	TIN, TOTAL											0.537	0.058
Metals	Ti	TITANIUM, TOTAL									869	0.748		
Metals	W	TUNGSTEN, TOTAL												
Metals	V	VANADIUM, TOTAL	27.8	0.060										
Metals	Zn	ZINC, TOTAL	75.9	0.599										

Project Name:
Project Number: JALK FEE

Client ID	S-16-B26	S-14-B27	S-14-B27	S-14-B27	S-14-B27	S-14-B27
Lab ID	L1634114-02	L1634114-04	L1634114-04	L1634114-04	L1634114-04	L1634114-04
Matrix	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Matrix Description						
Reference Method	6020A	6020A	6020A	6020A	6020A	6020A
Batch ID	WG945387	WG945382	WG945382	WG945382	WG945382	WG945385
Date Collected	10/18/2016	10/18/2016	10/18/2016	10/18/2016	10/18/2016	10/18/2016
Date Received	10/20/2016	10/20/2016	10/20/2016	10/20/2016	10/20/2016	10/20/2016
Date Prepped	10/26/2016	10/26/2016	10/26/2016	10/26/2016	10/26/2016	10/26/2016
Date Analyzed	10/31/2016	10/27/2016	10/27/2016	10/31/2016	10/31/2016	10/31/2016
Sample Size(wet)	1.97 g	1.87 g	1.87 g	1.87 g	1.87 g	2.03 g
% Solid	84.8	96.5	96.5	96.5	96.5	96.5
File ID						
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Final Volume	50	50	50	50	50	50
Dilution	10	2	10	2	10	2
Reporting Limit	1.50	0.011	138	0.028	0.138	0.026

Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL
Metals	Al	ALUMINUM, TOTAL					4360	27.7						
Metals	Sb	ANTIMONY, TOTAL											0.506	0.026
Metals	As	ARSENIC, TOTAL			2.78	0.028								
Metals	Ba	BARIUM, TOTAL			87.4	0.166								
Metals	Be	BERYLLIUM, TOTAL			0.166	0.017								
Metals	B	BORON, TOTAL			0.514	0.277								
Metals	Cd	CADMIUM, TOTAL			0.043	0.011								
Metals	Ca	CALCIUM, TOTAL					1780	138						
Metals	Cr	CHROMIUM, TOTAL			9.15	0.111								
Metals	Co	COBALT, TOTAL			4.61	0.028								
Metals	Cu	COPPER, TOTAL			11.1	0.111								
Metals	Fe	IRON, TOTAL					9440	55.4						
Metals	Pb	LEAD, TOTAL			2.51	0.033								
Metals	Mg	MAGNESIUM, TOTAL					2700	27.7						
Metals	Mn	MANGANESE, TOTAL			259	0.111								
Metals	Mo	MOLYBDENUM, TOTAL							0.118	0.028				
Metals	Ni	NICKEL, TOTAL			9.56	0.055								
Metals	K	POTASSIUM, TOTAL					1190	27.7						
Metals	Se	SELENIUM, TOTAL			0.087	0.055								
Metals	Ag	SILVER, TOTAL											0.012 J	0.026
Metals	Na	SODIUM, TOTAL					106	27.7						
Metals	Sr	STRONTIUM, TOTAL			20.9	0.055								
Metals	Tl	THALLIUM, TOTAL			0.082	0.011								
Metals	Sn	TIN, TOTAL											0.192	0.051
Metals	Ti	TITANIUM, TOTAL									346	0.138		
Metals	W	TUNGSTEN, TOTAL	0.356 J	1.50										
Metals	V	VANADIUM, TOTAL			15.2	0.055								
Metals	Zn	ZINC, TOTAL			27.8	0.554								

Project Name:
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Client ID	S-14-B27	S-16-B30	S-16-B30	S-16-B30	S-16-B30	S-16-B30
Lab ID	L1634114-04	L1634114-06	L1634114-06	L1634114-06	L1634114-06	L1634114-06
Matrix	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Matrix Description						
Reference Method	6020A	6020A	6020A	6020A	6020A	6020A
Batch ID	WG945387	WG945382	WG945382	WG945382	WG945382	WG945382
Date Collected	10/18/2016	10/18/2016	10/18/2016	10/18/2016	10/18/2016	10/18/2016
Date Received	10/20/2016	10/20/2016	10/20/2016	10/20/2016	10/20/2016	10/20/2016
Date Prepped	10/26/2016	10/26/2016	10/26/2016	10/26/2016	10/26/2016	10/26/2016
Date Analyzed	10/28/2016	10/27/2016	10/27/2016	10/27/2016	10/31/2016	10/31/2016
Sample Size(wet)	1.87 g	1.87 g	1.87 g	1.87 g	1.87 g	1.87 g
% Solid	96.5	83.3	83.3	83.3	83.3	83.3
File ID						
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Final Volume	50	50	50	50	50	50
Dilution	2	2	10	50	2	10
Reporting Limit	0.277	0.013	0.642	321	0.032	0.160

Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL
Metals	Al	ALUMINUM, TOTAL					9680	32.1						
Metals	Sb	ANTIMONY, TOTAL												
Metals	As	ARSENIC, TOTAL			4.84	0.032								
Metals	Ba	BARIUM, TOTAL			122	0.192								
Metals	Be	BERYLLIUM, TOTAL			0.332	0.019								
Metals	B	BORON, TOTAL			1.12	0.321								
Metals	Cd	CADMIUM, TOTAL			0.036	0.013								
Metals	Ca	CALCIUM, TOTAL					3770	160						
Metals	Cr	CHROMIUM, TOTAL			23.0	0.128								
Metals	Co	COBALT, TOTAL			11.2	0.032								
Metals	Cu	COPPER, TOTAL			24.8	0.128								
Metals	Fe	IRON, TOTAL							22500	321				
Metals	Pb	LEAD, TOTAL			5.07	0.039								
Metals	Mg	MAGNESIUM, TOTAL					6480	32.1						
Metals	Mn	MANGANESE, TOTAL					456	0.642						
Metals	Mo	MOLYBDENUM, TOTAL									0.160	0.032		
Metals	Ni	NICKEL, TOTAL			19.8	0.064								
Metals	K	POTASSIUM, TOTAL					2740	32.1						
Metals	Se	SELENIUM, TOTAL			0.064 J	0.064								
Metals	Ag	SILVER, TOTAL												
Metals	Na	SODIUM, TOTAL					263	32.1						
Metals	Sr	STRONTIUM, TOTAL			50.4	0.064								
Metals	Tl	THALLIUM, TOTAL			0.141	0.013								
Metals	Sn	TIN, TOTAL												
Metals	Ti	TITANIUM, TOTAL											721	0.160
Metals	W	TUNGSTEN, TOTAL	0.356	0.277										
Metals	V	VANADIUM, TOTAL			35.2	0.064								
Metals	Zn	ZINC, TOTAL			64.0	0.642								

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Client ID	S-16-B30	S-16-B30	S-6-B28	S-6-B28	S-6-B28	S-6-B28
Lab ID	L1634114-06	L1634114-06	L1634114-07	L1634114-07	L1634114-07	L1634114-07
Matrix	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Matrix Description						
Reference Method	6020A	6020A	6020A	6020A	6020A	6020A
Batch ID	WG945385	WG945387	WG945382	WG945382	WG945382	WG945382
Date Collected	10/18/2016	10/18/2016	10/19/2016	10/19/2016	10/19/2016	10/19/2016
Date Received	10/20/2016	10/20/2016	10/21/2016	10/21/2016	10/21/2016	10/21/2016
Date Prepped	10/26/2016	10/26/2016	10/26/2016	10/26/2016	10/26/2016	10/26/2016
Date Analyzed	10/31/2016	10/28/2016	10/27/2016	10/27/2016	10/27/2016	10/31/2016
Sample Size(wet)	1.82 g	1.87 g	1.81 g	1.81 g	1.81 g	1.81 g
% Solid	83.3	83.3	84.6	84.6	84.6	84.6
File ID						
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Final Volume	50	50	50	50	50	50
Dilution	2	2	2	10	50	2
Reporting Limit	0.033	0.321	0.013	0.653	163	0.033

Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL
Metals	Al	ALUMINUM, TOTAL									11000	163		
Metals	Sb	ANTIMONY, TOTAL	1.03	0.033										
Metals	As	ARSENIC, TOTAL					18.1	0.033						
Metals	Ba	BARIUM, TOTAL							339	0.980				
Metals	Be	BERYLLIUM, TOTAL					0.419	0.020						
Metals	B	BORON, TOTAL					4.28	0.326						
Metals	Cd	CADMIUM, TOTAL					0.428	0.013						
Metals	Ca	CALCIUM, TOTAL									6450	816		
Metals	Cr	CHROMIUM, TOTAL					28.5	0.131						
Metals	Co	COBALT, TOTAL					10.9	0.033						
Metals	Cu	COPPER, TOTAL					41.8	0.131						
Metals	Fe	IRON, TOTAL									25000	326		
Metals	Pb	LEAD, TOTAL					36.2	0.039						
Metals	Mg	MAGNESIUM, TOTAL									6040	163		
Metals	Mn	MANGANESE, TOTAL							426	0.653				
Metals	Mo	MOLYBDENUM, TOTAL											1.40	0.033
Metals	Ni	NICKEL, TOTAL					31.3	0.065						
Metals	K	POTASSIUM, TOTAL									3640	163		
Metals	Se	SELENIUM, TOTAL					0.286	0.065						
Metals	Ag	SILVER, TOTAL	0.053	0.033										
Metals	Na	SODIUM, TOTAL									269	163		
Metals	Sr	STRONTIUM, TOTAL					62.7	0.065						
Metals	Tl	THALLIUM, TOTAL					0.151	0.013						
Metals	Sn	TIN, TOTAL	0.434	0.066										
Metals	Ti	TITANIUM, TOTAL												
Metals	W	TUNGSTEN, TOTAL			0.318 J	0.321								
Metals	V	VANADIUM, TOTAL					38.2	0.065						
Metals	Zn	ZINC, TOTAL					113	0.653						

Project Name:
Project Number: JALK FEE

		Client ID	S-6-B28		S-6-B28		S-6-B28		S-9-B32		S-9-B32		S-9-B32	
		Lab ID	L1634114-07		L1634114-07		L1634114-07		L1634114-12		L1634114-12		L1634114-12	
		Matrix	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
		Matrix Description												
		Reference Method	6020A		6020A		6020A		6020A		6020A		6020A	
		Batch ID	WG945382		WG945385		WG945387		WG945382		WG945382		WG945382	
		Date Collected	10/19/2016		10/19/2016		10/19/2016		10/19/2016		10/19/2016		10/19/2016	
		Date Received	10/21/2016		10/21/2016		10/21/2016		10/21/2016		10/21/2016		10/21/2016	
		Date Prepped	10/26/2016		10/26/2016		10/26/2016		10/26/2016		10/26/2016		10/26/2016	
		Date Analyzed	10/31/2016		10/31/2016		10/28/2016		10/27/2016		10/27/2016		10/27/2016	
		Sample Size(wet)	1.81 g		1.82 g		1.81 g		1.99 g		1.99 g		1.99 g	
		% Solid	84.6		84.6		84.6		87.6		87.6		87.6	
		File ID												
		Units	mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
		Final Volume	50		50		50		50		50		50	
		Dilution	50		2		2		2		10		50	
		Reporting Limit	0.816		0.033		0.326		0.012		0.574		143	
Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL
Metals	Al	ALUMINUM, TOTAL											8960	143
Metals	Sb	ANTIMONY, TOTAL			1.90	0.033								
Metals	As	ARSENIC, TOTAL							4.55	0.029				
Metals	Ba	BARIUM, TOTAL							115	0.172				
Metals	Be	BERYLLIUM, TOTAL							0.420	0.017				
Metals	B	BORON, TOTAL							2.32	0.287				
Metals	Cd	CADMIUM, TOTAL							0.140	0.012				
Metals	Ca	CALCIUM, TOTAL											2910	717
Metals	Cr	CHROMIUM, TOTAL							19.8	0.115				
Metals	Co	COBALT, TOTAL							8.49	0.029				
Metals	Cu	COPPER, TOTAL							19.7	0.115				
Metals	Fe	IRON, TOTAL											16600	287
Metals	Pb	LEAD, TOTAL							13.4	0.034				
Metals	Mg	MAGNESIUM, TOTAL											4270	143
Metals	Mn	MANGANESE, TOTAL									347	0.574		
Metals	Mo	MOLYBDENUM, TOTAL												
Metals	Ni	NICKEL, TOTAL							15.0	0.057				
Metals	K	POTASSIUM, TOTAL											2890	143
Metals	Se	SELENIUM, TOTAL							0.138	0.057				
Metals	Ag	SILVER, TOTAL			0.087	0.033								
Metals	Na	SODIUM, TOTAL											252	143
Metals	Sr	STRONTIUM, TOTAL							30.4	0.057				
Metals	Tl	THALLIUM, TOTAL							0.109	0.012				
Metals	Sn	TIN, TOTAL			5.50	0.065								
Metals	Ti	TITANIUM, TOTAL	717	0.816										
Metals	W	TUNGSTEN, TOTAL					0.756	0.326						
Metals	V	VANADIUM, TOTAL							33.4	0.057				
Metals	Zn	ZINC, TOTAL							59.3	0.574				

Project Name:
Project Number: JALK FEE

		Client ID	S-9-B32		S-9-B32		S-9-B32		S-9-B32		S-8-B24		S-8-B24	
		Lab ID	L1634114-12		L1634114-12		L1634114-12		L1634114-12		L1634114-15		L1634114-15	
		Matrix	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
		Matrix Description												
		Reference Method	6020A		6020A		6020A		6020A		6020A		6020A	
		Batch ID	WG945382		WG945382		WG945385		WG945387		WG945382		WG945382	
		Date Collected	10/19/2016		10/19/2016		10/19/2016		10/19/2016		10/20/2016		10/20/2016	
		Date Received	10/21/2016		10/21/2016		10/21/2016		10/21/2016		10/22/2016		10/22/2016	
		Date Prepped	10/26/2016		10/26/2016		10/26/2016		10/26/2016		10/26/2016		10/26/2016	
		Date Analyzed	10/31/2016		10/31/2016		10/31/2016		10/28/2016		10/27/2016		10/27/2016	
		Sample Size(wet)	1.99	g	1.99	g	1.82	g	1.99	g	2.01	g	2.01	g
		% Solid	87.6		87.6		87.6		87.6		88.5		88.5	
		File ID												
		Units	mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
		Final Volume	50		50		50		50		50		50	
		Dilution	2		50		2		10		2		10	
		Reporting Limit	0.029		0.717		0.031		1.43		0.011		0.562	
Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL
Metals	Al	ALUMINUM, TOTAL												
Metals	Sb	ANTIMONY, TOTAL					1.00	0.031						
Metals	As	ARSENIC, TOTAL									9.60	0.028		
Metals	Ba	BARIUM, TOTAL									127	0.169		
Metals	Be	BERYLLIUM, TOTAL									0.562	0.017		
Metals	B	BORON, TOTAL									1.65	0.281		
Metals	Cd	CADMIUM, TOTAL									0.046	0.011		
Metals	Ca	CALCIUM, TOTAL												
Metals	Cr	CHROMIUM, TOTAL									30.4	0.112		
Metals	Co	COBALT, TOTAL									14.9	0.028		
Metals	Cu	COPPER, TOTAL									30.3	0.112		
Metals	Fe	IRON, TOTAL												
Metals	Pb	LEAD, TOTAL									7.15	0.034		
Metals	Mg	MAGNESIUM, TOTAL												
Metals	Mn	MANGANESE, TOTAL											530	0.562
Metals	Mo	MOLYBDENUM, TOTAL	0.401	0.029										
Metals	Ni	NICKEL, TOTAL									22.5	0.056		
Metals	K	POTASSIUM, TOTAL												
Metals	Se	SELENIUM, TOTAL									0.111	0.056		
Metals	Ag	SILVER, TOTAL					0.061	0.031						
Metals	Na	SODIUM, TOTAL												
Metals	Sr	STRONTIUM, TOTAL									40.4	0.056		
Metals	Tl	THALLIUM, TOTAL									0.123	0.011		
Metals	Sn	TIN, TOTAL					0.984	0.063						
Metals	Ti	TITANIUM, TOTAL			682	0.717								
Metals	W	TUNGSTEN, TOTAL							0.342 J	1.43				
Metals	V	VANADIUM, TOTAL									49.8	0.056		
Metals	Zn	ZINC, TOTAL									57.6	0.562		

Project Name:
Project Number: JALK FEE

		Client ID	S-8-B24		S-8-B24		S-8-B24		S-8-B24		S-8-B24		S-5-B34	
		Lab ID	L1634114-15		L1634114-15		L1634114-15		L1634114-15		L1634114-15		L1634114-20	
		Matrix	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
		Matrix Description												
		Reference Method	6020A		6020A		6020A		6020A		6020A		6020A	
		Batch ID	WG945382		WG945382		WG945382		WG945385		WG945387		WG945382	
		Date Collected	10/20/2016		10/20/2016		10/20/2016		10/20/2016		10/20/2016		10/20/2016	
		Date Received	10/22/2016		10/22/2016		10/22/2016		10/22/2016		10/22/2016		10/22/2016	
		Date Prepped	10/26/2016		10/26/2016		10/26/2016		10/26/2016		10/26/2016		10/26/2016	
		Date Analyzed	10/27/2016		10/31/2016		10/31/2016		10/31/2016		10/28/2016		10/27/2016	
		Sample Size(wet)	2.01	g	2.01	g	2.01	g	1.81	g	2.01	g	1.82	g
		% Solid	88.5		88.5		88.5		88.5		88.5		92	
		File ID												
		Units	mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
		Final Volume	50		50		50		50		50		50	
		Dilution	50		2		50		2		10		2	
		Reporting Limit	140		0.028		0.703		0.031		1.40		0.012	
Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL
Metals	Al	ALUMINUM, TOTAL	13500	140										
Metals	Sb	ANTIMONY, TOTAL							1.50	0.031				
Metals	As	ARSENIC, TOTAL											4.30	0.030
Metals	Ba	BARIUM, TOTAL											115	0.179
Metals	Be	BERYLLIUM, TOTAL											0.397	0.018
Metals	B	BORON, TOTAL											2.16	0.299
Metals	Cd	CADMIUM, TOTAL											0.139	0.012
Metals	Ca	CALCIUM, TOTAL	3390	703										
Metals	Cr	CHROMIUM, TOTAL											19.5	0.119
Metals	Co	COBALT, TOTAL											8.66	0.030
Metals	Cu	COPPER, TOTAL											18.3	0.119
Metals	Fe	IRON, TOTAL	27600	281										
Metals	Pb	LEAD, TOTAL											11.7	0.036
Metals	Mg	MAGNESIUM, TOTAL	6700	140										
Metals	Mn	MANGANESE, TOTAL												
Metals	Mo	MOLYBDENUM, TOTAL			0.209	0.028								
Metals	Ni	NICKEL, TOTAL											14.2	0.060
Metals	K	POTASSIUM, TOTAL	4380	140										
Metals	Se	SELENIUM, TOTAL											0.138	0.060
Metals	Ag	SILVER, TOTAL							0.058	0.031				
Metals	Na	SODIUM, TOTAL	273	140										
Metals	Sr	STRONTIUM, TOTAL											29.3	0.060
Metals	Tl	THALLIUM, TOTAL											0.116	0.012
Metals	Sn	TIN, TOTAL							0.910	0.062				
Metals	Ti	TITANIUM, TOTAL					818	0.703						
Metals	W	TUNGSTEN, TOTAL									0.357 J	1.40		
Metals	V	VANADIUM, TOTAL											34.7	0.060
Metals	Zn	ZINC, TOTAL											100	0.597

Project Name:
Project Number: JALK FEE

Client ID	S-5-B34	S-5-B34	S-5-B34	S-5-B34	S-5-B34	S-5-B34
Lab ID	L1634114-20	L1634114-20	L1634114-20	L1634114-20	L1634114-20	L1634114-20
Matrix	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Matrix Description						
Reference Method	6020A	6020A	6020A	6020A	6020A	6020A
Batch ID	WG945382	WG945382	WG945382	WG945382	WG945385	WG945387
Date Collected	10/20/2016	10/20/2016	10/20/2016	10/20/2016	10/20/2016	10/20/2016
Date Received	10/22/2016	10/22/2016	10/22/2016	10/22/2016	10/22/2016	10/22/2016
Date Prepped	10/26/2016	10/26/2016	10/26/2016	10/26/2016	10/26/2016	10/26/2016
Date Analyzed	10/27/2016	10/27/2016	10/31/2016	10/31/2016	10/31/2016	10/28/2016
Sample Size(wet)	1.82 g	1.82 g	1.82 g	1.82 g	1.88 g	1.82 g
% Solid	92	92	92	92	92	92
File ID						
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Final Volume	50	50	50	50	50	50
Dilution	10	50	2	10	2	10
Reporting Limit	0.597	299	0.030	0.149	0.029	1.49

Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL
Metals	Al	ALUMINUM, TOTAL	8020	29.9										
Metals	Sb	ANTIMONY, TOTAL									0.882	0.029		
Metals	As	ARSENIC, TOTAL												
Metals	Ba	BARIUM, TOTAL												
Metals	Be	BERYLLIUM, TOTAL												
Metals	B	BORON, TOTAL												
Metals	Cd	CADMIUM, TOTAL												
Metals	Ca	CALCIUM, TOTAL	2060	149										
Metals	Cr	CHROMIUM, TOTAL												
Metals	Co	COBALT, TOTAL												
Metals	Cu	COPPER, TOTAL												
Metals	Fe	IRON, TOTAL			17700	299								
Metals	Pb	LEAD, TOTAL												
Metals	Mg	MAGNESIUM, TOTAL	3930	29.9										
Metals	Mn	MANGANESE, TOTAL	381	0.597										
Metals	Mo	MOLYBDENUM, TOTAL					0.363	0.030						
Metals	Ni	NICKEL, TOTAL												
Metals	K	POTASSIUM, TOTAL	2720	29.9										
Metals	Se	SELENIUM, TOTAL												
Metals	Ag	SILVER, TOTAL									0.054	0.029		
Metals	Na	SODIUM, TOTAL	211	29.9										
Metals	Sr	STRONTIUM, TOTAL												
Metals	Tl	THALLIUM, TOTAL												
Metals	Sn	TIN, TOTAL									0.806	0.058		
Metals	Ti	TITANIUM, TOTAL							560	0.149				
Metals	W	TUNGSTEN, TOTAL											0.313 J	1.49
Metals	V	VANADIUM, TOTAL												
Metals	Zn	ZINC, TOTAL												

Project Name:
Project Number: JALK FEE

Client ID	S-9-B34	S-9-B34	S-9-B34	S-9-B34	S-9-B34	S-9-B34
Lab ID	L1634114-21	L1634114-21	L1634114-21	L1634114-21	L1634114-21	L1634114-21
Matrix	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Matrix Description						
Reference Method	6020A	6020A	6020A	6020A	6020A	6020A
Batch ID	WG945382	WG945382	WG945382	WG945382	WG945382	WG945385
Date Collected	10/20/2016	10/20/2016	10/20/2016	10/20/2016	10/20/2016	10/20/2016
Date Received	10/22/2016	10/22/2016	10/22/2016	10/22/2016	10/22/2016	10/22/2016
Date Prepped	10/26/2016	10/26/2016	10/26/2016	10/26/2016	10/26/2016	10/26/2016
Date Analyzed	10/27/2016	10/27/2016	10/27/2016	10/31/2016	10/31/2016	10/31/2016
Sample Size(wet)	1.86 g	1.86 g	1.86 g	1.86 g	1.86 g	1.88 g
% Solid	91.1	91.1	91.1	91.1	91.1	91.1
File ID						
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Final Volume	50	50	50	50	50	50
Dilution	2	10	50	2	50	2
Reporting Limit	0.012	0.590	148	0.030	0.738	0.029

Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL
Metals	Al	ALUMINUM, TOTAL					12400	148						
Metals	Sb	ANTIMONY, TOTAL											1.25	0.029
Metals	As	ARSENIC, TOTAL	7.77	0.030										
Metals	Ba	BARIUM, TOTAL	115	0.177										
Metals	Be	BERYLLIUM, TOTAL	0.498	0.018										
Metals	B	BORON, TOTAL	1.72	0.295										
Metals	Cd	CADMIUM, TOTAL	0.029	0.012										
Metals	Ca	CALCIUM, TOTAL					3490	738						
Metals	Cr	CHROMIUM, TOTAL	25.6	0.118										
Metals	Co	COBALT, TOTAL	12.0	0.030										
Metals	Cu	COPPER, TOTAL	25.5	0.118										
Metals	Fe	IRON, TOTAL					23900	295						
Metals	Pb	LEAD, TOTAL	5.55	0.035										
Metals	Mg	MAGNESIUM, TOTAL					6370	148						
Metals	Mn	MANGANESE, TOTAL			456	0.590								
Metals	Mo	MOLYBDENUM, TOTAL							0.160	0.030				
Metals	Ni	NICKEL, TOTAL	19.9	0.059										
Metals	K	POTASSIUM, TOTAL					4320	148						
Metals	Se	SELENIUM, TOTAL	0.081	0.059										
Metals	Ag	SILVER, TOTAL											0.047	0.029
Metals	Na	SODIUM, TOTAL					259	148						
Metals	Sr	STRONTIUM, TOTAL	39.6	0.059										
Metals	Tl	THALLIUM, TOTAL	0.124	0.012										
Metals	Sn	TIN, TOTAL											0.473	0.058
Metals	Ti	TITANIUM, TOTAL									801	0.738		
Metals	W	TUNGSTEN, TOTAL												
Metals	V	VANADIUM, TOTAL	41.8	0.059										
Metals	Zn	ZINC, TOTAL	53.8	0.590										

Project Name:
Project Number: JALK FEE

		Client ID	S-9-B34		S-3-B35		S-3-B35		S-3-B35		S-3-B35		S-3-B35	
		Lab ID	L1634114-21		L1634114-22		L1634114-22		L1634114-22		L1634114-22		L1634114-22	
		Matrix	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
		Matrix Description												
		Reference Method	6020A		6020A		6020A		6020A		6020A		6020A	
		Batch ID	WG945387		WG945382		WG945382		WG945382		WG945382		WG945382	
		Date Collected	10/20/2016		10/20/2016		10/20/2016		10/20/2016		10/20/2016		10/20/2016	
		Date Received	10/22/2016		10/22/2016		10/22/2016		10/22/2016		10/22/2016		10/22/2016	
		Date Prepped	10/26/2016		10/26/2016		10/26/2016		10/26/2016		10/26/2016		10/26/2016	
		Date Analyzed	10/28/2016		10/27/2016		10/27/2016		10/27/2016		10/31/2016		10/31/2016	
		Sample Size(wet)	1.86	g	1.91	g	1.91	g	1.91	g	1.91	g	1.91	g
		% Solid	91.1		92.8		92.8		92.8		92.8		92.8	
		File ID												
		Units	mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
		Final Volume	50		50		50		50		50		50	
		Dilution	10		2		10		50		2		10	
		Reporting Limit	1.48		0.011		0.564		141		0.028		0.141	
Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL
Metals	Al	ALUMINUM, TOTAL							10300	141				
Metals	Sb	ANTIMONY, TOTAL												
Metals	As	ARSENIC, TOTAL			6.04	0.028								
Metals	Ba	BARIUM, TOTAL			111	0.169								
Metals	Be	BERYLLIUM, TOTAL			0.365	0.017								
Metals	B	BORON, TOTAL			1.98	0.282								
Metals	Cd	CADMIUM, TOTAL			0.186	0.011								
Metals	Ca	CALCIUM, TOTAL							8430	705				
Metals	Cr	CHROMIUM, TOTAL			20.6	0.113								
Metals	Co	COBALT, TOTAL			8.54	0.028								
Metals	Cu	COPPER, TOTAL			19.1	0.113								
Metals	Fe	IRON, TOTAL							18800	282				
Metals	Pb	LEAD, TOTAL			8.22	0.034								
Metals	Mg	MAGNESIUM, TOTAL							5530	141				
Metals	Mn	MANGANESE, TOTAL					398	0.564						
Metals	Mo	MOLYBDENUM, TOTAL									0.343	0.028		
Metals	Ni	NICKEL, TOTAL			14.2	0.056								
Metals	K	POTASSIUM, TOTAL							2860	141				
Metals	Se	SELENIUM, TOTAL			0.117	0.056								
Metals	Ag	SILVER, TOTAL												
Metals	Na	SODIUM, TOTAL							325	141				
Metals	Sr	STRONTIUM, TOTAL			48.0	0.056								
Metals	Tl	THALLIUM, TOTAL			0.119	0.011								
Metals	Sn	TIN, TOTAL												
Metals	Ti	TITANIUM, TOTAL											557	0.141
Metals	W	TUNGSTEN, TOTAL	0.322 J	1.48										
Metals	V	VANADIUM, TOTAL			36.4	0.056								
Metals	Zn	ZINC, TOTAL			55.0	0.564								

Project Name:
Project Number: JALK FEE

		Client ID	S-3-B35		S-3-B35		S-5-B36		S-5-B36		S-5-B36		S-5-B36	
		Lab ID	L1634114-22		L1634114-22		L1634114-23		L1634114-23		L1634114-23		L1634114-23	
		Matrix	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
		Matrix Description												
		Reference Method	6020A		6020A		6020A		6020A		6020A		6020A	
		Batch ID	WG945385		WG945387		WG945382		WG945382		WG945382		WG945382	
		Date Collected	10/20/2016		10/20/2016		10/21/2016		10/21/2016		10/21/2016		10/21/2016	
		Date Received	10/22/2016		10/22/2016		10/22/2016		10/22/2016		10/22/2016		10/22/2016	
		Date Prepped	10/26/2016		10/26/2016		10/26/2016		10/26/2016		10/26/2016		10/26/2016	
		Date Analyzed	10/31/2016		10/28/2016		10/27/2016		10/27/2016		10/27/2016		10/31/2016	
		Sample Size(wet)	1.84	g	1.91	g	1.83	g	1.83	g	1.83	g	1.83	g
		% Solid	92.8		92.8		89.6		89.6		89.6		89.6	
		File ID												
		Units	mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
		Final Volume	50		50		50		50		50		50	
		Dilution	2		10		2		10		50		2	
		Reporting Limit	0.029		1.41		0.012		0.610		152		0.031	
Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL
Metals	Al	ALUMINUM, TOTAL									10800	152		
Metals	Sb	ANTIMONY, TOTAL	1.50	0.029										
Metals	As	ARSENIC, TOTAL					4.59	0.031						
Metals	Ba	BARIUM, TOTAL					129	0.183						
Metals	Be	BERYLLIUM, TOTAL					0.472	0.018						
Metals	B	BORON, TOTAL					1.76	0.305						
Metals	Cd	CADMIUM, TOTAL					0.195	0.012						
Metals	Ca	CALCIUM, TOTAL									2010	762		
Metals	Cr	CHROMIUM, TOTAL					21.1	0.122						
Metals	Co	COBALT, TOTAL					9.80	0.031						
Metals	Cu	COPPER, TOTAL					19.3	0.122						
Metals	Fe	IRON, TOTAL									19200	305		
Metals	Pb	LEAD, TOTAL					7.15	0.037						
Metals	Mg	MAGNESIUM, TOTAL									4800	152		
Metals	Mn	MANGANESE, TOTAL							478	0.610				
Metals	Mo	MOLYBDENUM, TOTAL											0.280	0.031
Metals	Ni	NICKEL, TOTAL					15.9	0.061						
Metals	K	POTASSIUM, TOTAL									3390	152		
Metals	Se	SELENIUM, TOTAL					0.082	0.061						
Metals	Ag	SILVER, TOTAL	0.065	0.029										
Metals	Na	SODIUM, TOTAL									188	152		
Metals	Sr	STRONTIUM, TOTAL					27.7	0.061						
Metals	Tl	THALLIUM, TOTAL					0.130	0.012						
Metals	Sn	TIN, TOTAL	1.57	0.059										
Metals	Ti	TITANIUM, TOTAL												
Metals	W	TUNGSTEN, TOTAL			U	1.41								
Metals	V	VANADIUM, TOTAL					39.3	0.061						
Metals	Zn	ZINC, TOTAL					68.8	0.610						

Project Name:
Project Number: JALK FEE

		Client ID	S-5-B36		S-5-B36		S-5-B36		S-10-B33		S-10-B33		S-10-B33	
		Lab ID	L1634114-23		L1634114-23		L1634114-23		L1634114-28		L1634114-28		L1634114-28	
		Matrix	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
		Matrix Description												
		Reference Method	6020A		6020A		6020A		6020A		6020A		6020A	
		Batch ID	WG945382		WG945385		WG945387		WG945382		WG945382		WG945382	
		Date Collected	10/21/2016		10/21/2016		10/21/2016		10/21/2016		10/21/2016		10/21/2016	
		Date Received	10/22/2016		10/22/2016		10/22/2016		10/22/2016		10/22/2016		10/22/2016	
		Date Prepped	10/26/2016		10/26/2016		10/26/2016		10/26/2016		10/26/2016		10/26/2016	
		Date Analyzed	10/31/2016		10/31/2016		10/28/2016		10/27/2016		10/27/2016		10/27/2016	
		Sample Size(wet)	1.83 g		1.85 g		1.83 g		2.01 g		2.01 g		2.01 g	
		% Solid	89.6		89.6		89.6		87.4		87.4		87.4	
		File ID												
		Units	mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
		Final Volume	50		50		50		50		50		50	
		Dilution	50		2		2		2		10		50	
		Reporting Limit	0.762		0.030		0.305		0.011		0.569		142	
Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL
Metals	Al	ALUMINUM, TOTAL											11200	142
Metals	Sb	ANTIMONY, TOTAL			1.09	0.030								
Metals	As	ARSENIC, TOTAL							6.56	0.029				
Metals	Ba	BARIUM, TOTAL							146	0.171				
Metals	Be	BERYLLIUM, TOTAL							0.503	0.017				
Metals	B	BORON, TOTAL							1.42	0.285				
Metals	Cd	CADMIUM, TOTAL							0.032	0.011				
Metals	Ca	CALCIUM, TOTAL											2860	712
Metals	Cr	CHROMIUM, TOTAL							23.5	0.114				
Metals	Co	COBALT, TOTAL							9.78	0.029				
Metals	Cu	COPPER, TOTAL							22.2	0.114				
Metals	Fe	IRON, TOTAL											21000	285
Metals	Pb	LEAD, TOTAL							5.03	0.034				
Metals	Mg	MAGNESIUM, TOTAL											5780	142
Metals	Mn	MANGANESE, TOTAL									456	0.569		
Metals	Mo	MOLYBDENUM, TOTAL												
Metals	Ni	NICKEL, TOTAL							17.0	0.057				
Metals	K	POTASSIUM, TOTAL											3220	142
Metals	Se	SELENIUM, TOTAL							0.076	0.057				
Metals	Ag	SILVER, TOTAL			0.072	0.030								
Metals	Na	SODIUM, TOTAL											204	142
Metals	Sr	STRONTIUM, TOTAL							38.5	0.057				
Metals	Tl	THALLIUM, TOTAL							0.108	0.011				
Metals	Sn	TIN, TOTAL			0.525	0.060								
Metals	Ti	TITANIUM, TOTAL	826	0.762										
Metals	W	TUNGSTEN, TOTAL					0.181 J	0.305						
Metals	V	VANADIUM, TOTAL							38.8	0.057				
Metals	Zn	ZINC, TOTAL							52.2	0.569				

Project Name:
Project Number: JALK FEE

Client ID	S-10-B33	S-10-B33	S-10-B33	S-10-B33
Lab ID	L1634114-28	L1634114-28	L1634114-28	L1634114-28
Matrix	SOIL	SOIL	SOIL	SOIL
Matrix Description				
Reference Method	6020A	6020A	6020A	6020A
Batch ID	WG945382	WG945382	WG945385	WG945387
Date Collected	10/21/2016	10/21/2016	10/21/2016	10/21/2016
Date Received	10/22/2016	10/22/2016	10/22/2016	10/22/2016
Date Prepped	10/26/2016	10/26/2016	10/26/2016	10/26/2016
Date Analyzed	10/31/2016	10/31/2016	10/31/2016	10/28/2016
Sample Size(wet)	2.01 g	2.01 g	2.05 g	2.01 g
% Solid	87.4	87.4	87.4	87.4
File ID				
Units	mg/kg	mg/kg	mg/kg	mg/kg
Final Volume	50	50	50	50
Dilution	2	10	2	2
Reporting Limit	0.029	0.142	0.028	0.285

Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL
Metals	Al	ALUMINUM, TOTAL								
Metals	Sb	ANTIMONY, TOTAL					1.05	0.028		
Metals	As	ARSENIC, TOTAL								
Metals	Ba	BARIUM, TOTAL								
Metals	Be	BERYLLIUM, TOTAL								
Metals	B	BORON, TOTAL								
Metals	Cd	CADMIUM, TOTAL								
Metals	Ca	CALCIUM, TOTAL								
Metals	Cr	CHROMIUM, TOTAL								
Metals	Co	COBALT, TOTAL								
Metals	Cu	COPPER, TOTAL								
Metals	Fe	IRON, TOTAL								
Metals	Pb	LEAD, TOTAL								
Metals	Mg	MAGNESIUM, TOTAL								
Metals	Mn	MANGANESE, TOTAL								
Metals	Mo	MOLYBDENUM, TOTAL	0.146	0.029						
Metals	Ni	NICKEL, TOTAL								
Metals	K	POTASSIUM, TOTAL								
Metals	Se	SELENIUM, TOTAL								
Metals	Ag	SILVER, TOTAL					0.052	0.028		
Metals	Na	SODIUM, TOTAL								
Metals	Sr	STRONTIUM, TOTAL								
Metals	Tl	THALLIUM, TOTAL								
Metals	Sn	TIN, TOTAL					0.437	0.056		
Metals	Ti	TITANIUM, TOTAL			585	0.142				
Metals	W	TUNGSTEN, TOTAL							0.206 J	0.285
Metals	V	VANADIUM, TOTAL								
Metals	Zn	ZINC, TOTAL								

Project Name:
Project Number: JALK FEE

Client ID	Laboratory Method Bl
Lab ID	WG945388-1
Matrix	SOIL
Matrix Description	
Reference Method	7474
Batch ID	WG945388
Date Collected	NA
Date Received	10/25/2016
Date Prepped	10/25/2016
Date Analyzed	10/31/2016
Sample Size(wet)	1 g
% Solid	100
File ID	
Units	mg/kg
Final Volume	50
Dilution	5
Reporting Limit	0.013

Class	Abbrev	Analytes	Result		SSRL
Metals	Hg	MERCURY, TOTAL		U	0.013

Project Name:
Project Number: JALK FEE

Client ID	Laboratory Control S
Lab ID	WG945388-2
Matrix	SOIL
Matrix Description	
Reference Method	7474
Batch ID	WG945388
Date Collected	NA
Date Received	10/25/2016
Date Prepped	10/25/2016
Date Analyzed	10/31/2016
Sample Size(wet)	0.54 g
% Solid	100
File ID	
Units	%
Final Volume	50
Dilution	50
Reporting Limit	0.231

Class	Abbrev	Analytes	Result	SSRL	% REC	Spike Conc.	Lower Limit	Upper Limit
Metals	Hg	MERCURY, TOTAL	12.8	0.231	104	12.3	78	128

Project Name:
Project Number: JALK FEE

Client ID	S-16-B26		S-16-B26				
Lab ID	L1634114-02		WG945388-3				
Matrix	SOIL		SOIL				
Matrix Description							
Reference Method	7474		7474				
Batch ID	WG945388		WG945388				
Date Collected	10/18/2016		NA				
Date Received	10/20/2016		10/25/2016				
Date Prepped	10/25/2016		10/25/2016				
Date Analyzed	10/31/2016		10/31/2016				
Sample Size(wet)	1.19 g		1.13 g				
% Solid	84.8		84.8				
File ID							
Units	mg/kg		mg/kg				
Final Volume	50		50				
Dilution	5		5				
Reporting Limit	0.012		0.013				

Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	RPD	RPD Limit
Metals	Hg	MERCURY, TOTAL	0.081	0.012	0.095	0.013	16	20

Project Name:
Project Number: JALK FEE

Client ID	S-16-B26	S-16-B26
Lab ID	L1634114-02	WG945388-4
Matrix	SOIL	SOIL
Matrix Description		
Reference Method	7474	7474
Batch ID	WG945388	WG945388
Date Collected	10/18/2016	NA
Date Received	10/20/2016	10/25/2016
Date Prepped	10/25/2016	10/25/2016
Date Analyzed	10/31/2016	10/31/2016
Sample Size(wet)	1.19 g	1.1 g
% Solid	84.8	84.8
File ID		
Units	mg/kg	%
Final Volume	50	50
Dilution	5	5
Reporting Limit	0.012	0.0134

Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	% REC	Spike Conc.	Lower Limit	Upper Limit
Metals	Hg	MERCURY, TOTAL	0.081	0.012	0.737	0.0134	98	0.67	80	120

Project Name:
Project Number: JALK FEE

		Client ID	S-16-B26		S-14-B27		S-16-B30		S-6-B28		S-9-B32	
		Lab ID	L1634114-02		L1634114-04		L1634114-06		L1634114-07		L1634114-12	
		Matrix	SOIL		SOIL		SOIL		SOIL		SOIL	
		Matrix Description										
		Reference Method	7474		7474		7474		7474		7474	
		Batch ID	WG945388		WG945388		WG945388		WG945388		WG945388	
		Date Collected	10/18/2016		10/18/2016		10/18/2016		10/19/2016		10/19/2016	
		Date Received	10/20/2016		10/20/2016		10/20/2016		10/21/2016		10/21/2016	
		Date Prepped	10/25/2016		10/25/2016		10/25/2016		10/25/2016		10/25/2016	
		Date Analyzed	10/31/2016		10/31/2016		10/31/2016		10/31/2016		10/31/2016	
		Sample Size(wet)	1.19	g	1.13	g	1.17	g	1.13	g	1.11	g
		% Solid	84.8		96.5		83.3		84.6		87.6	
		File ID										
		Units	mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
		Final Volume	50		50		50		50		50	
		Dilution	5		5		5		5		5	
		Reporting Limit	0.012		0.012		0.013		0.013		0.013	
Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL
Metals	Hg	MERCURY, TOTAL	0.081	0.012	0.022	0.012	0.061	0.013	0.248	0.013	0.049	0.013

Project Name:
Project Number: JALK FEE

		Client ID	S-8-B24		S-5-B34		S-9-B34		S-3-B35		S-5-B36		S-10-B33	
		Lab ID	L1634114-15		L1634114-20		L1634114-21		L1634114-22		L1634114-23		L1634114-28	
		Matrix	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
		Matrix Description												
		Reference Method	7474		7474		7474		7474		7474		7474	
		Batch ID	WG945388		WG945388		WG945388		WG945388		WG945388		WG945388	
		Date Collected	10/20/2016		10/20/2016		10/20/2016		10/20/2016		10/21/2016		10/21/2016	
		Date Received	10/22/2016		10/22/2016		10/22/2016		10/22/2016		10/22/2016		10/22/2016	
		Date Prepped	10/25/2016		10/25/2016		10/25/2016		10/25/2016		10/25/2016		10/25/2016	
		Date Analyzed	10/31/2016		10/31/2016		10/31/2016		10/31/2016		10/31/2016		10/31/2016	
		Sample Size(wet)	1.06	g	1.01	g	0.99	g	1.14	g	1.08	g	1.04	g
		% Solid	88.5		92		91.1		92.8		89.6		87.4	
		File ID												
		Units	mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
		Final Volume	50		50		50		50		50		50	
		Dilution	5		5		5		5		5		5	
		Reporting Limit	0.013		0.013		0.014		0.012		0.013		0.014	
Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL
Metals	Hg	MERCURY, TOTAL	0.033	0.013	0.064	0.013	0.041	0.014	0.031	0.012	0.048	0.013	0.024	0.014

List of Potential Qualifiers

A: Spectra identified as "Aldol Condensation Product".

B: The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
C: Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
D: Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
E: Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
G: The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.
H: The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
I: The lower value for the two columns has been reported due to obvious interference.
J: Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
J: Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
M: Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
ND: Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
ND: Not detected at the reporting limit (RL) for the sample.
NJ: Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
P: The RPD between the results for the two columns exceeds the method-specified criteria.
Q: The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
R: Analytical results are from sample re-analysis.
RE: Analytical results are from sample re-extraction.
S: Analytical results are from modified screening analysis.
U: Not detected at the reported detection limit for the sample.

Attachment C – Raw Data for Oil Samples Analyzed in 2016

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Method Blank
Lab ID	SO120216B02
Matrix	Product
Reference Method	SHC
Batch ID	SO120216B02
Date Collected	N/A
Date Received	N/A
Date Prepped	12/02/2016
Date Analyzed	12/04/2016
Sample Size (wet)	0.1
% Solid	100.00
File ID	F1712041614.d
Units	mg/Kg
Final Volume	20
Dilution	1
Reporting Limit	4200

Class	Abbrev	Analytes	Result		SSRL
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)		U	6600
		C10-C28 DRO	2050	J	4200

Surrogates (% Recovery)	
ortho-Terphenyl	97
d50-Tetracosane	94

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	CUTTING OIL	CUTTING OIL
Lab ID	1611009-01	1611009-01D
Matrix	Product	Product
Reference Method	SHC	SHC
Batch ID	SO120216B02	SO120216B02
Date Collected	11/22/2016	11/22/2016
Date Received	11/23/2016	11/23/2016
Date Prepped	12/02/2016	12/02/2016
Date Analyzed	12/04/2016	12/04/2016
Sample Size (wet)	0.104	0.1022
% Solid	100.00	100.00
File ID	F1712041620.d	F1712041622.d
Units	mg/Kg	mg/Kg
Final Volume	20	20
Dilution	1	1
Reporting Limit	4040	4110

Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	RPD	RPD Limit
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	870000	6350	851000	6460	2	30
		C10-C28 DRO	766000	4040	749000	4110	2	30

Surrogates (% Recovery)		
ortho-Terphenyl	94	94
d50-Tetracosane	90	88

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Alaska North Slope Crude
Lab ID	TS111315ANC04
Matrix	Oil
Reference Method	SHC
Batch ID	N/A
Date Collected	N/A
Date Received	N/A
Date Prepped	N/A
Date Analyzed	10/27/2015
Sample Size (wet)	0.10382
% Solid	100.00
File ID	F17102615026.d
Units	mg/Kg
Final Volume	10
Dilution	1
Reporting Limit	2000

Class	Abbrev	Analytes	Result	SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	610000	3200				
		C10-C28 DRO	420000	2000				

Surrogates (% Recovery)
ortho-Terphenyl
d50-Tetracosane

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

		Client ID	CUTTING OIL		MOBILMET 426 CUTTING OIL		MOBIL VELOCITE 6 SPINDLE OIL		MOBIL VELOCITE OIL No. 3	
		Lab ID	1611009-01		1611009-02		1611009-03		1611009-04	
		Matrix	Product		Product		Product		Product	
		Reference Method	SHC		SHC		SHC		SHC	
		Batch ID	SO120216B02		SO120216B02		SO120216B02		SO120216B02	
		Date Collected	11/22/2016		11/22/2016		11/22/2016		11/22/2016	
		Date Received	11/23/2016		11/23/2016		11/23/2016		11/28/2016	
		Date Prepped	12/02/2016		12/02/2016		12/02/2016		12/02/2016	
		Date Analyzed	12/04/2016		12/05/2016		12/05/2016		12/05/2016	
		Sample Size (wet)	0.104		0.1064		0.1008		0.1079	
		% Solid	100.00		100.00		100.00		100.00	
		File ID	F1712041620.d		F1712041624.d		F1712041626.d		F1712041628.d	
		Units	mg/Kg		mg/Kg		mg/Kg		mg/Kg	
		Final Volume	20		20		20		20	
		Dilution	1		1		1		1	
		Reporting Limit	4040		3950		4170		3890	
Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	870000	6350	931000	6200	914000	6550	911000	6120
		C10-C28 DRO	766000	4040	580000	3950	851000	4170	915000	3890
		Surrogates (% Recovery)								
		ortho-Terphenyl	94		95		102		94	
		d50-Tetracosane	90		92		91		93	

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

		Client ID	CP70T		CP200T		CP350T		CP500T		BROWNELLS TOUGH QUENCH		100 QUENCHING OIL - BLACK BEAR	
		Lab ID	1611009-05		1611009-06		1611009-07		1611009-08		1611009-09		1611009-10	
		Matrix	Product		Product		Product		Product		Product		Product	
		Reference Method	SHC		SHC		SHC		SHC		SHC		SHC	
		Batch ID	SO120216B02		SO120216B02		SO120216B02		SO120216B02		SO120216B02		SO120216B02	
		Date Collected	11/23/2016		11/23/2016		11/23/2016		11/23/2016		11/22/2016		11/22/2016	
		Date Received	11/28/2016		11/28/2016		11/28/2016		11/28/2016		11/28/2016		11/28/2016	
		Date Prepped	12/02/2016		12/02/2016		12/02/2016		12/02/2016		12/02/2016		12/02/2016	
		Date Analyzed	12/05/2016		12/05/2016		12/05/2016		12/05/2016		12/05/2016		12/05/2016	
		Sample Size (wet)	0.1031		0.1028		0.103		0.108		0.1004		0.1001	
		% Solid	100.00		100.00		100.00		100.00		100.00		100.00	
		File ID	F1712041630.d		F1712041632.d		F1712041640.d		F1712041642.d		F1712041644.d		F1712041646.d	
		Units	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
		Final Volume	20		20		20		20		20		20	
		Dilution	1		1		1		1		1		1	
		Reporting Limit	4070		4090		4080		3890		4180		4200	
Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	966000	6400	852000	6420	889000	6410	928000	6110	950000	6570	1010000	6590
		C10-C28 DRO	968000	4070	610000	4090	456000	4080	134000	3890	765000	4180	815000	4200
		Surrogates (% Recovery)												
		ortho-Terphenyl	106		93		96		97		93		98	
		d50-Tetracosane	93		84		85		90		99		99	

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

		Client ID	MOBIL VELOCITE No.10		MOBIL VACTRA No. 2 WAY OIL		MOBIL VACTRA No. 4		Reference Material - Reserve Tank Oil		New Oil	
		Lab ID	1611009-11		1611009-12		1611009-13		1611009-14		1611009-15	
		Matrix	Product		Product		Product		Product		Product	
		Reference Method	SHC		SHC		SHC		SHC		SHC	
		Batch ID	SO120216B02		SO120216B02		SO120216B02		SO120216B02		SO120216B02	
		Date Collected	11/22/2016		11/22/2016		12/01/2016		11/21/2014		12/18/2014	
		Date Received	11/28/2016		11/28/2016		12/01/2016		11/25/2014		12/22/2014	
		Date Prepped	12/02/2016		12/02/2016		12/02/2016		12/02/2016		12/02/2016	
		Date Analyzed	12/05/2016		12/05/2016		12/05/2016		12/05/2016		12/06/2016	
		Sample Size (wet)	0.1055		0.1046		0.1026		0.1017		0.1017	
		% Solid	100.00		100.00		100.00		100.00		100.00	
		File ID	F1712041648.d		F1712041650.d		F1712041652.d		F1712041654.d		F1712041656.d	
		Units	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
		Final Volume	20		20		20		20		20	
		Dilution	1		1		1		1		1	
		Reporting Limit	3980		4010		4090		4130		4130	
Class	Abbrev	Analytes	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL	Result	SSRL
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	976000	6260	884000	6310	628000	6430	996000	6490	954000	6490
		C10-C28 DRO	743000	3980	340000	4010	91400	4090	784000	4130	800000	4130
		Surrogates (% Recovery)										
		ortho-Terphenyl	95		96		96		94		94	
		d50-Tetracosane	94		93		90		91		99	

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Method Blank
Lab ID	SO120216B02
Matrix	Product
Reference Method	SHC
Batch ID	SO120216B02
Date Collected	N/A
Date Received	N/A
Date Prepped	12/02/2016
Date Analyzed	12/04/2016
Sample Size (wet)	0.1
% Solid	100.00
File ID	F1712041614.d
Units	mg/Kg
Final Volume	20
Dilution	1
Reporting Limit	200

Class	Abbrev	Analytes	Result		SSRL
SHC	C9	n-Nonane (C9)		U	200
SHC	C10	n-Decane (C10)		U	200
SHC	C11	n-Undecane (C11)		U	200
SHC	C12	n-Dodecane (C12)		U	200
SHC	C13	n-Tridecane (C13)		U	200
SHC	1380	2,6,10 Trimethyldodecane (1380)		U	200
SHC	C14	n-Tetradecane (C14)		U	200
SHC	1470	2,6,10 Trimethyltridecane (1470)		U	200
SHC	C15	n-Pentadecane (C15)		U	200
SHC	C16	n-Hexadecane (C16)		U	200
SHC	1650	Norpristane (1650)		U	200
SHC	C17	n-Heptadecane (C17)		U	200
SHC	Pr	Pristane		U	200
SHC	C18	n-Octadecane (C18)		U	200
SHC	Ph	Phytane		U	200
SHC	C19	n-Nonadecane (C19)		U	200
SHC	C20	n-Eicosane (C20)		U	200
SHC	C21	n-Heneicosane (C21)		U	200
SHC	C22	n-Docosane (C22)		U	200
SHC	C23	n-Tricosane (C23)	6.20	J	200
SHC	C24	n-Tetracosane (C24)		U	200
SHC	C25	n-Pentacosane (C25)		U	200
SHC	C26	n-Hexacosane (C26)		U	200
SHC	C27	n-Heptacosane (C27)		U	200
SHC	C28	n-Octacosane (C28)		U	200
SHC	C29	n-Nonacosane (C29)		U	200
SHC	C30	n-Triacontane (C30)		U	200
SHC	C31	n-Hentriacontane (C31)		U	200
SHC	C32	n-Dotriacontane (C32)		U	200
SHC	C33	n-Tritriacontane (C33)		U	200
SHC	C34	n-Tetratriacontane (C34)		U	200
SHC	C35	n-Pentatriacontane (C35)		U	200
SHC	C36	n-Hexatriacontane (C36)		U	200
SHC	C37	n-Heptatriacontane (C37)		U	200
SHC	C38	n-Octatriacontane (C38)		U	200
SHC	C39	n-Nonatriacontane (C39)		U	200
SHC	C40	n-Tetracontane (C40)		U	200
SHC	TSH	Total Saturated Hydrocarbons	6.20	J	200
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)		U	6600

Surrogates (% Recovery)	
ortho-Terphenyl	97
d50-Tetracosane	94

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Laboratory Control Sample
Lab ID	SO120216LCS02
Matrix	Product
Reference Method	SHC
Batch ID	SO120216B02
Date Collected	N/A
Date Received	N/A
Date Prepped	12/02/2016
Date Analyzed	12/04/2016
Sample Size (wet)	0.1
% Solid	100.00
File ID	F1712041616.d
Units	mg/Kg
Final Volume	20
Dilution	1
Reporting Limit	200

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
SHC	C9	n-Nonane (C9)	4370	S	200	109	4000	50	130
SHC	C10	n-Decane (C10)	4180	S	200	105	4000	50	130
SHC	C12	n-Dodecane (C12)	4230	S	200	106	4000	50	130
SHC	C14	n-Tetradecane (C14)	4240	S	200	106	4000	50	130
SHC	C16	n-Hexadecane (C16)	4520	S	200	113	4000	50	130
SHC	C18	n-Octadecane (C18)	4450	S	200	111	4000	50	130
SHC	C19	n-Nonadecane (C19)	4210	S	200	105	4000	50	130
SHC	C20	n-Eicosane (C20)	4290	S	200	107	4000	50	130
SHC	C22	n-Docosane (C22)	4310	S	200	108	4000	50	130
SHC	C24	n-Tetracosane (C24)	4330	S	200	108	4000	50	130
SHC	C26	n-Hexacosane (C26)	4320	S	200	108	4000	50	130
SHC	C28	n-Octacosane (C28)	4420	S	200	110	4000	50	130
SHC	C30	n-Triacontane (C30)	4380	S	200	110	4000	50	130
SHC	C36	n-Hexatriacontane (C36)	4360	S	200	109	4000	50	130

Surrogates (% Recovery)	
ortho-Terphenyl	96
d50-Tetracosane	93

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Laboratory Control Sample Dup
Lab ID	SO120216LCSD02
Matrix	Product
Reference Method	SHC
Batch ID	SO120216B02
Date Collected	N/A
Date Received	N/A
Date Prepped	12/02/2016
Date Analyzed	12/04/2016
Sample Size (wet)	0.1
% Solid	100.00
File ID	F1712041618.d
Units	mg/Kg
Final Volume	20
Dilution	1
Reporting Limit	200

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit	RPD	RPD Limit
SHC	C9	n-Nonane (C9)	4650	S	200	116	4000	50	130	6	30
SHC	C10	n-Decane (C10)	4250	S	200	106	4000	50	130	2	30
SHC	C12	n-Dodecane (C12)	4310	S	200	108	4000	50	130	2	30
SHC	C14	n-Tetradecane (C14)	4320	S	200	108	4000	50	130	2	30
SHC	C16	n-Hexadecane (C16)	4620	S	200	115	4000	50	130	2	30
SHC	C18	n-Octadecane (C18)	4550	S	200	114	4000	50	130	2	30
SHC	C19	n-Nonadecane (C19)	4290	S	200	107	4000	50	130	2	30
SHC	C20	n-Eicosane (C20)	4400	S	200	110	4000	50	130	2	30
SHC	C22	n-Docosane (C22)	4390	S	200	110	4000	50	130	2	30
SHC	C24	n-Tetracosane (C24)	4410	S	200	110	4000	50	130	2	30
SHC	C26	n-Hexacosane (C26)	4390	S	200	110	4000	50	130	2	30
SHC	C28	n-Octacosane (C28)	4500	S	200	112	4000	50	130	2	30
SHC	C30	n-Triacontane (C30)	4460	S	200	112	4000	50	130	2	30
SHC	C36	n-Hexatriacontane (C36)	4430	S	200	111	4000	50	130	2	30

Surrogates (% Recovery)	
ortho-Terphenyl	95
d50-Tetracosane	92

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	CUTTING OIL	CUTTING OIL
Lab ID	1611009-01	1611009-01D
Matrix	Product	Product
Reference Method	SHC	SHC
Batch ID	SO120216B02	SO120216B02
Date Collected	11/22/2016	11/22/2016
Date Received	11/23/2016	11/23/2016
Date Prepped	12/02/2016	12/02/2016
Date Analyzed	12/04/2016	12/04/2016
Sample Size (wet)	0.104	0.1022
% Solid	100.00	100.00
File ID	F1712041620.d	F1712041622.d
Units	mg/Kg	mg/Kg
Final Volume	20	20
Dilution	1	1
Reporting Limit	192	196

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	RPD	RPD Limit	
SHC	C9	n-Nonane (C9)		U	192		U	196		30	N/A
SHC	C10	n-Decane (C10)	19.2	J	192	20.2	J	196	5	30	
SHC	C11	n-Undecane (C11)	36.2	J	192	31.3	J	196	14	30	
SHC	C12	n-Dodecane (C12)	55.8	J	192	51.9	J	196	7	30	
SHC	C13	n-Tridecane (C13)	288	G	192	279	G	196	3	30	
SHC	1380	2,6,10 Trimethyldodecane (1380)	39.4	J	192	41.5	J	196	5	30	
SHC	C14	n-Tetradecane (C14)	139	J	192	134	J	196	4	30	
SHC	1470	2,6,10 Trimethyltridecane (1470)	380		192	390		196	3	30	
SHC	C15	n-Pentadecane (C15)	174	J	192	169	J	196	3	30	
SHC	C16	n-Hexadecane (C16)	314		192	317		196	1	30	
SHC	1650	Norpristane (1650)	486		192	474		196	2	30	
SHC	C17	n-Heptadecane (C17)	472		192	450		196	5	30	
SHC	Pr	Pristane	1420		192	1400		196	1	30	
SHC	C18	n-Octadecane (C18)	722		192	799		196	10	30	
SHC	Ph	Phytane	1130		192	1090		196	3	30	
SHC	C19	n-Nonadecane (C19)	647		192	704		196	8	30	
SHC	C20	n-Eicosane (C20)	4350		192	4280		196	1	30	
SHC	C21	n-Heneicosane (C21)	651		192	639		196	2	30	
SHC	C22	n-Docosane (C22)	471		192	438		196	7	30	
SHC	C23	n-Tricosane (C23)	534		192	517		196	3	30	
SHC	C24	n-Tetracosane (C24)	192		192	231		196	18	30	
SHC	C25	n-Pentacosane (C25)		U	192		U	196		30	N/A
SHC	C26	n-Hexacosane (C26)		U	192		U	196		30	N/A
SHC	C27	n-Heptacosane (C27)		U	192		U	196		30	N/A
SHC	C28	n-Octacosane (C28)		U	192		U	196		30	N/A
SHC	C29	n-Nonacosane (C29)		U	192		U	196		30	N/A
SHC	C30	n-Triacontane (C30)		U	192		U	196		30	N/A
SHC	C31	n-Hentriacontane (C31)	170	J	192	112	J	196	42	30	¤
SHC	C32	n-Dotriacontane (C32)		U	192		U	196		30	N/A
SHC	C33	n-Tritriacontane (C33)		U	192		U	196		30	N/A
SHC	C34	n-Tetratriacontane (C34)		U	192		U	196		30	N/A
SHC	C35	n-Pentatriacontane (C35)		U	192		U	196		30	N/A
SHC	C36	n-Hexatriacontane (C36)		U	192		U	196		30	N/A
SHC	C37	n-Heptatriacontane (C37)		U	192		U	196		30	N/A
SHC	C38	n-Octatriacontane (C38)		U	192		U	196		30	N/A
SHC	C39	n-Nonatriacontane (C39)		U	192		U	196		30	N/A
SHC	C40	n-Tetracontane (C40)		U	192		U	196		30	N/A
SHC	TSH	Total Saturated Hydrocarbons	12700		192	12600		196	1	30	
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	870000		6350	851000		6460	2	30	

Surrogates (% Recovery)		
ortho-Terphenyl	94	94
d50-Tetracosane	90	88

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Alaska North Slope Crude
Lab ID	TS111315ANC04
Matrix	Oil
Reference Method	SHC
Batch ID	N/A
Date Collected	N/A
Date Received	N/A
Date Prepped	N/A
Date Analyzed	10/27/2015
Sample Size (wet)	0.10382
% Solid	100.00
File ID	F17102615026.d
Units	mg/Kg
Final Volume	10
Dilution	1
Reporting Limit	96.3

Class	Abbrev	Analytes	Result	SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
SHC	C9	n-Nonane (C9)	7120	96.3	113	6286.00	65	135
SHC	C10	n-Decane (C10)	5700	96.3	113	5047.00	65	135
SHC	C11	n-Undecane (C11)	5180	96.3	110	4703.00	65	135
SHC	C12	n-Dodecane (C12)	4730	96.3	114	4155.00	65	135
SHC	C13	n-Tridecane (C13)	4360	96.3	107	4058.00	65	135
SHC	1380	2,6,10 Trimethyldodecane (1380)	990	96.3	117	845.00	65	135
SHC	C14	n-Tetradecane (C14)	4030	96.3	110	3670.00	65	135
SHC	1470	2,6,10 Trimethyltridecane (1470)	1500	96.3	110	1367.00	65	135
SHC	C15	n-Pentadecane (C15)	4410	96.3	121	3660.00	65	135
SHC	C16	n-Hexadecane (C16)	3610	96.3	108	3330.00	65	135
SHC	1650	Norpristane (1650)	1160	96.3	106	1093.00	65	135
SHC	C17	n-Heptadecane (C17)	3140	96.3	104	3012.00	65	135
SHC	Pr	Pristane	2440	96.3	114	2145.00	65	135
SHC	C18	n-Octadecane (C18)	2700	96.3	100	2700.00	65	135
SHC	Ph	Phytane	1500	96.3	124	1215.00	65	135
SHC	C19	n-Nonadecane (C19)	2670	96.3	116	2305.00	65	135
SHC	C20	n-Eicosane (C20)	2820	96.3	121	2337.00	65	135
SHC	C21	n-Heneicosane (C21)	2330	96.3	114	2044.00	65	135
SHC	C22	n-Docosane (C22)	2180	96.3	110	1972.00	65	135
SHC	C23	n-Tricosane (C23)	1920	96.3	110	1745.00	65	135
SHC	C24	n-Tetracosane (C24)	1840	96.3	112	1641.00	65	135
SHC	C25	n-Pentacosane (C25)	1780	96.3	114	1562.00	65	135
SHC	C26	n-Hexacosane (C26)	1510	96.3	110	1378.00	65	135
SHC	C27	n-Heptacosane (C27)	1170	96.3	108	1083.00	65	135
SHC	C28	n-Octacosane (C28)	845	96.3	109	776.00	65	135
SHC	C29	n-Nonacosane (C29)	846	96.3	115	734.00	65	135
SHC	C30	n-Triacontane (C30)	672	96.3	107	627.00	65	135
SHC	C31	n-Hentriacontane (C31)	528	96.3	103	514.00	65	135
SHC	C32	n-Dotriacontane (C32)	560	96.3	122	458.00	65	135
SHC	C33	n-Tritriacontane (C33)	386	96.3	99	388.00	65	135
SHC	C34	n-Tetratriacontane (C34)	370	96.3	107	347.00	65	135
SHC	C35	n-Pentatriacontane (C35)	266	96.3	96	278.00	65	135
SHC	C36	n-Hexatriacontane (C36)	198	96.3	107	186.00	65	135
SHC	C37	n-Heptatriacontane (C37)	169	96.3	111	152.00	65	135
SHC	C38	n-Octatriacontane (C38)	144	96.3	110	131.00	65	135
SHC	C39	n-Nonatriacontane (C39)	97.0	96.3	109	89.00	65	135
SHC	C40	n-Tetracontane (C40)	89.7 J	96.3	97	92.00	65	135
SHC	TSH	Total Saturated Hydrocarbons	76000	96.3	111	68122.00	65	135
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	613000	3180	111	554993.00	65	135

Surrogates (% Recovery)
ortho-Terphenyl
d50-Tetracosane

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	CUTTING OIL	MOBILMET 426 CUTTING OIL	MOBIL VELOCITE 6 SPINDLE OIL	MOBIL VELOCITE OIL No. 3
Lab ID	1611009-01	1611009-02	1611009-03	1611009-04
Matrix	Product	Product	Product	Product
Reference Method	SHC	SHC	SHC	SHC
Batch ID	SO120216B02	SO120216B02	SO120216B02	SO120216B02
Date Collected	11/22/2016	11/22/2016	11/22/2016	11/22/2016
Date Received	11/23/2016	11/23/2016	11/23/2016	11/28/2016
Date Prepped	12/02/2016	12/02/2016	12/02/2016	12/02/2016
Date Analyzed	12/04/2016	12/05/2016	12/05/2016	12/05/2016
Sample Size (wet)	0.104	0.1064	0.1008	0.1079
% Solid	100.00	100.00	100.00	100.00
File ID	F1712041620.d	F1712041624.d	F1712041626.d	F1712041628.d
Units	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Final Volume	20	20	20	20
Dilution	1	1	1	1
Reporting Limit	192	188	198	185

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	Result		SSRL	Result		SSRL
SHC	C9	n-Nonane (C9)		U	192		U	188		U	198		U	185
SHC	C10	n-Decane (C10)	19.2	J	192	4.51	J	188	64.3	J	198	4160		185
SHC	C11	n-Undecane (C11)	36.2	J	192	7.14	J	188	201		198	44800	D	927
SHC	C12	n-Dodecane (C12)	55.8	J	192	13.2	J	188	412		198	84600	D	927
SHC	C13	n-Tridecane (C13)	288	G	192	15.2	J	188	759		198	60600	D	927
SHC	1380	2,6,10 Trimethyldodecane (1380)	39.4	J	192		U	188		U	198	2230		185
SHC	C14	n-Tetradecane (C14)	139	J	192	23.1	J	188	1070		198	11800		185
SHC	1470	2,6,10 Trimethyltridecane (1470)	380		192	10.9	J	188	700		198	547		185
SHC	C15	n-Pentadecane (C15)	174	J	192	28.8	J	188	1000		198	891		185
SHC	C16	n-Hexadecane (C16)	314		192	32.1	J	188	894		198	236		185
SHC	1650	Norpristane (1650)	486		192	12.2	J	188	736		198	112	J	185
SHC	C17	n-Heptadecane (C17)	472		192	29.5	J	188	746		198	484		185
SHC	Pr	Pristane	1420		192	61.6	J	188	1690		198	324		185
SHC	C18	n-Octadecane (C18)	722		192	40.2	J	188	520		198	961		185
SHC	Ph	Phytane	1130		192	272		188	3340	G	198	683		185
SHC	C19	n-Nonadecane (C19)	647		192	102	J	188	298		198	1610		185
SHC	C20	n-Eicosane (C20)	4350		192		U	188		U	198	1640		185
SHC	C21	n-Heneicosane (C21)	651		192		U	188	1470		198	1100		185
SHC	C22	n-Docosane (C22)	471		192		U	188	607		198	381		185
SHC	C23	n-Tricosane (C23)	534		192		U	188		U	198	128	J	185
SHC	C24	n-Tetracosane (C24)	192		192		U	188		U	198		U	185
SHC	C25	n-Pentacosane (C25)		U	192		U	188		U	198		U	185
SHC	C26	n-Hexacosane (C26)		U	192		U	188		U	198		U	185
SHC	C27	n-Heptacosane (C27)		U	192		U	188		U	198		U	185
SHC	C28	n-Octacosane (C28)		U	192		U	188		U	198		U	185
SHC	C29	n-Nonacosane (C29)		U	192		U	188		U	198		U	185
SHC	C30	n-Triacontane (C30)		U	192		U	188		U	198		U	185
SHC	C31	n-Hentriacontane (C31)	170	J	192	1910		188	324		198		U	185
SHC	C32	n-Dotriacontane (C32)		U	192		U	188		U	198	14.1	J	185
SHC	C33	n-Tritriacontane (C33)		U	192	617		188		U	198		U	185
SHC	C34	n-Tetratriacontane (C34)		U	192		U	188		U	198		U	185
SHC	C35	n-Pentatriacontane (C35)		U	192		U	188		U	198		U	185
SHC	C36	n-Hexatriacontane (C36)		U	192		U	188		U	198		U	185
SHC	C37	n-Heptatriacontane (C37)		U	192		U	188		U	198		U	185
SHC	C38	n-Octatriacontane (C38)		U	192		U	188		U	198		U	185
SHC	C39	n-Nonatriacontane (C39)		U	192		U	188		U	198		U	185
SHC	C40	n-Tetracontane (C40)		U	192		U	188		U	198		U	185
SHC	TSH	Total Saturated Hydrocarbons	12700		192	3180		188	14800		198	239000		185
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	870000		6350	931000		6200	914000		6550	911000		6120

Surrogates (% Recovery)				
ortho-Terphenyl	94	95	102	94
d50-Tetracosane	90	92	91	93

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	CP70T	CP200T	CP350T	CP500T	BROWNELLS TOUGH QUENCH
Lab ID	1611009-05	1611009-06	1611009-07	1611009-08	1611009-09
Matrix	Product	Product	Product	Product	Product
Reference Method	SHC	SHC	SHC	SHC	SHC
Batch ID	SO120216B02	SO120216B02	SO120216B02	SO120216B02	SO120216B02
Date Collected	11/23/2016	11/23/2016	11/23/2016	11/23/2016	11/22/2016
Date Received	11/28/2016	11/28/2016	11/28/2016	11/28/2016	11/28/2016
Date Prepped	12/02/2016	12/02/2016	12/02/2016	12/02/2016	12/02/2016
Date Analyzed	12/05/2016	12/05/2016	12/05/2016	12/05/2016	12/05/2016
Sample Size (wet)	0.1031	0.1028	0.103	0.108	0.1004
% Solid	100.00	100.00	100.00	100.00	100.00
File ID	F1712041630.d	F1712041632.d	F1712041640.d	F1712041642.d	F1712041644.d
Units	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Final Volume	20	20	20	20	20
Dilution	1	1	1	1	1
Reporting Limit	194	195	194	185	199

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	Result		SSRL	Result		SSRL	Result		SSRL
SHC	C9	n-Nonane (C9)		U	194		U	195	1.55	J	194	3.70	J	185		U	199
SHC	C10	n-Decane (C10)		U	194	1.75	J	195	2.52	J	194	3.89	J	185	1.39	J	199
SHC	C11	n-Undecane (C11)		U	194	1.56	J	195	2.52	J	194	4.63	J	185	1.59	J	199
SHC	C12	n-Dodecane (C12)		U	194	3.31	J	195	4.27	J	194	5.93	J	185	4.98	J	199
SHC	C13	n-Tridecane (C13)		U	194	1.75	J	195	3.11	J	194	4.82	J	185	13.7	J	199
SHC	1380	2,6,10 Trimethyldodecane (1380)		U	194		U	195		U	194		U	185		U	199
SHC	C14	n-Tetradecane (C14)		U	194	2.72	J	195	4.47	J	194	7.78	J	185	51.2	J	199
SHC	1470	2,6,10 Trimethyltridecane (1470)		U	194	2.14	J	195	3.69	J	194	6.11	J	185	30.9	J	199
SHC	C15	n-Pentadecane (C15)	8.92	J	194	8.37	J	195	10.9	J	194	21.5	J	185	182	J	199
SHC	C16	n-Hexadecane (C16)	5.24	J	194	6.81	J	195	7.38	J	194	14.6	J	185	539		199
SHC	1650	Norpristane (1650)		U	194		U	195		U	194		U	185	119	J	199
SHC	C17	n-Heptadecane (C17)	26.6	J	194	19.1	J	195	15.5	J	194	8.33	J	185	1080		199
SHC	Pr	Pristane	35.9	J	194	19.6	J	195	25.2	J	194	21.7	J	185	481		199
SHC	C18	n-Octadecane (C18)	104	J	194	46.1	J	195	59.8	J	194		U	185	1770		199
SHC	Ph	Phytane	153	J	194	89.9	J	195	74.8	J	194	28.9	J	185	645		199
SHC	C19	n-Nonadecane (C19)	439		194	255		195	185	J	194	15.0	J	185	2260		199
SHC	C20	n-Eicosane (C20)		U	194		U	195		U	194	56.3	J	185	2420		199
SHC	C21	n-Heneicosane (C21)		U	194		U	195		U	194	106	J	185	3140		199
SHC	C22	n-Docosane (C22)		U	194		U	195		U	194	69.8	J	185	1720		199
SHC	C23	n-Tricosane (C23)		U	194	696		195	476		194		U	185	514		199
SHC	C24	n-Tetracosane (C24)		U	194		U	195		U	194		U	185		U	199
SHC	C25	n-Pentacosane (C25)		U	194		U	195		U	194		U	185		U	199
SHC	C26	n-Hexacosane (C26)		U	194		U	195		U	194		U	185		U	199
SHC	C27	n-Heptacosane (C27)		U	194		U	195		U	194		U	185		U	199
SHC	C28	n-Octacosane (C28)		U	194		U	195		U	194		U	185		U	199
SHC	C29	n-Nonacosane (C29)		U	194		U	195		U	194		U	185		U	199
SHC	C30	n-Triacontane (C30)		U	194		U	195		U	194		U	185		U	199
SHC	C31	n-Hentriacontane (C31)		U	194		U	195		U	194		U	185		U	199
SHC	C32	n-Dotriacontane (C32)		U	194		U	195		U	194		U	185		U	199
SHC	C33	n-Tritriacontane (C33)		U	194		U	195		U	194		U	185		U	199
SHC	C34	n-Tetratriacontane (C34)		U	194		U	195		U	194		U	185		U	199
SHC	C35	n-Pentatriacontane (C35)		U	194		U	195		U	194		U	185		U	199
SHC	C36	n-Hexatriacontane (C36)		U	194		U	195		U	194		U	185		U	199
SHC	C37	n-Heptatriacontane (C37)		U	194		U	195		U	194		U	185		U	199
SHC	C38	n-Octatriacontane (C38)		U	194		U	195		U	194		U	185		U	199
SHC	C39	n-Nonatriacontane (C39)		U	194		U	195		U	194		U	185		U	199
SHC	C40	n-Tetracontane (C40)		U	194		U	195		U	194		U	185		U	199
SHC	TSH	Total Saturated Hydrocarbons	773		194	1160		195	877		194	379		185	15000		199
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	966000		6400	852000		6420	889000		6410	928000		6110	950000		6570

Surrogates (% Recovery)					
ortho-Terphenyl	106	93	96	97	93
d50-Tetracosane	93	84	85	90	99

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	100 QUENCHING OIL - BLACK BEAR
Lab ID	1611009-10
Matrix	Product
Reference Method	SHC
Batch ID	SO120216B02
Date Collected	11/22/2016
Date Received	11/28/2016
Date Prepped	12/02/2016
Date Analyzed	12/05/2016
Sample Size (wet)	0.1001
% Solid	100.00
File ID	F1712041646.d
Units	mg/Kg
Final Volume	20
Dilution	1
Reporting Limit	200

Class	Abbrev	Analytes	Result		SSRL
SHC	C9	n-Nonane (C9)	6.19	J	200
SHC	C10	n-Decane (C10)	0.999	J	200
SHC	C11	n-Undecane (C11)	1.20	J	200
SHC	C12	n-Dodecane (C12)	4.00	J	200
SHC	C13	n-Tridecane (C13)	5.20	J	200
SHC	1380	2,6,10 Trimethyldodecane (1380)		U	200
SHC	C14	n-Tetradecane (C14)	9.59	J	200
SHC	1470	2,6,10 Trimethyltridecane (1470)	19.4	J	200
SHC	C15	n-Pentadecane (C15)	27.4	J	200
SHC	C16	n-Hexadecane (C16)	30.4	J	200
SHC	1650	Norpristane (1650)	23.6	J	200
SHC	C17	n-Heptadecane (C17)	55.3	J	200
SHC	Pr	Pristane	154	J	200
SHC	C18	n-Octadecane (C18)	91.1	J	200
SHC	Ph	Phytane	103	J	200
SHC	C19	n-Nonadecane (C19)	88.1	J	200
SHC	C20	n-Eicosane (C20)		U	200
SHC	C21	n-Heneicosane (C21)	648		200
SHC	C22	n-Docosane (C22)	662		200
SHC	C23	n-Tricosane (C23)	1200		200
SHC	C24	n-Tetracosane (C24)	1060		200
SHC	C25	n-Pentacosane (C25)		U	200
SHC	C26	n-Hexacosane (C26)		U	200
SHC	C27	n-Heptacosane (C27)		U	200
SHC	C28	n-Octacosane (C28)		U	200
SHC	C29	n-Nonacosane (C29)		U	200
SHC	C30	n-Triacontane (C30)		U	200
SHC	C31	n-Hentriacontane (C31)	233		200
SHC	C32	n-Dotriacontane (C32)		U	200
SHC	C33	n-Tritriacontane (C33)		U	200
SHC	C34	n-Tetratriacontane (C34)		U	200
SHC	C35	n-Pentatriacontane (C35)		U	200
SHC	C36	n-Hexatriacontane (C36)		U	200
SHC	C37	n-Heptatriacontane (C37)		U	200
SHC	C38	n-Octatriacontane (C38)		U	200
SHC	C39	n-Nonatriacontane (C39)		U	200
SHC	C40	n-Tetracontane (C40)		U	200
SHC	TSH	Total Saturated Hydrocarbons	4420		200
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	1010000		6590

Surrogates (% Recovery)	
ortho-Terphenyl	98
d50-Tetracosane	99

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	MOBIL VELOCITE No.10	MOBIL VACTRA No. 2 WAY OIL	MOBIL VACTRA No. 4
Lab ID	1611009-11	1611009-12	1611009-13
Matrix	Product	Product	Product
Reference Method	SHC	SHC	SHC
Batch ID	SO120216B02	SO120216B02	SO120216B02
Date Collected	11/22/2016	11/22/2016	12/01/2016
Date Received	11/28/2016	11/28/2016	12/01/2016
Date Prepped	12/02/2016	12/02/2016	12/02/2016
Date Analyzed	12/05/2016	12/05/2016	12/05/2016
Sample Size (wet)	0.1055	0.1046	0.1026
% Solid	100.00	100.00	100.00
File ID	F1712041648.d	F1712041650.d	F1712041652.d
Units	mg/Kg	mg/Kg	mg/Kg
Final Volume	20	20	20
Dilution	1	1	1
Reporting Limit	190	191	195

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	Result		SSRL
SHC	C9	n-Nonane (C9)		U	190	4.78	J	191	5.46	J	195
SHC	C10	n-Decane (C10)	3.79	J	190	9.37	J	191	9.75	J	195
SHC	C11	n-Undecane (C11)	6.64	J	190	7.27	J	191	8.97	J	195
SHC	C12	n-Dodecane (C12)	10.2	J	190	7.65	J	191	7.21	J	195
SHC	C13	n-Tridecane (C13)	16.7	J	190	8.41	J	191	5.26	J	195
SHC	1380	2,6,10 Trimethyldodecane (1380)		U	190		U	191		U	195
SHC	C14	n-Tetradecane (C14)	23.1	J	190	22.4	J	191	20.1	J	195
SHC	1470	2,6,10 Trimethyltridecane (1470)	18.4	J	190	11.1	J	191	9.36	J	195
SHC	C15	n-Pentadecane (C15)	35.4	J	190	9.94	J	191	15.6	J	195
SHC	C16	n-Hexadecane (C16)	30.5	J	190	6.50	J	191	7.21	J	195
SHC	1650	Norpristane (1650)	50.8	J	190	1.91	J	191	2.73	J	195
SHC	C17	n-Heptadecane (C17)	9.29	J	190	10.1	J	191	7.99	J	195
SHC	Pr	Pristane	170	J	190	5.35	J	191		U	195
SHC	C18	n-Octadecane (C18)		U	190	124	GJ	191	128	GJ	195
SHC	Ph	Phytane	583		190	49.5	GJ	191	26.1	GJ	195
SHC	C19	n-Nonadecane (C19)		U	190		U	191		U	195
SHC	C20	n-Eicosane (C20)		U	190		U	191		U	195
SHC	C21	n-Heneicosane (C21)		U	190		U	191		U	195
SHC	C22	n-Docosane (C22)		U	190		U	191		U	195
SHC	C23	n-Tricosane (C23)		U	190		U	191		U	195
SHC	C24	n-Tetracosane (C24)		U	190		U	191		U	195
SHC	C25	n-Pentacosane (C25)		U	190		U	191		U	195
SHC	C26	n-Hexacosane (C26)		U	190		U	191		U	195
SHC	C27	n-Heptacosane (C27)		U	190		U	191		U	195
SHC	C28	n-Octacosane (C28)		U	190		U	191		U	195
SHC	C29	n-Nonacosane (C29)		U	190		U	191		U	195
SHC	C30	n-Triacontane (C30)		U	190		U	191		U	195
SHC	C31	n-Hentriacontane (C31)	1130		190	2420		191	900		195
SHC	C32	n-Dotriacontane (C32)		U	190		U	191		U	195
SHC	C33	n-Tritriacontane (C33)		U	190		U	191		U	195
SHC	C34	n-Tetratriacontane (C34)		U	190		U	191		U	195
SHC	C35	n-Pentatriacontane (C35)		U	190		U	191	904		195
SHC	C36	n-Hexatriacontane (C36)		U	190		U	191		U	195
SHC	C37	n-Heptatriacontane (C37)		U	190		U	191		U	195
SHC	C38	n-Octatriacontane (C38)		U	190		U	191		U	195
SHC	C39	n-Nonatriacontane (C39)		U	190		U	191		U	195
SHC	C40	n-Tetracontane (C40)		U	190		U	191		U	195
SHC	TSH	Total Saturated Hydrocarbons	2090		190	2700		191	2060		195
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	976000		6260	884000		6310	628000		6430

Surrogates (% Recovery)			
ortho-Terphenyl	95	96	96
d50-Tetracosane	94	93	90

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Reference Material - Reserve Tank Oil	New Oil
Lab ID	1611009-14	1611009-15
Matrix	Product	Product
Reference Method	SHC	SHC
Batch ID	SO120216B02	SO120216B02
Date Collected	11/21/2014	12/18/2014
Date Received	11/25/2014	12/22/2014
Date Prepped	12/02/2016	12/02/2016
Date Analyzed	12/05/2016	12/06/2016
Sample Size (wet)	0.1017	0.1017
% Solid	100.00	100.00
File ID	F1712041654.d	F1712041656.d
Units	mg/Kg	mg/Kg
Final Volume	20	20
Dilution	1	1
Reporting Limit	197	197

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL
SHC	C9	n-Nonane (C9)		U	197		U	197
SHC	C10	n-Decane (C10)	2.36	J	197	7.08	J	197
SHC	C11	n-Undecane (C11)	3.34	J	197	2.56	J	197
SHC	C12	n-Dodecane (C12)	5.90	J	197	7.08	J	197
SHC	C13	n-Tridecane (C13)	109	GJ	197	32.1	J	197
SHC	1380	2,6,10 Trimethyldodecane (1380)	33.6	J	197	18.1	J	197
SHC	C14	n-Tetradecane (C14)	260		197	186	J	197
SHC	1470	2,6,10 Trimethyltridecane (1470)	472		197	118	J	197
SHC	C15	n-Pentadecane (C15)	859		197	743		197
SHC	C16	n-Hexadecane (C16)	1670		197	1870		197
SHC	1650	Norpristane (1650)	649		197	706		197
SHC	C17	n-Heptadecane (C17)	1830		197	3380		197
SHC	Pr	Pristane	1730		197	1910		197
SHC	C18	n-Octadecane (C18)	1920		197	5490		197
SHC	Ph	Phytane	1170		197	3460		197
SHC	C19	n-Nonadecane (C19)	2020		197	7060		197
SHC	C20	n-Eicosane (C20)	1370		197	5520		197
SHC	C21	n-Heneicosane (C21)	993		197	2260		197
SHC	C22	n-Docosane (C22)	445		197	569		197
SHC	C23	n-Tricosane (C23)	194	J	197		U	197
SHC	C24	n-Tetracosane (C24)		U	197		U	197
SHC	C25	n-Pentacosane (C25)		U	197		U	197
SHC	C26	n-Hexacosane (C26)		U	197		U	197
SHC	C27	n-Heptacosane (C27)		U	197		U	197
SHC	C28	n-Octacosane (C28)		U	197		U	197
SHC	C29	n-Nonacosane (C29)		U	197		U	197
SHC	C30	n-Triacontane (C30)		U	197		U	197
SHC	C31	n-Hentriacontane (C31)	96.6	J	197	112	J	197
SHC	C32	n-Dotriacontane (C32)		U	197		U	197
SHC	C33	n-Tritriacontane (C33)		U	197		U	197
SHC	C34	n-Tetratriacontane (C34)		U	197		U	197
SHC	C35	n-Pentatriacontane (C35)		U	197		U	197
SHC	C36	n-Hexatriacontane (C36)		U	197		U	197
SHC	C37	n-Heptatriacontane (C37)		U	197		U	197
SHC	C38	n-Octatriacontane (C38)		U	197		U	197
SHC	C39	n-Nonatriacontane (C39)		U	197		U	197
SHC	C40	n-Tetracontane (C40)		U	197		U	197
SHC	TSH	Total Saturated Hydrocarbons	15800		197	33400		197
SHC	TPH	Total Petroleum Hydrocarbons (C9-C44)	996000		6490	954000		6490

Surrogates (% Recovery)		
ortho-Terphenyl	94	94
d50-Tetracosane	91	99

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Method Blank
Lab ID	SO120216B02
Matrix	Product
Reference Method	Modified 8270D
Batch ID	SO120216B02
Date Collected	N/A
Date Received	N/A
Date Prepped	12/02/2016
Date Analyzed	12/05/2016
Sample Size (wet)	0.1
% Solid	100.00
File ID	F312051606.D
Units	mg/Kg
Final Volume	20
Dilution	1
Reporting Limit	2.00

Class	Abbrev	Analytes	Result		SSRL
2	D0	cis/trans-Decalin		U	2.00
2	D1	C1-Decalins		U	2.00
2	D2	C2-Decalins		U	2.00
2	D3	C3-Decalins		U	2.00
2	D4	C4-Decalins		U	2.00
2	BT0	Benzothiophene		U	2.00
2	BT1	C1-Benzo(b)thiophenes		U	2.00
2	BT2	C2-Benzo(b)thiophenes		U	2.00
2	BT3	C3-Benzo(b)thiophenes		U	2.00
2	BT4	C4-Benzo(b)thiophenes		U	2.00
2	N0	Naphthalene	0.103	J	2.00
2	N1	C1-Naphthalenes	0.162	J	2.00
2	N2	C2-Naphthalenes		U	2.00
2	N3	C3-Naphthalenes		U	2.00
2	N4	C4-Naphthalenes		U	2.00
2	B	Biphenyl		U	2.00
3	DF	Dibenzofuran		U	2.00
3	AY	Acenaphthylene		U	2.00
3	AE	Acenaphthene		U	2.00
3	F0	Fluorene	0.116	J	2.00
3	F1	C1-Fluorenes		U	2.00
3	F2	C2-Fluorenes		U	2.00
3	F3	C3-Fluorenes		U	2.00
3	A0	Anthracene		U	2.00
3	P0	Phenanthrene		U	2.00
3	PA1	C1-Phenanthrenes/Anthracenes		U	2.00
3	PA2	C2-Phenanthrenes/Anthracenes		U	2.00
3	PA3	C3-Phenanthrenes/Anthracenes		U	2.00
3	PA4	C4-Phenanthrenes/Anthracenes		U	2.00
3	RET	Retene		U	2.00
3	DBT0	Dibenzothiophene		U	2.00
3	DBT1	C1-Dibenzothiophenes		U	2.00
3	DBT2	C2-Dibenzothiophenes		U	2.00
3	DBT3	C3-Dibenzothiophenes		U	2.00
3	DBT4	C4-Dibenzothiophenes		U	2.00
4	BF	Benzo(b)fluorene		U	2.00
4	FL0	Fluoranthene		U	2.00
4	PY0	Pyrene		U	2.00
4	FP1	C1-Fluoranthenes/Pyrenes		U	2.00
4	FP2	C2-Fluoranthenes/Pyrenes		U	2.00
4	FP3	C3-Fluoranthenes/Pyrenes		U	2.00
4	FP4	C4-Fluoranthenes/Pyrenes		U	2.00
4	NBT0	Naphthobenzothiophenes		U	2.00
4	NBT1	C1-Naphthobenzothiophenes		U	2.00
4	NBT2	C2-Naphthobenzothiophenes		U	2.00
4	NBT3	C3-Naphthobenzothiophenes		U	2.00
4	NBT4	C4-Naphthobenzothiophenes		U	2.00
4	BA0	Benz[a]anthracene		U	2.00
4	C0	Chrysene/Triphenylene		U	2.00
4	BC1	C1-Chrysenes		U	2.00
4	BC2	C2-Chrysenes		U	2.00
4	BC3	C3-Chrysenes		U	2.00
4	BC4	C4-Chrysenes		U	2.00

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Method Blank
Lab ID	SO120216B02
Matrix	Product
Reference Method	Modified 8270D
Batch ID	SO120216B02
Date Collected	N/A
Date Received	N/A
Date Prepped	12/02/2016
Date Analyzed	12/05/2016
Sample Size (wet)	0.1
% Solid	100.00
File ID	F312051606.D
Units	mg/Kg
Final Volume	20
Dilution	1
Reporting Limit	2.00

Class	Abbrev	Analytes	Result		SSRL
5	BBF	Benzo[b]fluoranthene		U	2.00
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene		U	2.00
5	BAF	Benzo[a]fluoranthene		U	2.00
5	BEP	Benzo[e]pyrene		U	2.00
5	BAP	Benzo[a]pyrene		U	2.00
5	PER	Perylene		U	2.00
6	IND	Indeno[1,2,3-cd]pyrene		U	2.00
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene		U	2.00
6	GHI	Benzo[g,h,i]perylene		U	2.00
3	CAR	Carbazole		U	2.00
3	4MDT	4-Methyldibenzothiophene		U	2.00
3	2MDT	2/3-Methyldibenzothiophene		U	2.00
3	1MDT	1-Methyldibenzothiophene		U	2.00
3	3MP	3-Methylphenanthrene		U	2.00
3	2MP	2-Methylphenanthrene		U	2.00
3	2MA	2-Methylanthracene		U	2.00
3	9MP	9/4-Methylphenanthrene		U	2.00
3	1MP	1-Methylphenanthrene		U	2.00
t23	T4	C23 Tricyclic Terpane		U	2.00
t24	T5	C24 Tricyclic Terpane		U	2.00
t25	T6	C25 Tricyclic Terpane		U	2.00
te24	T6a	C24 Tetracyclic Terpane		U	2.00
t26S	T6b	C26 Tricyclic Terpane-22S		U	2.00
t26R	T6c	C26 Tricyclic Terpane-22R		U	2.00
t28S	T7	C28 Tricyclic Terpane-22S		U	2.00
t28R	T8	C28 Tricyclic Terpane-22R		U	2.00
t29S	T9	C29 Tricyclic Terpane-22S		U	2.00
t29R	T10	C29 Tricyclic Terpane-22R		U	2.00
Ts	T11	18a-22,29,30-Trisnorneohopane-TS		U	2.00
t30S	T11a	C30 Tricyclic Terpane-22S		U	2.00
t30R	T11b	C30 Tricyclic Terpane-22R		U	2.00
Tm	T12	17a(H)-22,29,30-Trisnorhopane-TM		U	2.00
BNH	T14a	17a/b,21b/a 28,30-Bisnorhopane		U	2.00
25N	T14b	17a(H),21b(H)-25-Norhopane		U	2.00
H29	T15	30-Norhopane		U	2.00
C29Ts	T16	18a(H)-30-Norneohopane-C29Ts		U	2.00
X	X	17a(H)-Diahopane		U	2.00
M29	T17	30-Normoretane		U	2.00
OL	T18	18a(H)&18b(H)-Oleananes		U	2.00
H30	T19	Hopane		U	2.00
M30	T20	Moretane		U	2.00
H31S	T21	30-Homohopane-22S		U	2.00
H31R	T22	30-Homohopane-22R		U	2.00
T22A	T22A	T22a-Gammacerane/C32-diahopane		U	2.00
H32S	T26	30,31-Bishomohopane-22S		U	2.00
H32R	T27	30,31-Bishomohopane-22R		U	2.00
H33S	T30	30,31-Trishomohopane-22S		U	2.00
H33R	T31	30,31-Trishomohopane-22R		U	2.00
H34S	T32	Tetrakishomohopane-22S		U	2.00
H34R	T33	Tetrakishomohopane-22R		U	2.00
H35S	T34	Pentakishomohopane-22S		U	2.00
H35R	T35	Pentakishomohopane-22R		U	2.00
d27S	S4	13b(H),17a(H)-20S-Diacholestane		U	2.00
d27R	S5	13b(H),17a(H)-20R-Diacholestane		U	2.00
d28S	S8	13b,17a-20S-Methyldiacholestane		U	2.00
aa27S	S12	14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12)		U	2.00
aa27R	S17	14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17)		U	2.00
d29R	S18	Unknown Sterane (S18)		U	2.00
d29S	S19	13a,17b-20S-Ethyldiacholestane		U	2.00
aa28S	S20	14a,17a-20S-Methylcholestane		U	2.00
aa28R	S24	14a,17a-20R-Methylcholestane		U	2.00
aa29S	S25	14a(H),17a(H)-20S-Ethylcholestane		U	2.00
aa29R	S28	14a(H),17a(H)-20R-Ethylcholestane		U	2.00
bb27R	S14	14b(H),17b(H)-20R-Cholestane		U	2.00
bb27S	S15	14b(H),17b(H)-20S-Cholestane		U	2.00
bb28R	S22	14b,17b-20R-Methylcholestane		U	2.00
bb28S	S23	14b,17b-20S-Methylcholestane		U	2.00
bb29R	S26	14b(H),17b(H)-20R-Ethylcholestane		U	2.00
bb29S	S27	14b(H),17b(H)-20S-Ethylcholestane		U	2.00
RC26/SC27TA	RC26/SC27TA	C26,20R- +C27,20S- triaromatic steroid		U	2.00
SC28TA	SC28TA	C28,20S-triaromatic steroid		U	2.00
RC27TA	RC27TA	C27,20R-triaromatic steroid		U	2.00
RC28TA	RC28TA	C28,20R-triaromatic steroid		U	2.00

Surrogates (% Recovery)	
Naphthalene-d8	101
Phenanthrene-d10	102
Benzo[a]pyrene-d12	109
5B(H)Cholane	103

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Laboratory Control Sample
Lab ID	SO120216LCS02
Matrix	Product
Reference Method	Modified 8270D
Batch ID	SO120216B02
Date Collected	N/A
Date Received	N/A
Date Prepped	12/02/2016
Date Analyzed	12/05/2016
Sample Size (wet)	0.1
% Solid	100.00
File ID	F312051607.D
Units	mg/Kg
Final Volume	20
Dilution	1
Reporting Limit	2.00

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
2	N0	Naphthalene	200	S	2.00	100	0.200	50	130
3	AY	Acenaphthylene	203	S	2.00	101	0.200	50	130
3	AE	Acenaphthene	211	S	2.00	106	0.200	50	130
3	F0	Fluorene	210	S	2.00	105	0.200	50	130
3	A0	Anthracene	217	S	2.00	109	0.200	50	130
3	P0	Phenanthrene	208	S	2.00	104	0.200	50	130
4	FL0	Fluoranthene	168	S	2.00	84	0.200	50	130
4	PY0	Pyrene	169	S	2.00	84	0.200	50	130
4	BA0	Benz[a]anthracene	189	S	2.00	95	0.200	50	130
4	C0	Chrysene/Triphenylene	193	S	2.00	96	0.200	50	130
5	BBF	Benzo[b]fluoranthene	203	S	2.00	102	0.200	50	130
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	221	S	2.00	111	0.200	50	130
5	BAP	Benzo[a]pyrene	228	S	2.00	114	0.200	50	130
6	IND	Indeno[1,2,3-cd]pyrene	191	S	2.00	96	0.200	50	130
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	218	S	2.00	109	0.200	50	130
6	GHI	Benzo[g,h,i]perylene	205	S	2.00	102	0.200	50	130

Surrogates (% Recovery)	
Naphthalene-d8	102
Phenanthrene-d10	101
Benzo[a]pyrene-d12	110
5B(H)Cholane	101

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Laboratory Control Sample Dup
Lab ID	SO120216LCSD02
Matrix	Product
Reference Method	Modified 8270D
Batch ID	SO120216B02
Date Collected	N/A
Date Received	N/A
Date Prepped	12/02/2016
Date Analyzed	12/05/2016
Sample Size (wet)	0.1
% Solid	100.00
File ID	F312051608.D
Units	mg/Kg
Final Volume	20
Dilution	1
Reporting Limit	2.00

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit	RPD	RPD Limit
2	N0	Naphthalene	212	S	2.00	106	0.200	50	130	6	30
3	AY	Acenaphthylene	219	S	2.00	109	0.200	50	130	8	30
3	AE	Acenaphthene	224	S	2.00	112	0.200	50	130	6	30
3	F0	Fluorene	222	S	2.00	111	0.200	50	130	6	30
3	A0	Anthracene	232	S	2.00	116	0.200	50	130	7	30
3	P0	Phenanthrene	222	S	2.00	111	0.200	50	130	7	30
4	FL0	Fluoranthene	179	S	2.00	89	0.200	50	130	6	30
4	PY0	Pyrene	180	S	2.00	90	0.200	50	130	6	30
4	BA0	Benz[a]anthracene	205	S	2.00	103	0.200	50	130	8	30
4	C0	Chrysene/Triphenylene	211	S	2.00	105	0.200	50	130	9	30
5	BBF	Benzo[b]fluoranthene	222	S	2.00	111	0.200	50	130	9	30
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	242	S	2.00	121	0.200	50	130	9	30
5	BAP	Benzo[a]pyrene	248	S	2.00	124	0.200	50	130	9	30
6	IND	Indeno[1,2,3-cd]pyrene	222	S	2.00	111	0.200	50	130	15	30
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	238	S	2.00	119	0.200	50	130	9	30
6	GHI	Benzo[g,h,i]perylene	224	S	2.00	112	0.200	50	130	9	30

Surrogates (% Recovery)	
Naphthalene-d8	100
Phenanthrene-d10	99
Benzo[a]pyrene-d12	109
5B(H)Cholane	99

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	CUTTING OIL	CUTTING OIL
Lab ID	1611009-01	1611009-01D
Matrix	Product	Product
Reference Method	Modified 8270D	Modified 8270D
Batch ID	SO120216B02	SO120216B02
Date Collected	11/22/2016	11/22/2016
Date Received	11/23/2016	11/23/2016
Date Prepped	12/02/2016	12/02/2016
Date Analyzed	12/06/2016	12/06/2016
Sample Size (wet)	0.104	0.1022
% Solid	100.00	100.00
File ID	F312051609.D	F312051610.D
Units	mg/Kg	mg/Kg
Final Volume	20	20
Dilution	1	1
Reporting Limit	1.92	1.96

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	RPD	RPD Limit	
2	D0	cis/trans-Decalin	53.9		1.92	56.1		1.96	4	30	
2	D1	C1-Decalins	109		1.92	119		1.96	9	30	
2	D2	C2-Decalins	277		1.92	309		1.96	11	30	
2	D3	C3-Decalins	270		1.92	313		1.96	15	30	
2	D4	C4-Decalins	527		1.92	582		1.96	10	30	
2	BT0	Benzothiophene	0.619	J	1.92	0.784	J	1.96	24	30	
2	BT1	C1-Benzo(b)thiophenes	7.88		1.92	7.93		1.96	1	30	
2	BT2	C2-Benzo(b)thiophenes	10.3		1.92	10.1		1.96	1	30	
2	BT3	C3-Benzo(b)thiophenes		U	1.92		U	1.96		30	N/A
2	BT4	C4-Benzo(b)thiophenes		U	1.92		U	1.96		30	N/A
2	N0	Naphthalene	3.03		1.92	3.05		1.96	1	30	
2	N1	C1-Naphthalenes	9.13		1.92	9.37		1.96	3	30	
2	N2	C2-Naphthalenes	30.5		1.92	30.6		1.96	0	30	
2	N3	C3-Naphthalenes	51.9		1.92	52.1		1.96	0	30	
2	N4	C4-Naphthalenes	104		1.92	100		1.96	4	30	
2	B	Biphenyl	45.4		1.92	45.7		1.96	1	30	
3	DF	Dibenzofuran	4.44		1.92	4.50		1.96	1	30	
3	AY	Acenaphthylene	4.35	G	1.92	4.30	G	1.96	1	30	
3	AE	Acenaphthene	6.97	G	1.92	7.00	G	1.96	0	30	
3	F0	Fluorene	8.49		1.92	8.09		1.96	5	30	
3	F1	C1-Fluorenes	51.5		1.92	45.8		1.96	12	30	
3	F2	C2-Fluorenes	193		1.92	186		1.96	4	30	
3	F3	C3-Fluorenes	232		1.92	220		1.96	5	30	
3	A0	Anthracene		U	1.92		U	1.96		30	N/A
3	P0	Phenanthrene	4.41		1.92	4.00		1.96	10	30	
3	PA1	C1-Phenanthrenes/Anthracenes	34.5		1.92	30.5		1.96	13	30	
3	PA2	C2-Phenanthrenes/Anthracenes	53.7		1.92	52.3		1.96	3	30	
3	PA3	C3-Phenanthrenes/Anthracenes	52.0		1.92	50.6		1.96	3	30	
3	PA4	C4-Phenanthrenes/Anthracenes	35.0		1.92	38.4		1.96	9	30	
3	RET	Retene		U	1.92		U	1.96		30	N/A
3	DBT0	Dibenzothiophene	1.77	J	1.92	1.66	J	1.96	6	30	
3	DBT1	C1-Dibenzothiophenes	26.6		1.92	27.1		1.96	2	30	
3	DBT2	C2-Dibenzothiophenes	64.2		1.92	62.2		1.96	3	30	
3	DBT3	C3-Dibenzothiophenes	63.4		1.92	63.8		1.96	1	30	
3	DBT4	C4-Dibenzothiophenes	49.1		1.92	49.0		1.96	0	30	
4	BF	Benzo(b)fluorene		U	1.92		U	1.96		30	N/A
4	FL0	Fluoranthene	0.393	J	1.92	0.319	J	1.96	21	30	
4	PY0	Pyrene	2.91		1.92	3.00		1.96	3	30	
4	FP1	C1-Fluoranthenes/Pyrenes	8.80		1.92	8.40		1.96	5	30	
4	FP2	C2-Fluoranthenes/Pyrenes	20.5		1.92	20.6		1.96	1	30	
4	FP3	C3-Fluoranthenes/Pyrenes	16.7	G	1.92	16.4	G	1.96	2	30	
4	FP4	C4-Fluoranthenes/Pyrenes	18.4	G	1.92	16.4	G	1.96	11	30	
4	NBT0	Naphthobenzothiophenes		U	1.92		U	1.96		30	N/A
4	NBT1	C1-Naphthobenzothiophenes	10.4	G	1.92	9.98	G	1.96	4	30	
4	NBT2	C2-Naphthobenzothiophenes		U	1.92		U	1.96		30	N/A
4	NBT3	C3-Naphthobenzothiophenes		U	1.92		U	1.96		30	N/A
4	NBT4	C4-Naphthobenzothiophenes		U	1.92		U	1.96		30	N/A
4	BA0	Benz[a]anthracene		U	1.92		U	1.96		30	N/A
4	C0	Chrysene/Triphenylene		U	1.92		U	1.96		30	N/A
4	BC1	C1-Chrysenes	18.2	G	1.92	16.9	G	1.96	7	30	
4	BC2	C2-Chrysenes		U	1.92		U	1.96		30	N/A
4	BC3	C3-Chrysenes		U	1.92		U	1.96		30	N/A
4	BC4	C4-Chrysenes		U	1.92		U	1.96		30	N/A

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	CUTTING OIL	CUTTING OIL
Lab ID	1611009-01	1611009-01D
Matrix	Product	Product
Reference Method	Modified 8270D	Modified 8270D
Batch ID	SO120216B02	SO120216B02
Date Collected	11/22/2016	11/22/2016
Date Received	11/23/2016	11/23/2016
Date Prepped	12/02/2016	12/02/2016
Date Analyzed	12/06/2016	12/06/2016
Sample Size (wet)	0.104	0.1022
% Solid	100.00	100.00
File ID	F312051609.D	F312051610.D
Units	mg/Kg	mg/Kg
Final Volume	20	20
Dilution	1	1
Reporting Limit	1.92	1.96

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	RPD	RPD Limit	
5	BBF	Benzo[b]fluoranthene		U	1.92		U	1.96		30	N/A
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene		U	1.92		U	1.96		30	N/A
5	BAF	Benzo[a]fluoranthene		U	1.92		U	1.96		30	N/A
5	BEP	Benzo[e]pyrene		U	1.92		U	1.96		30	N/A
5	BAP	Benzo[a]pyrene		U	1.92		U	1.96		30	N/A
5	PER	Perylene		U	1.92		U	1.96		30	N/A
6	IND	Indeno[1,2,3-cd]pyrene		U	1.92		U	1.96		30	N/A
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene		U	1.92		U	1.96		30	N/A
6	GHI	Benzo[g,h,i]perylene	0.527	J	1.92	0.489	J	1.96	7	30	
3	CAR	Carbazole	1.37	J	1.92	1.35	J	1.96	2	30	
3	4MDT	4-Methyldibenzothiophene	8.79		1.92	8.60		1.96	2	30	
3	2MDT	2/3-Methyldibenzothiophene	8.85		1.92	9.33		1.96	5	30	
3	1MDT	1-Methyldibenzothiophene	1.81	J	1.92	1.86	J	1.96	3	30	
3	3MP	3-Methylphenanthrene	6.52		1.92	5.38		1.96	19	30	
3	2MP	2-Methylphenanthrene	6.29		1.92	5.94		1.96	6	30	
3	2MA	2-Methylanthracene	1.54	J	1.92	1.08	J	1.96	35	30	¤
3	9MP	9/4-Methylphenanthrene	6.99		1.92	7.13		1.96	2	30	
3	1MP	1-Methylphenanthrene	3.69		1.92	3.80		1.96	3	30	
t23	T4	C23 Tricyclic Terpane	46.9		1.92	43.7		1.96	7	30	
t24	T5	C24 Tricyclic Terpane	19.4		1.92	19.1		1.96	2	30	
t25	T6	C25 Tricyclic Terpane	21.4		1.92	20.4		1.96	5	30	
te24	T6a	C24 Tetracyclic Terpane	21.3		1.92	20.0		1.96	6	30	
t26S	T6b	C26 Tricyclic Terpane-22S	7.48		1.92	8.75		1.96	16	30	
t26R	T6c	C26 Tricyclic Terpane-22R	6.70		1.92	8.03		1.96	18	30	
t28S	T7	C28 Tricyclic Terpane-22S	17.3		1.92	15.2		1.96	13	30	
t28R	T8	C28 Tricyclic Terpane-22R	22.4		1.92	23.0		1.96	2	30	
t29S	T9	C29 Tricyclic Terpane-22S	7.37		1.92	8.78		1.96	17	30	
t29R	T10	C29 Tricyclic Terpane-22R	12.8		1.92	11.1		1.96	14	30	
Ts	T11	18a-22,29,30-Trisnorneohopane-TS	24.3		1.92	23.9		1.96	2	30	
t30S	T11a	C30 Tricyclic Terpane-22S	6.87		1.92	8.92		1.96	26	30	
t30R	T11b	C30 Tricyclic Terpane-22R	6.75		1.92	7.55		1.96	11	30	
Tm	T12	17a(H)-22,29,30-Trisnorhopane-TM	18.6		1.92	19.9		1.96	7	30	
BNH	T14a	17a/b,21b/a 28,30-Bisnorhopane		U	1.92		U	1.96		30	N/A
25N	T14b	17a(H),21b(H)-25-Norhopane	4.96		1.92	5.15		1.96	4	30	
H29	T15	30-Norhopane	70.8		1.92	71.4		1.96	1	30	
C29Ts	T16	18a(H)-30-Norneohopane-C29Ts	13.8		1.92	16.0		1.96	14	30	
X	X	17a(H)-Diahopane	3.83		1.92	4.36		1.96	13	30	
M29	T17	30-Normoretane	6.68		1.92	6.21		1.96	7	30	
OL	T18	18a(H)&18b(H)-Oleananes		U	1.92		U	1.96		30	N/A
H30	T19	Hopane	68.9		1.92	69.1		1.96	0	30	
M30	T20	Moretane	5.80		1.92	6.44		1.96	10	30	
H31S	T21	30-Homohopane-22S	27.6		1.92	27.9		1.96	1	30	
H31R	T22	30-Homohopane-22R	24.2		1.92	24.5		1.96	1	30	
T22A	T22A	T22a-Gammacerane/C32-diahopane	7.22		1.92	6.42		1.96	12	30	
H32S	T26	30,31-Bishomohopane-22S	15.4		1.92	14.6		1.96	5	30	
H32R	T27	30,31-Bishomohopane-22R	10.1		1.92	10.8		1.96	7	30	
H33S	T30	30,31-Trishomohopane-22S	9.10		1.92	9.20		1.96	1	30	
H33R	T31	30,31-Trishomohopane-22R	5.81		1.92	5.64		1.96	3	30	
H34S	T32	Tetrakishomohopane-22S	4.76		1.92	5.04		1.96	6	30	
H34R	T33	Tetrakishomohopane-22R	2.87		1.92	3.70		1.96	25	30	
H35S	T34	Pentakishomohopane-22S	3.28		1.92	4.08		1.96	22	30	
H35R	T35	Pentakishomohopane-22R	3.69		1.92	3.13		1.96	16	30	
d27S	S4	13b(H),17a(H)-20S-Diacholestane	22.5		1.92	20.8		1.96	8	30	
d27R	S5	13b(H),17a(H)-20R-Diacholestane	16.1		1.92	17.4		1.96	8	30	
d28S	S8	13b,17a-20S-Methyldiacholestane	22.4		1.92	20.1		1.96	11	30	
aa27S	S12	14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12)	32.1		1.92	31.6		1.96	1	30	
aa27R	S17	14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17)	33.2		1.92	31.2		1.96	6	30	
d29R	S18	Unknown Sterane (S18)	7.65		1.92	7.71		1.96	1	30	
d29S	S19	13a,17b-20S-Ethyldiacholestane	2.66		1.92	2.28		1.96	16	30	
aa28S	S20	14a,17a-20S-Methylcholestane	14.4		1.92	14.2		1.96	2	30	
aa28R	S24	14a,17a-20R-Methylcholestane	7.66		1.92	7.69		1.96	0	30	
aa29S	S25	14a(H),17a(H)-20S-Ethylcholestane	12.0		1.92	10.8		1.96	10	30	
aa29R	S28	14a(H),17a(H)-20R-Ethylcholestane	11.6		1.92	12.1		1.96	4	30	
bb27R	S14	14b(H),17b(H)-20R-Cholestane	21.6		1.92	20.8		1.96	3	30	
bb27S	S15	14b(H),17b(H)-20S-Cholestane	22.8		1.92	22.5		1.96	1	30	
bb28R	S22	14b,17b-20R-Methylcholestane	16.3		1.92	12.7		1.96	25	30	
bb28S	S23	14b,17b-20S-Methylcholestane	17.2		1.92	17.0		1.96	1	30	
bb29R	S26	14b(H),17b(H)-20R-Ethylcholestane	23.4		1.92	24.6		1.96	5	30	
bb29S	S27	14b(H),17b(H)-20S-Ethylcholestane	15.8		1.92	15.3		1.96	3	30	
RC26/SC27TA	RC26/SC27TA	C26,20R- +C27,20S- triaromatic steroid	5.17		1.92	6.02		1.96	15	30	
SC28TA	SC28TA	C28,20S-triaromatic steroid	6.66		1.92	5.96		1.96	11	30	
RC27TA	RC27TA	C27,20R-triaromatic steroid	4.64		1.92	4.41		1.96	5	30	
RC28TA	RC28TA	C28,20R-triaromatic steroid		U	1.92		U	1.96		30	N/A

Surrogates (% Recovery)		
Naphthalene-d8	107	113
Phenanthrene-d10	60	58
Benzo[a]pyrene-d12	115	117
5B(H)Cholane	101	103

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Alaska North Slope Crude
Lab ID	SS112816ANC01
Matrix	Oil
Reference Method	Modified 8270D
Batch ID	N/A
Date Collected	N/A
Date Received	N/A
Date Prepped	N/A
Date Analyzed	11/10/2016
Sample Size (wet)	0.0502
% Solid	100.00
File ID	F311091613.D
Units	mg/Kg
Final Volume	10
Dilution	1
Reporting Limit	1.99

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
2	D0	cis/trans-Decalin	574		1.99	120	479.20	65	135
2	D1	C1-Decalins	905		1.99	124	728.90	65	135
2	D2	C2-Decalins	760		1.99	120	635.50	65	135
2	D3	C3-Decalins	412		1.99	125	329.80	65	135
2	D4	C4-Decalins	397		1.99	122	326.50	65	135
2	BT0	Benzothiophene	5.29		1.99	98	5.40	65	135
2	BT1	C1-Benzo(b)thiophenes	28.6		1.99	99	28.90	65	135
2	BT2	C2-Benzo(b)thiophenes	45.8		1.99	92	49.60	65	135
2	BT3	C3-Benzo(b)thiophenes	86.8		1.99	88	99.00	65	135
2	BT4	C4-Benzo(b)thiophenes	74.4		1.99	85	87.10	65	135
2	N0	Naphthalene	589		1.99	106	555.80	65	135
2	N1	C1-Naphthalenes	1200		1.99	103	1167.30	65	135
2	N2	C2-Naphthalenes	1370		1.99	97	1409.70	65	135
2	N3	C3-Naphthalenes	961		1.99	93	1035.90	65	135
2	N4	C4-Naphthalenes	542		1.99	97	561.10	65	135
2	B	Biphenyl	152		1.99	105	145.70	65	135
3	DF	Dibenzofuran	47.6		1.99	93	51.20	65	135
3	AY	Acenaphthylene	7.61		1.99	117	6.50	65	135
3	AE	Acenaphthene	14.3		1.99	76	18.70	65	135
3	F0	Fluorene	62.0		1.99	83	74.60	65	135
3	F1	C1-Fluorenes	143		1.99	84	170.20	65	135
3	F2	C2-Fluorenes	224		1.99	88	255.40	65	135
3	F3	C3-Fluorenes	211		1.99	88	238.50	65	135
3	A0	Anthracene		U	1.99				
3	P0	Phenanthrene	164		1.99	77	212.20	65	135
3	PA1	C1-Phenanthrenes/Anthracenes	315		1.99	73	432.70	65	135
3	PA2	C2-Phenanthrenes/Anthracenes	406		1.99	87	465.90	65	135
3	PA3	C3-Phenanthrenes/Anthracenes	292		1.99	92	317.40	65	135
3	PA4	C4-Phenanthrenes/Anthracenes	125		1.99	97	129.00	65	135
3	RET	Retene		U	1.99				
3	DBT0	Dibenzothiophene	121		1.99	87	138.90	65	135
3	DBT1	C1-Dibenzothiophenes	238		1.99	85	278.60	65	135
3	DBT2	C2-Dibenzothiophenes	301		1.99	80	377.50	65	135
3	DBT3	C3-Dibenzothiophenes	289		1.99	85	341.40	65	135
3	DBT4	C4-Dibenzothiophenes	166		1.99	91	183.40	65	135
4	BF	Benzo(b)fluorene	5.43		1.99				
4	FL0	Fluoranthene	3.23		1.99	81	4.00	65	135
4	PY0	Pyrene	9.38		1.99	72	13.00	65	135
4	FP1	C1-Fluoranthenes/Pyrenes	45.0		1.99	71	63.10	65	135
4	FP2	C2-Fluoranthenes/Pyrenes	75.1		1.99	73	102.20	65	135
4	FP3	C3-Fluoranthenes/Pyrenes	97.9		1.99	82	119.60	65	135
4	FP4	C4-Fluoranthenes/Pyrenes	82.8		1.99	80	104.00	65	135
4	NBT0	Naphthobenzothiophenes	35.0		1.99	80	43.80	65	135
4	NBT1	C1-Naphthobenzothiophenes	91.4		1.99	78	117.20	65	135
4	NBT2	C2-Naphthobenzothiophenes	126		1.99	77	163.30	65	135
4	NBT3	C3-Naphthobenzothiophenes	108		1.99	84	128.70	65	135
4	NBT4	C4-Naphthobenzothiophenes	76.5		1.99	86	89.00	65	135
4	BA0	Benz[a]anthracene	1.58	J	1.99	75	2.10	65	135
4	C0	Chrysene/Triphenylene	29.8		1.99	85	35.20	65	135
4	BC1	C1-Chrysenes	56.8		1.99	90	62.80	65	135
4	BC2	C2-Chrysenes	69.6		1.99	81	86.00	65	135
4	BC3	C3-Chrysenes	91.1		1.99	93	97.60	65	135
4	BC4	C4-Chrysenes	58.0		1.99	98	59.40	65	135

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	Alaska North Slope Crude
Lab ID	SS112816ANC01
Matrix	Oil
Reference Method	Modified 8270D
Batch ID	N/A
Date Collected	N/A
Date Received	N/A
Date Prepped	N/A
Date Analyzed	11/10/2016
Sample Size (wet)	0.0502
% Solid	100.00
File ID	F311091613.D
Units	mg/Kg
Final Volume	10
Dilution	1
Reporting Limit	1.99

Class	Abbrev	Analytes	Result		SSRL	% Rec	Spike Conc.	Lower Limit	Upper Limit
5	BBF	Benzo[b]fluoranthene	4.53		1.99	87	5.20	65	135
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	0.563	J	1.99				
5	BAF	Benzo[a]fluoranthene		U	1.99				
5	BEP	Benzo[e]pyrene	9.22		1.99	94	9.80	65	135
5	BAP	Benzo[a]pyrene	1.57	J	1.99	82	1.90	65	135
5	PER	Perylene	3.30		1.99	118	2.80	65	135
6	IND	Indeno[1,2,3-cd]pyrene	0.807	J	1.99				
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	1.50	J	1.99				
6	GHI	Benzo[g,h,i]perylene	3.72		1.99	120	3.10	65	135
3	CAR	Carbazole	4.54		1.99	76	6.00	65	135
3	4MDT	4-Methyldibenzothiophene	113		1.99	86	131.80	65	135
3	2MDT	2/3-Methyldibenzothiophene	92.0		1.99	94	97.50	65	135
3	1MDT	1-Methyldibenzothiophene	29.0		1.99	66	44.20	65	135
3	3MP	3-Methylphenanthrene	62.8		1.99	70	89.40	65	135
3	2MP	2-Methylphenanthrene	65.5		1.99	67	97.70	65	135
3	2MA	2-Methylanthracene	2.08		1.99	65	3.20	65	135
3	9MP	9/4-Methylphenanthrene	111		1.99	78	141.20	65	135
3	1MP	1-Methylphenanthrene	67.8		1.99	70	97.40	65	135
t23	T4	C23 Tricyclic Terpane	78.3		1.99	116	67.30	65	135
t24	T5	C24 Tricyclic Terpane	35.9		1.99	83	43.00	65	135
t25	T6	C25 Tricyclic Terpane	38.4		1.99	92	42.00	65	135
te24	T6a	C24 Tetracyclic Terpane	13.6		1.99	92	14.80	65	135
t26S	T6b	C26 Tricyclic Terpane-22S	15.7		1.99	89	17.70	65	135
t26R	T6c	C26 Tricyclic Terpane-22R	14.3		1.99	93	15.40	65	135
t28S	T7	C28 Tricyclic Terpane-22S	13.9		1.99	83	16.80	65	135
t28R	T8	C28 Tricyclic Terpane-22R	14.7		1.99	81	18.10	65	135
t29S	T9	C29 Tricyclic Terpane-22S	17.9		1.99	86	20.80	65	135
t29R	T10	C29 Tricyclic Terpane-22R	18.8		1.99	83	22.60	65	135
Ts	T11	18a-22,29,30-Trisnorneohopane-TS	25.9		1.99	83	31.30	65	135
t30S	T11a	C30 Tricyclic Terpane-22S	11.6		1.99	71	16.20	65	135
t30R	T11b	C30 Tricyclic Terpane-22R	14.2		1.99	87	16.40	65	135
Tm	T12	17a(H)-22,29,30-Trisnorhopane-TM	30.5		1.99	81	37.80	65	135
BNH	T14a	17a/b,21b/a 28,30-Bisnorhopane	6.80		1.99	97	7.00	65	135
25N	T14b	17a(H),21b(H)-25-Norhopane	7.92		1.99	91	8.70	65	135
H29	T15	30-Norhopane	86.5		1.99	87	99.70	65	135
C29Ts	T16	18a(H)-30-Norneohopane-C29Ts	20.6		1.99	82	25.20	65	135
X	X	17a(H)-Diahopane	11.2		1.99	79	14.20	65	135
M29	T17	30-Normoretane	8.80		1.99	76	11.60	65	135
OL	T18	18a(H)&18b(H)-Oleananes		U	1.99				
H30	T19	Hopane	155		1.99	89	173.60	65	135
M30	T20	Moretane	14.7		1.99	84	17.50	65	135
H31S	T21	30-Homohopane-22S	67.5		1.99	90	75.10	65	135
H31R	T22	30-Homohopane-22R	57.2		1.99	89	64.10	65	135
T22A	T22A	T22a-Gammacerane/C32-diahopane	12.1		1.99				
H32S	T26	30,31-Bishomohopane-22S	51.0		1.99	95	53.60	65	135
H32R	T27	30,31-Bishomohopane-22R	36.4		1.99	92	39.60	65	135
H33S	T30	30,31-Trishomohopane-22S	41.5		1.99	99	41.80	65	135
H33R	T31	30,31-Trishomohopane-22R	30.5		1.99	112	27.20	65	135
H34S	T32	Tetrakishomohopane-22S	30.7		1.99	103	29.80	65	135
H34R	T33	Tetrakishomohopane-22R	21.9		1.99	103	21.20	65	135
H35S	T34	Pentakishomohopane-22S	37.4		1.99	124	30.20	65	135
H35R	T35	Pentakishomohopane-22R	26.3		1.99	112	23.50	65	135
d27S	S4	13b(H),17a(H)-20S-Diacholestane	44.1		1.99	88	50.00	65	135
d27R	S5	13b(H),17a(H)-20R-Diacholestane	22.2		1.99	84	26.30	65	135
d28S	S8	13b,17a-20S-Methyldiacholestane	20.7		1.99	81	25.70	65	135
aa27S	S12	14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12)	50.2		1.99	77	65.00	65	135
aa27R	S17	14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17)	59.8		1.99	79	75.80	65	135
d29R	S18	Unknown Sterane (S18)	14.7		1.99	69	21.30	65	135
d29S	S19	13a,17b-20S-Ethyldiacholestane	2.94		1.99	75	3.90	65	135
aa28S	S20	14a,17a-20S-Methylcholestane	28.3		1.99	76	37.30	65	135
aa28R	S24	14a,17a-20R-Methylcholestane	31.4		1.99	91	34.50	65	135
aa29S	S25	14a(H),17a(H)-20S-Ethylcholestane	59.8		1.99	117	51.00	65	135
aa29R	S28	14a(H),17a(H)-20R-Ethylcholestane	39.6		1.99	100	39.50	65	135
bb27R	S14	14b(H),17b(H)-20R-Cholestane	40.4		1.99	97	41.50	65	135
bb27S	S15	14b(H),17b(H)-20S-Cholestane	36.0		1.99	85	42.50	65	135
bb28R	S22	14b,17b-20R-Methylcholestane	42.0		1.99	94	44.80	65	135
bb28S	S23	14b,17b-20S-Methylcholestane	47.1		1.99	85	55.40	65	135
bb29R	S26	14b(H),17b(H)-20R-Ethylcholestane	61.4		1.99	101	60.90	65	135
bb29S	S27	14b(H),17b(H)-20S-Ethylcholestane	32.1		1.99	80	40.30	65	135
RC26/SC27TA	RC26/SC27TA	C26,20R- +C27,20S- triaromatic steroid	296		1.99	101	293.90	65	135
SC28TA	SC28TA	C28,20S-triaromatic steroid	183		1.99	97	187.60	65	135
RC27TA	RC27TA	C27,20R-triaromatic steroid	170		1.99	95	180.20	65	135
RC28TA	RC28TA	C28,20R-triaromatic steroid	148		1.99	98	150.50	65	135

Surrogates (% Recovery)
Naphthalene-d8
Phenanthrene-d10
Benzo[a]pyrene-d12
5B(H)Cholane

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	CUTTING OIL	MOBILMET 426 CUTTING OIL	MOBIL VELOCITE 6 SPINDLE OIL	MOBIL VELOCITE OIL No. 3
Lab ID	1611009-01	1611009-02	1611009-03	1611009-04
Matrix	Product	Product	Product	Product
Reference Method	Modified 8270D	Modified 8270D	Modified 8270D	Modified 8270D
Batch ID	SO120216B02	SO120216B02	SO120216B02	SO120216B02
Date Collected	11/22/2016	11/22/2016	11/22/2016	11/22/2016
Date Received	11/23/2016	11/23/2016	11/23/2016	11/28/2016
Date Prepped	12/02/2016	12/02/2016	12/02/2016	12/02/2016
Date Analyzed	12/06/2016	12/06/2016	12/06/2016	12/06/2016
Sample Size (wet)	0.104	0.1064	0.1008	0.1079
% Solid	100.00	100.00	100.00	100.00
File ID	F312051609.D	F312051611.D	F312051612.D	F312051613.D
Units	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Final Volume	20	20	20	20
Dilution	1	1	1	1
Reporting Limit	1.92	1.88	1.98	1.85

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	Result		SSRL	Result		SSRL
2	D0	cis/trans-Decalin	53.9		1.92	0.637	J	1.88	4.26		1.98	1320		1.85
2	D1	C1-Decalins	109		1.92	1.60	J	1.88	27.2		1.98	5940		1.85
2	D2	C2-Decalins	277		1.92	2.84		1.88	103		1.98	5070		1.85
2	D3	C3-Decalins	270		1.92		U	1.88	135		1.98	1820		1.85
2	D4	C4-Decalins	527		1.92		U	1.88	345		1.98	613		1.85
2	BT0	Benzothiophene	0.619	J	1.92		U	1.88		U	1.98	29.0		1.85
2	BT1	C1-Benzo(b)thiophenes	7.88		1.92	0.381	J	1.88		U	1.98	100		1.85
2	BT2	C2-Benzo(b)thiophenes	10.3		1.92	0.596	J	1.88		U	1.98	8.49		1.85
2	BT3	C3-Benzo(b)thiophenes		U	1.92		U	1.88		U	1.98		U	1.85
2	BT4	C4-Benzo(b)thiophenes		U	1.92		U	1.88		U	1.98		U	1.85
2	N0	Naphthalene	3.03		1.92	0.268	JB	1.88	0.428	JB	1.98	136		1.85
2	N1	C1-Naphthalenes	9.13		1.92	0.865	JB	1.88	1.60	JB	1.98	159		1.85
2	N2	C2-Naphthalenes	30.5		1.92	2.75		1.88	6.14	G	1.98	80.0		1.85
2	N3	C3-Naphthalenes	51.9		1.92	4.23	G	1.88	11.2		1.98	15.8		1.85
2	N4	C4-Naphthalenes	104		1.92	5.98		1.88	20.9		1.98	13.4		1.85
2	B	Biphenyl	45.4		1.92	0.580	J	1.88	3.33		1.98	196		1.85
3	DF	Dibenzofuran	4.44		1.92	0.0742	J	1.88	3.91		1.98	1.87		1.85
3	AY	Acenaphthylene	4.35	G	1.92	0.0737	J	1.88	0.318	J	1.98	0.287	J	1.85
3	AE	Acenaphthene	6.97	G	1.92	0.305	GJ	1.88	1.18	J	1.98	2.15	G	1.85
3	F0	Fluorene	8.49		1.92		U	1.88		U	1.98	1.01	JB	1.85
3	F1	C1-Fluorenes	51.5		1.92	1.82	J	1.88	3.50		1.98	2.96		1.85
3	F2	C2-Fluorenes	193		1.92	10.9		1.88	14.1		1.98	16.5		1.85
3	F3	C3-Fluorenes	232		1.92	25.9		1.88	35.2		1.98	33.0		1.85
3	A0	Anthracene		U	1.92	0.285	J	1.88		U	1.98	0.322	J	1.85
3	P0	Phenanthrene	4.41		1.92	0.884	J	1.88	1.46	J	1.98	2.62		1.85
3	PA1	C1-Phenanthrenes/Anthracenes	34.5		1.92	7.16		1.88	5.30		1.98	10.7		1.85
3	PA2	C2-Phenanthrenes/Anthracenes	53.7		1.92	15.6		1.88	10.5		1.98	26.0		1.85
3	PA3	C3-Phenanthrenes/Anthracenes	52.0		1.92	18.4		1.88	8.92		1.98	25.2		1.85
3	PA4	C4-Phenanthrenes/Anthracenes	35.0		1.92	16.5		1.88		U	1.98	25.2		1.85
3	RET	Retene		U	1.92		U	1.88		U	1.98		U	1.85
3	DBT0	Dibenzothiophene	1.77	J	1.92	1.34	J	1.88	0.526	J	1.98	1.28	J	1.85
3	DBT1	C1-Dibenzothiophenes	26.6		1.92	17.9		1.88	9.19		1.98	10.2		1.85
3	DBT2	C2-Dibenzothiophenes	64.2		1.92	45.3		1.88	31.6		1.98	15.3		1.85
3	DBT3	C3-Dibenzothiophenes	63.4		1.92	56.2		1.88	34.5		1.98	18.8		1.85
3	DBT4	C4-Dibenzothiophenes	49.1		1.92	39.4		1.88	21.2		1.98	12.1		1.85
4	BF	Benzo(b)fluorene		U	1.92		U	1.88		U	1.98		U	1.85
4	FL0	Fluoranthene	0.393	J	1.92		U	1.88		U	1.98		U	1.85
4	PY0	Pyrene	2.91		1.92		U	1.88		U	1.98	0.255	J	1.85
4	FP1	C1-Fluoranthenes/Pyrenes	8.80		1.92		U	1.88		U	1.98		U	1.85
4	FP2	C2-Fluoranthenes/Pyrenes	20.5		1.92		U	1.88		U	1.98		U	1.85
4	FP3	C3-Fluoranthenes/Pyrenes	16.7	G	1.92		U	1.88		U	1.98		U	1.85
4	FP4	C4-Fluoranthenes/Pyrenes	18.4	G	1.92		U	1.88		U	1.98		U	1.85
4	NBT0	Naphthobenzothiophenes		U	1.92	0.363	J	1.88		U	1.98		U	1.85
4	NBT1	C1-Naphthobenzothiophenes	10.4	G	1.92	3.54		1.88		U	1.98		U	1.85
4	NBT2	C2-Naphthobenzothiophenes		U	1.92	5.00		1.88		U	1.98		U	1.85
4	NBT3	C3-Naphthobenzothiophenes		U	1.92		U	1.88		U	1.98		U	1.85
4	NBT4	C4-Naphthobenzothiophenes		U	1.92		U	1.88		U	1.98		U	1.85
4	BA0	Benz[a]anthracene		U	1.92		U	1.88		U	1.98		U	1.85
4	C0	Chrysene/Triphenylene		U	1.92		U	1.88		U	1.98		U	1.85
4	BC1	C1-Chrysenes	18.2	G	1.92		U	1.88		U	1.98		U	1.85
4	BC2	C2-Chrysenes		U	1.92		U	1.88		U	1.98		U	1.85
4	BC3	C3-Chrysenes		U	1.92		U	1.88		U	1.98		U	1.85
4	BC4	C4-Chrysenes		U	1.92		U	1.88		U	1.98		U	1.85

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	CUTTING OIL	MOBILMET 426 CUTTING OIL	MOBIL VELOCITE 6 SPINDLE OIL	MOBIL VELOCITE OIL No. 3
Lab ID	1611009-01	1611009-02	1611009-03	1611009-04
Matrix	Product	Product	Product	Product
Reference Method	Modified 8270D	Modified 8270D	Modified 8270D	Modified 8270D
Batch ID	SO120216B02	SO120216B02	SO120216B02	SO120216B02
Date Collected	11/22/2016	11/22/2016	11/22/2016	11/22/2016
Date Received	11/23/2016	11/23/2016	11/23/2016	11/28/2016
Date Prepped	12/02/2016	12/02/2016	12/02/2016	12/02/2016
Date Analyzed	12/06/2016	12/06/2016	12/06/2016	12/06/2016
Sample Size (wet)	0.104	0.1064	0.1008	0.1079
% Solid	100.00	100.00	100.00	100.00
File ID	F312051609.D	F312051611.D	F312051612.D	F312051613.D
Units	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Final Volume	20	20	20	20
Dilution	1	1	1	1
Reporting Limit	1.92	1.88	1.98	1.85

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	Result		SSRL	Result		SSRL
5	BBF	Benzo[b]fluoranthene		U	1.92		U	1.88		U	1.98		U	1.85
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene		U	1.92		U	1.88		U	1.98		U	1.85
5	BAF	Benzo[a]fluoranthene		U	1.92		U	1.88		U	1.98		U	1.85
5	BEP	Benzo[e]pyrene		U	1.92		U	1.88		U	1.98		U	1.85
5	BAP	Benzo[a]pyrene		U	1.92		U	1.88		U	1.98		U	1.85
5	PER	Perylene		U	1.92	1.55	J	1.88		U	1.98		U	1.85
6	IND	Indeno[1,2,3-cd]pyrene		U	1.92		U	1.88		U	1.98		U	1.85
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene		U	1.92		U	1.88		U	1.98		U	1.85
6	GHI	Benzo[g,h,i]perylene	0.527	J	1.92		U	1.88		U	1.98		U	1.85
3	CAR	Carbazole	1.37	J	1.92		U	1.88		U	1.98		U	1.85
3	4MDT	4-Methyldibenzothiophene	8.79		1.92	7.43		1.88	3.30		1.98	3.61		1.85
3	2MDT	2/3-Methyldibenzothiophene	8.85		1.92	7.44		1.88		U	1.98	4.52		1.85
3	1MDT	1-Methyldibenzothiophene	1.81	J	1.92	2.53		1.88	1.42	J	1.98	0.553	J	1.85
3	3MP	3-Methylphenanthrene	6.52		1.92	0.808	J	1.88	0.645	J	1.98	1.59	J	1.85
3	2MP	2-Methylphenanthrene	6.29		1.92	1.05	J	1.88	0.360	J	1.98	2.00		1.85
3	2MA	2-Methylanthracene	1.54	J	1.92	0.141	J	1.88		U	1.98		U	1.85
3	9MP	9/4-Methylphenanthrene	6.99		1.92	3.11		1.88	1.30	J	1.98	3.76		1.85
3	1MP	1-Methylphenanthrene	3.69		1.92	1.25	J	1.88	0.481	J	1.98	2.05		1.85
t23	T4	C23 Tricyclic Terpane	46.9		1.92	148		1.88	82.7		1.98	87.8		1.85
t24	T5	C24 Tricyclic Terpane	19.4		1.92	40.7		1.88	22.0		1.98	41.4		1.85
t25	T6	C25 Tricyclic Terpane	21.4		1.92	48.7		1.88	20.3		1.98	16.5		1.85
te24	T6a	C24 Tetracyclic Terpane	21.3		1.92	187		1.88	73.3		1.98	1.30	J	1.85
t26S	T6b	C26 Tricyclic Terpane-22S	7.48		1.92	20.8		1.88	9.09		1.98	3.74		1.85
t26R	T6c	C26 Tricyclic Terpane-22R	6.70		1.92	18.4		1.88	7.02		1.98	3.61		1.85
t28S	T7	C28 Tricyclic Terpane-22S	17.3		1.92	24.5		1.88	9.66		1.98	0.683	J	1.85
t28R	T8	C28 Tricyclic Terpane-22R	22.4		1.92	30.1		1.88	11.2		1.98		U	1.85
t29S	T9	C29 Tricyclic Terpane-22S	7.37		1.92	27.1		1.88	9.66		1.98	0.482	J	1.85
t29R	T10	C29 Tricyclic Terpane-22R	12.8		1.92	36.0		1.88	14.3		1.98		U	1.85
Ts	T11	18a-22,29,30-Trisnorneohopane-TS	24.3		1.92	317		1.88	73.4		1.98		U	1.85
t30S	T11a	C30 Tricyclic Terpane-22S	6.87		1.92	14.3		1.88	4.78		1.98		U	1.85
t30R	T11b	C30 Tricyclic Terpane-22R	6.75		1.92	18.7		1.88	6.42		1.98		U	1.85
Tm	T12	17a(H)-22,29,30-Trisnorhopane-TM	18.6		1.92	281		1.88	89.8		1.98		U	1.85
BNH	T14a	17a/b,21b/a 28,30-Bisnorhopane		U	1.92	8.51		1.88	2.62		1.98		U	1.85
25N	T14b	17a(H),21b(H)-25-Norhopane	4.96		1.92	9.64		1.88	2.55		1.98		U	1.85
H29	T15	30-Norhopane	70.8		1.92	1200		1.88	269		1.98		U	1.85
C29Ts	T16	18a(H)-30-Norneohopane-C29Ts	13.8		1.92	202		1.88	34.4		1.98		U	1.85
X	X	17a(H)-Diahopane	3.83		1.92	12.1		1.88		U	1.98		U	1.85
M29	T17	30-Normoretane	6.68		1.92	80.7		1.88	15.1		1.98		U	1.85
OL	T18	18a(H)&18b(H)-Oleananes		U	1.92		U	1.88		U	1.98		U	1.85
H30	T19	Hopane	68.9		1.92	927		1.88	165		1.98		U	1.85
M30	T20	Moretane	5.80		1.92	63.6		1.88	9.84		1.98		U	1.85
H31S	T21	30-Homohopane-22S	27.6		1.92	519		1.88	69.6		1.98		U	1.85
H31R	T22	30-Homohopane-22R	24.2		1.92	375		1.88	50.8		1.98		U	1.85
T22A	T22A	T22a-Gammacerane/C32-diahopane	7.22		1.92	90.3		1.88	12.0		1.98		U	1.85
H32S	T26	30,31-Bishomohopane-22S	15.4		1.92	273		1.88	32.9		1.98		U	1.85
H32R	T27	30,31-Bishomohopane-22R	10.1		1.92	192		1.88	21.0		1.98		U	1.85
H33S	T30	30,31-Trishomohopane-22S	9.10		1.92	145		1.88	17.3		1.98		U	1.85
H33R	T31	30,31-Trishomohopane-22R	5.81		1.92	90.4		1.88	10.8		1.98		U	1.85
H34S	T32	Tetrakishomohopane-22S	4.76		1.92	66.4		1.88	8.78		1.98		U	1.85
H34R	T33	Tetrakishomohopane-22R	2.87		1.92	43.1		1.88	6.38		1.98		U	1.85
H35S	T34	Pentakishomohopane-22S	3.28		1.92	47.0		1.88	9.58		1.98		U	1.85
H35R	T35	Pentakishomohopane-22R	3.69		1.92	26.1		1.88	6.21		1.98		U	1.85
d27S	S4	13b(H),17a(H)-20S-Diacholestane	22.5		1.92	72.3		1.88	27.6		1.98	2.60		1.85
d27R	S5	13b(H),17a(H)-20R-Diacholestane	16.1		1.92	31.8		1.88	13.1		1.98	1.40	J	1.85
d28S	S8	13b,17a-20S-Methyldiacholestane	22.4		1.92	43.4		1.88	20.8		1.98	0.461	J	1.85
aa27S	S12	14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12)	32.1		1.92	134		1.88	60.7		1.98	1.51	J	1.85
aa27R	S17	14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17)	33.2		1.92	173		1.88	78.9		1.98	1.36	J	1.85
d29R	S18	Unknown Sterane (S18)	7.65		1.92	20.2		1.88	8.18		1.98		U	1.85
d29S	S19	13a,17b-20S-Ethyldiacholestane	2.66		1.92	24.4		1.88	7.40		1.98		U	1.85
aa28S	S20	14a,17a-20S-Methylcholestane	14.4		1.92	86.5		1.88	26.0		1.98		U	1.85
aa28R	S24	14a,17a-20R-Methylcholestane	7.66		1.92	67.6		1.88	23.8		1.98		U	1.85
aa29S	S25	14a(H),17a(H)-20S-Ethylcholestane	12.0		1.92	129		1.88	39.8		1.98		U	1.85
aa29R	S28	14a(H),17a(H)-20R-Ethylcholestane	11.6		1.92	131		1.88	33.4		1.98		U	1.85
bb27R	S14	14b(H),17b(H)-20R-Cholestane	21.6		1.92	201		1.88	93.3		1.98	0.981	J	1.85
bb27S	S15	14b(H),17b(H)-20S-Cholestane	22.8		1.92	182		1.88	85.9		1.98	0.888	J	1.85
bb28R	S22	14b,17b-20R-Methylcholestane	16.3		1.92	110		1.88	50.6		1.98	0.761	J	1.85
bb28S	S23	14b,17b-20S-Methylcholestane	17.2		1.92	161		1.88	60.5		1.98	0.781	J	1.85
bb29R	S26	14b(H),17b(H)-20R-Ethylcholestane	23.4		1.92	307		1.88	84.9		1.98	0.888	J	1.85
bb29S	S27	14b(H),17b(H)-20S-Ethylcholestane	15.8		1.92	214		1.88	72.5		1.98	0.968	J	1.85
RC26/SC27TA	RC26/SC27TA	C26,20R- +C27,20S- triaromatic steroid	5.17		1.92	53.6		1.88	6.84		1.98		U	1.85
SC28TA	SC28TA	C28,20S-triaromatic steroid	6.66		1.92	104		1.88	8.87		1.98		U	1.85
RC27TA	RC27TA	C27,20R-triaromatic steroid	4.64		1.92	67.6		1.88	7.69		1.98		U	1.85
RC28TA	RC28TA	C28,20R-triaromatic steroid		U	1.92	40.6		1.88	1.42	J	1.98		U	1.85

Surrogates (% Recovery)					
Naphthalene-d8	107	94	111	101	
Phenanthrene-d10	60	92	67	121	
Benzo[a]pyrene-d12	115	120	125	150	§
5B(H)Cholane	101	104	101	105	

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	CP70T	CP200T	CP350T	CP500T	BROWNELLS TOUGH QUENCH
Lab ID	1611009-05	1611009-06	1611009-07	1611009-08	1611009-09
Matrix	Product	Product	Product	Product	Product
Reference Method	Modified 8270D	Modified 8270D	Modified 8270D	Modified 8270D	Modified 8270D
Batch ID	SO120216B02	SO120216B02	SO120216B02	SO120216B02	SO120216B02
Date Collected	11/23/2016	11/23/2016	11/23/2016	11/23/2016	11/22/2016
Date Received	11/28/2016	11/28/2016	11/28/2016	11/28/2016	11/28/2016
Date Prepped	12/02/2016	12/02/2016	12/02/2016	12/02/2016	12/02/2016
Date Analyzed	12/06/2016	12/06/2016	12/06/2016	12/06/2016	12/06/2016
Sample Size (wet)	0.1031	0.1028	0.103	0.108	0.1004
% Solid	100.00	100.00	100.00	100.00	100.00
File ID	F312051615.D	F312051616.D	F312051617.D	F312051618.D	F312051619.D
Units	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Final Volume	20	20	20	20	20
Dilution	1	1	1	1	1
Reporting Limit	1.94	1.95	1.94	1.85	1.99

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	Result		SSRL	Result		SSRL	Result	
2	D0	cis/trans-Decalin		U	1.94	0.542	J	1.95	0.716	J	1.94	1.41	J	1.85		U
2	D1	C1-Decalins		U	1.94	1.89	J	1.95	2.61		1.94	4.06		1.85	1.18	J
2	D2	C2-Decalins		U	1.94	2.92		1.95	4.68		1.94	7.22		1.85	6.40	
2	D3	C3-Decalins		U	1.94	2.55		1.95	4.09		1.94	5.70		1.85	13.6	
2	D4	C4-Decalins		U	1.94	4.52		1.95	4.41		1.94	8.46		1.85	60.1	
2	BT0	Benzothiophene		U	1.94		U	1.95		U	1.94		U	1.85		U
2	BT1	C1-Benzo(b)thiophenes		U	1.94		U	1.95		U	1.94		U	1.85		U
2	BT2	C2-Benzo(b)thiophenes		U	1.94		U	1.95		U	1.94		U	1.85		U
2	BT3	C3-Benzo(b)thiophenes		U	1.94		U	1.95		U	1.94		U	1.85		U
2	BT4	C4-Benzo(b)thiophenes		U	1.94		U	1.95		U	1.94		U	1.85		U
2	N0	Naphthalene	0.0956	JB	1.94	0.0854	JB	1.95	0.104	JB	1.94		U	1.85	0.0825	JB
2	N1	C1-Naphthalenes	0.207	JB	1.94	0.181	JB	1.95	0.220	JB	1.94	0.170	JB	1.85	0.336	JB
2	N2	C2-Naphthalenes		U	1.94		U	1.95		U	1.94		U	1.85	1.48	J
2	N3	C3-Naphthalenes		U	1.94		U	1.95		U	1.94		U	1.85	4.32	
2	N4	C4-Naphthalenes		U	1.94		U	1.95		U	1.94		U	1.85	11.6	
2	B	Biphenyl		U	1.94		U	1.95	0.0625	J	1.94		U	1.85	0.276	J
3	DF	Dibenzofuran		U	1.94		U	1.95		U	1.94		U	1.85	0.255	J
3	AY	Acenaphthylene		U	1.94		U	1.95		U	1.94		U	1.85		U
3	AE	Acenaphthene		U	1.94		U	1.95		U	1.94		U	1.85		U
3	F0	Fluorene		U	1.94	0.102	JB	1.95		U	1.94		U	1.85		U
3	F1	C1-Fluorenes		U	1.94		U	1.95		U	1.94		U	1.85		U
3	F2	C2-Fluorenes		U	1.94		U	1.95		U	1.94		U	1.85	9.71	
3	F3	C3-Fluorenes		U	1.94		U	1.95		U	1.94		U	1.85		U
3	A0	Anthracene	0.251	J	1.94	0.207	J	1.95		U	1.94		U	1.85		U
3	P0	Phenanthrene		U	1.94	0.186	J	1.95	0.122	J	1.94		U	1.85	0.687	J
3	PA1	C1-Phenanthrenes/Anthracenes		U	1.94		U	1.95		U	1.94		U	1.85		U
3	PA2	C2-Phenanthrenes/Anthracenes		U	1.94		U	1.95		U	1.94		U	1.85		U
3	PA3	C3-Phenanthrenes/Anthracenes		U	1.94		U	1.95		U	1.94		U	1.85		U
3	PA4	C4-Phenanthrenes/Anthracenes		U	1.94		U	1.95		U	1.94		U	1.85		U
3	RET	Retene		U	1.94		U	1.95		U	1.94		U	1.85		U
3	DBT0	Dibenzothiophene		U	1.94		U	1.95		U	1.94		U	1.85		U
3	DBT1	C1-Dibenzothiophenes	2.78	G	1.94	1.90	GJ	1.95	1.36	J	1.94		U	1.85	2.29	G
3	DBT2	C2-Dibenzothiophenes	14.3	G	1.94	7.98		1.95	5.92		1.94		U	1.85	12.5	
3	DBT3	C3-Dibenzothiophenes	25.5	G	1.94	15.3		1.95	9.49		1.94		U	1.85	24.0	
3	DBT4	C4-Dibenzothiophenes	22.5	G	1.94	12.1		1.95	7.22		1.94		U	1.85	23.1	
4	BF	Benzo(b)fluorene		U	1.94		U	1.95		U	1.94		U	1.85		U
4	FL0	Fluoranthene	0.404	J	1.94		U	1.95		U	1.94		U	1.85	0.791	J
4	PY0	Pyrene		U	1.94		U	1.95		U	1.94		U	1.85	1.00	J
4	FP1	C1-Fluoranthenes/Pyrenes		U	1.94		U	1.95		U	1.94		U	1.85	8.78	
4	FP2	C2-Fluoranthenes/Pyrenes		U	1.94		U	1.95		U	1.94		U	1.85	13.5	
4	FP3	C3-Fluoranthenes/Pyrenes		U	1.94		U	1.95		U	1.94		U	1.85	10.0	
4	FP4	C4-Fluoranthenes/Pyrenes		U	1.94		U	1.95		U	1.94		U	1.85	4.04	
4	NBT0	Naphthobenzothiophenes		U	1.94		U	1.95		U	1.94		U	1.85		U
4	NBT1	C1-Naphthobenzothiophenes		U	1.94		U	1.95		U	1.94		U	1.85		U
4	NBT2	C2-Naphthobenzothiophenes		U	1.94		U	1.95		U	1.94		U	1.85		U
4	NBT3	C3-Naphthobenzothiophenes		U	1.94		U	1.95		U	1.94		U	1.85		U
4	NBT4	C4-Naphthobenzothiophenes		U	1.94		U	1.95		U	1.94		U	1.85		U
4	BA0	Benz[a]anthracene		U	1.94		U	1.95		U	1.94		U	1.85		U
4	C0	Chrysene/Triphenylene		U	1.94		U	1.95		U	1.94		U	1.85		U
4	BC1	C1-Chrysenes		U	1.94		U	1.95		U	1.94		U	1.85		U
4	BC2	C2-Chrysenes		U	1.94		U	1.95		U	1.94		U	1.85		U
4	BC3	C3-Chrysenes		U	1.94		U	1.95		U	1.94		U	1.85		U
4	BC4	C4-Chrysenes		U	1.94		U	1.95		U	1.94		U	1.85		U

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	CP70T	CP200T	CP350T	CP500T	BROWNELLS TOUGH QUENCH
Lab ID	1611009-05	1611009-06	1611009-07	1611009-08	1611009-09
Matrix	Product	Product	Product	Product	Product
Reference Method	Modified 8270D	Modified 8270D	Modified 8270D	Modified 8270D	Modified 8270D
Batch ID	SO120216B02	SO120216B02	SO120216B02	SO120216B02	SO120216B02
Date Collected	11/23/2016	11/23/2016	11/23/2016	11/23/2016	11/22/2016
Date Received	11/28/2016	11/28/2016	11/28/2016	11/28/2016	11/28/2016
Date Prepped	12/02/2016	12/02/2016	12/02/2016	12/02/2016	12/02/2016
Date Analyzed	12/06/2016	12/06/2016	12/06/2016	12/06/2016	12/06/2016
Sample Size (wet)	0.1031	0.1028	0.103	0.108	0.1004
% Solid	100.00	100.00	100.00	100.00	100.00
File ID	F312051615.D	F312051616.D	F312051617.D	F312051618.D	F312051619.D
Units	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Final Volume	20	20	20	20	20
Dilution	1	1	1	1	1
Reporting Limit	1.94	1.95	1.94	1.85	1.99

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	Result		SSRL	Result		SSRL	Result	
5	BBF	Benzo[b]fluoranthene		U	1.94		U	1.95		U	1.94		U	1.85		U
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene		U	1.94		U	1.95		U	1.94		U	1.85		U
5	BAF	Benzo[a]fluoranthene		U	1.94		U	1.95		U	1.94		U	1.85		U
5	BEP	Benzo[e]pyrene		U	1.94		U	1.95		U	1.94		U	1.85		U
5	BAP	Benzo[a]pyrene		U	1.94		U	1.95		U	1.94		U	1.85		U
5	PER	Perylene		U	1.94		U	1.95		U	1.94		U	1.85		U
6	IND	Indeno[1,2,3-cd]pyrene		U	1.94		U	1.95		U	1.94		U	1.85		U
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene		U	1.94		U	1.95		U	1.94		U	1.85		U
6	GHI	Benzo[g,h,i]perylene		U	1.94		U	1.95		U	1.94		U	1.85	0.737	J
3	CAR	Carbazole		U	1.94		U	1.95		U	1.94		U	1.85		U
3	4MDT	4-Methyldibenzothiophene	0.196	J	1.94	0.108	J	1.95	0.0948	J	1.94		U	1.85	0.788	J
3	2MDT	2/3-Methyldibenzothiophene		U	1.94		U	1.95		U	1.94		U	1.85		U
3	1MDT	1-Methyldibenzothiophene		U	1.94		U	1.95		U	1.94		U	1.85		U
3	3MP	3-Methylphenanthrene		U	1.94		U	1.95		U	1.94		U	1.85		U
3	2MP	2-Methylphenanthrene		U	1.94		U	1.95		U	1.94		U	1.85		U
3	2MA	2-Methylanthracene		U	1.94		U	1.95		U	1.94		U	1.85		U
3	9MP	9/4-Methylphenanthrene		U	1.94		U	1.95		U	1.94		U	1.85		U
3	1MP	1-Methylphenanthrene		U	1.94		U	1.95		U	1.94		U	1.85		U
t23	T4	C23 Tricyclic Terpane		U	1.94	43.4		1.95	28.9		1.94	6.64		1.85	47.7	
t24	T5	C24 Tricyclic Terpane		U	1.94		U	1.95	5.84		1.94	3.21		1.85	18.5	
t25	T6	C25 Tricyclic Terpane		U	1.94		U	1.95		U	1.94		U	1.85		U
te24	T6a	C24 Tetracyclic Terpane	1.70	J	1.94	2.91		1.95	3.39		1.94	5.29		1.85	2.88	
t26S	T6b	C26 Tricyclic Terpane-22S		U	1.94		U	1.95		U	1.94		U	1.85		U
t26R	T6c	C26 Tricyclic Terpane-22R		U	1.94		U	1.95		U	1.94		U	1.85		U
t28S	T7	C28 Tricyclic Terpane-22S		U	1.94	2.60		1.95	3.29		1.94	4.93		1.85		U
t28R	T8	C28 Tricyclic Terpane-22R		U	1.94	2.43		1.95	3.16		1.94	4.02		1.85		U
t29S	T9	C29 Tricyclic Terpane-22S		U	1.94	1.31	J	1.95	1.94	J	1.94	2.38		1.85		U
t29R	T10	C29 Tricyclic Terpane-22R		U	1.94	2.36		1.95		U	1.94	3.05		1.85		U
Ts	T11	18a-22,29,30-Trisnorneohopane-TS		U	1.94	9.86		1.95	11.9		1.94	15.2		1.85		U
t30S	T11a	C30 Tricyclic Terpane-22S		U	1.94	2.42		1.95	3.12		1.94	3.46		1.85		U
t30R	T11b	C30 Tricyclic Terpane-22R		U	1.94	2.70		1.95		U	1.94		U	1.85		U
Tm	T12	17a(H)-22,29,30-Trisnorhopane-TM		U	1.94	5.10		1.95		U	1.94	8.12		1.85		U
BNH	T14a	17a/b,21b/a 28,30-Bisnorhopane		U	1.94		U	1.95		U	1.94		U	1.85		U
25N	T14b	17a(H),21b(H)-25-Norhopane		U	1.94	2.18		1.95	2.59		1.94		U	1.85		U
H29	T15	30-Norhopane		U	1.94	18.0		1.95	26.0		1.94	34.3		1.85	3.39	
C29Ts	T16	18a(H)-30-Norneohopane-C29Ts		U	1.94	7.65		1.95	10.3		1.94	13.5		1.85	2.68	
X	X	17a(H)-Diahopane		U	1.94	3.34		1.95	5.55		1.94	7.17		1.85	3.64	
M29	T17	30-Normoretane		U	1.94	4.69		1.95		U	1.94		U	1.85		U
OL	T18	18a(H)&18b(H)-Oleananes		U	1.94	5.19		1.95	7.10		1.94	10.1		1.85		U
H30	T19	Hopane		U	1.94	35.6		1.95	51.1		1.94	71.2		1.85	9.00	
M30	T20	Moretane		U	1.94	5.28		1.95	6.95		1.94	8.72		1.85		U
H31S	T21	30-Homohopane-22S		U	1.94	15.3		1.95	23.0		1.94	32.0		1.85	4.16	
H31R	T22	30-Homohopane-22R		U	1.94	16.0		1.95	26.5		1.94	34.2		1.85	3.50	
T22A	T22A	T22a-Gammacerane/C32-diahopane		U	1.94	7.57		1.95	10.4		1.94	15.1		1.85		U
H32S	T26	30,31-Bishomohopane-22S		U	1.94	11.7		1.95	17.2		1.94	23.2		1.85		U
H32R	T27	30,31-Bishomohopane-22R		U	1.94	9.53		1.95	12.3		1.94	19.6		1.85		U
H33S	T30	30,31-Trishomohopane-22S		U	1.94	9.00		1.95	15.2		1.94	19.0		1.85		U
H33R	T31	30,31-Trishomohopane-22R		U	1.94	5.85		1.95	7.50		1.94	10.2		1.85		U
H34S	T32	Tetrakishomohopane-22S		U	1.94	7.08		1.95	12.7		1.94	13.8		1.85		U
H34R	T33	Tetrakishomohopane-22R		U	1.94	5.92		1.95	8.91		1.94	9.83		1.85		U
H35S	T34	Pentakishomohopane-22S		U	1.94	7.92		1.95	9.91		1.94	17.7		1.85		U
H35R	T35	Pentakishomohopane-22R		U	1.94	7.78		1.95	9.47		1.94	16.5		1.85		U
d27S	S4	13b(H),17a(H)-20S-Diacholestane		U	1.94	4.03		1.95	5.76		1.94	8.34		1.85	5.72	
d27R	S5	13b(H),17a(H)-20R-Diacholestane		U	1.94	2.28		1.95	3.53		1.94	4.64		1.85	3.02	
d28S	S8	13b,17a-20S-Methyldiacholestane		U	1.94	2.50		1.95	4.56		1.94	5.66		1.85	3.41	
aa27S	S12	14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12)		U	1.94	6.66		1.95	8.81		1.94	11.7		1.85	5.48	
aa27R	S17	14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17)		U	1.94	7.40		1.95	9.85		1.94	13.5		1.85	5.00	
d29R	S18	Unknown Sterane (S18)		U	1.94	2.27		1.95	3.96		1.94	3.02		1.85		U
d29S	S19	13a,17b-20S-Ethyldiacholestane		U	1.94		U	1.95		U	1.94		U	1.85		U
aa28S	S20	14a,17a-20S-Methylcholestane		U	1.94	3.41		1.95	5.81		1.94	6.22		1.85	4.00	
aa28R	S24	14a,17a-20R-Methylcholestane		U	1.94	2.17		1.95	3.43		1.94		U	1.85		U
aa29S	S25	14a(H),17a(H)-20S-Ethylcholestane		U	1.94	3.08		1.95	3.35		1.94	4.42		1.85		U
aa29R	S28	14a(H),17a(H)-20R-Ethylcholestane		U	1.94	3.54		1.95	4.34		1.94	5.87		1.85	3.41	
bb27R	S14	14b(H),17b(H)-20R-Cholestane		U	1.94	2.87		1.95	3.96		1.94	3.96		1.85	1.52	J
bb27S	S15	14b(H),17b(H)-20S-Cholestane		U	1.94	3.18		1.95	3.52		1.94	5.11		1.85	1.57	J
bb28R	S22	14b,17b-20R-Methylcholestane		U	1.94	3.13		1.95	3.41		1.94	5.19		1.85	1.52	J
bb28S	S23	14b,17b-20S-Methylcholestane		U	1.94	3.64		1.95	4.81		1.94	6.24		1.85	2.27	
bb29R	S26	14b(H),17b(H)-20R-Ethylcholestane		U	1.94	6.46		1.95	8.97		1.94	13.3		1.85	3.87	
bb29S	S27	14b(H),17b(H)-20S-Ethylcholestane		U	1.94	4.50		1.95	6.66		1.94	4.61		1.85	2.44	
RC26/SC27TA	RC26/SC27TA	C26,20R- +C27,20S- triaromatic steroid		U	1.94		U	1.95		U	1.94		U	1.85		U
SC28TA	SC28TA	C28,20S-triaromatic steroid		U	1.94		U	1.95		U	1.94		U	1.85		U
RC27TA	RC27TA	C27,20R-triaromatic steroid		U	1.94		U	1.95		U	1.94		U	1.85		U
RC28TA	RC28TA	C28,20R-triaromatic steroid		U	1.94		U	1.95		U	1.94		U	1.85		U

Surrogates (% Recovery)						
Naphthalene-d8	95		93	92	91	99
Phenanthrene-d10	91		91	93	98	64
Benzo[a]pyrene-d12	149	§	129	117	93	127
5B(H)Cholane	110		103	104	97	105

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	100 QUENCHING OIL - BLACK BEAR
Lab ID	1611009-10
Matrix	Product
Reference Method	Modified 8270D
Batch ID	SO120216B02
Date Collected	11/22/2016
Date Received	11/28/2016
Date Prepped	12/02/2016
Date Analyzed	12/06/2016
Sample Size (wet)	0.1001
% Solid	100.00
File ID	F312051620.D
Units	mg/Kg
Final Volume	20
Dilution	1
Reporting Limit	2.00

Class	Abbrev	Analytes	SSRL	Result		SSRL
2	D0	cis/trans-Decalin	1.99		U	2.00
2	D1	C1-Decalins	1.99	1.23	J	2.00
2	D2	C2-Decalins	1.99	3.50		2.00
2	D3	C3-Decalins	1.99	6.87		2.00
2	D4	C4-Decalins	1.99	30.3		2.00
2	BT0	Benzothiophene	1.99		U	2.00
2	BT1	C1-Benzo(b)thiophenes	1.99		U	2.00
2	BT2	C2-Benzo(b)thiophenes	1.99		U	2.00
2	BT3	C3-Benzo(b)thiophenes	1.99		U	2.00
2	BT4	C4-Benzo(b)thiophenes	1.99		U	2.00
2	N0	Naphthalene	1.99	0.139	JB	2.00
2	N1	C1-Naphthalenes	1.99	0.321	JB	2.00
2	N2	C2-Naphthalenes	1.99	1.05	J	2.00
2	N3	C3-Naphthalenes	1.99	4.00		2.00
2	N4	C4-Naphthalenes	1.99	10.4		2.00
2	B	Biphenyl	1.99	0.789	J	2.00
3	DF	Dibenzofuran	1.99	0.559	J	2.00
3	AY	Acenaphthylene	1.99	0.133	J	2.00
3	AE	Acenaphthene	1.99	0.324	J	2.00
3	F0	Fluorene	1.99	0.871	JB	2.00
3	F1	C1-Fluorenes	1.99	4.66		2.00
3	F2	C2-Fluorenes	1.99	15.4		2.00
3	F3	C3-Fluorenes	1.99	24.1		2.00
3	A0	Anthracene	1.99		U	2.00
3	P0	Phenanthrene	1.99	0.294	J	2.00
3	PA1	C1-Phenanthrenes/Anthracenes	1.99		U	2.00
3	PA2	C2-Phenanthrenes/Anthracenes	1.99		U	2.00
3	PA3	C3-Phenanthrenes/Anthracenes	1.99		U	2.00
3	PA4	C4-Phenanthrenes/Anthracenes	1.99		U	2.00
3	RET	Retene	1.99		U	2.00
3	DBT0	Dibenzothiophene	1.99	0.202	J	2.00
3	DBT1	C1-Dibenzothiophenes	1.99	2.05	G	2.00
3	DBT2	C2-Dibenzothiophenes	1.99	6.42		2.00
3	DBT3	C3-Dibenzothiophenes	1.99	11.6		2.00
3	DBT4	C4-Dibenzothiophenes	1.99	11.7		2.00
4	BF	Benzo(b)fluorene	1.99		U	2.00
4	FL0	Fluoranthene	1.99		U	2.00
4	PY0	Pyrene	1.99	0.274	J	2.00
4	FP1	C1-Fluoranthenes/Pyrenes	1.99		U	2.00
4	FP2	C2-Fluoranthenes/Pyrenes	1.99	3.74		2.00
4	FP3	C3-Fluoranthenes/Pyrenes	1.99	3.95		2.00
4	FP4	C4-Fluoranthenes/Pyrenes	1.99	5.48		2.00
4	NBT0	Naphthobenzothiophenes	1.99		U	2.00
4	NBT1	C1-Naphthobenzothiophenes	1.99		U	2.00
4	NBT2	C2-Naphthobenzothiophenes	1.99		U	2.00
4	NBT3	C3-Naphthobenzothiophenes	1.99		U	2.00
4	NBT4	C4-Naphthobenzothiophenes	1.99		U	2.00
4	BA0	Benz[a]anthracene	1.99		U	2.00
4	C0	Chrysene/Triphenylene	1.99		U	2.00
4	BC1	C1-Chrysenes	1.99		U	2.00
4	BC2	C2-Chrysenes	1.99		U	2.00
4	BC3	C3-Chrysenes	1.99		U	2.00
4	BC4	C4-Chrysenes	1.99		U	2.00

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	100 QUENCHING OIL - BLACK BEAR
Lab ID	1611009-10
Matrix	Product
Reference Method	Modified 8270D
Batch ID	SO120216B02
Date Collected	11/22/2016
Date Received	11/28/2016
Date Prepped	12/02/2016
Date Analyzed	12/06/2016
Sample Size (wet)	0.1001
% Solid	100.00
File ID	F312051620.D
Units	mg/Kg
Final Volume	20
Dilution	1
Reporting Limit	2.00

Class	Abbrev	Analytes	SSRL	Result		SSRL
5	BBF	Benzo[b]fluoranthene	1.99		U	2.00
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	1.99		U	2.00
5	BAF	Benzo[a]fluoranthene	1.99		U	2.00
5	BEP	Benzo[e]pyrene	1.99		U	2.00
5	BAP	Benzo[a]pyrene	1.99		U	2.00
5	PER	Perylene	1.99		U	2.00
6	IND	Indeno[1,2,3-cd]pyrene	1.99		U	2.00
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	1.99		U	2.00
6	GHI	Benzo[g,h,i]perylene	1.99		U	2.00
3	CAR	Carbazole	1.99		U	2.00
3	4MDT	4-Methyldibenzothiophene	1.99	0.348	J	2.00
3	2MDT	2/3-Methyldibenzothiophene	1.99		U	2.00
3	1MDT	1-Methyldibenzothiophene	1.99		U	2.00
3	3MP	3-Methylphenanthrene	1.99		U	2.00
3	2MP	2-Methylphenanthrene	1.99		U	2.00
3	2MA	2-Methylanthracene	1.99		U	2.00
3	9MP	9/4-Methylphenanthrene	1.99		U	2.00
3	1MP	1-Methylphenanthrene	1.99		U	2.00
t23	T4	C23 Tricyclic Terpane	1.99	79.0		2.00
t24	T5	C24 Tricyclic Terpane	1.99	36.5		2.00
t25	T6	C25 Tricyclic Terpane	1.99	25.3		2.00
te24	T6a	C24 Tetracyclic Terpane	1.99	51.5		2.00
t26S	T6b	C26 Tricyclic Terpane-22S	1.99	16.6		2.00
t26R	T6c	C26 Tricyclic Terpane-22R	1.99	11.6		2.00
t28S	T7	C28 Tricyclic Terpane-22S	1.99	14.8		2.00
t28R	T8	C28 Tricyclic Terpane-22R	1.99	10.7		2.00
t29S	T9	C29 Tricyclic Terpane-22S	1.99	8.98		2.00
t29R	T10	C29 Tricyclic Terpane-22R	1.99	8.25		2.00
Ts	T11	18a-22,29,30-Trisnorneohopane-TS	1.99	59.7		2.00
t30S	T11a	C30 Tricyclic Terpane-22S	1.99	8.30		2.00
t30R	T11b	C30 Tricyclic Terpane-22R	1.99	7.28		2.00
Tm	T12	17a(H)-22,29,30-Trisnorhopane-TM	1.99	9.31		2.00
BNH	T14a	17a/b,21b/a 28,30-Bisnorhopane	1.99	3.30		2.00
25N	T14b	17a(H),21b(H)-25-Norhopane	1.99	4.64		2.00
H29	T15	30-Norhopane	1.99	75.5		2.00
C29Ts	T16	18a(H)-30-Norneohopane-C29Ts	1.99	16.8		2.00
X	X	17a(H)-Diahopane	1.99	4.47		2.00
M29	T17	30-Normoretane	1.99	9.71		2.00
OL	T18	18a(H)&18b(H)-Oleananes	1.99		U	2.00
H30	T19	Hopane	1.99	65.5		2.00
M30	T20	Moretane	1.99	6.74		2.00
H31S	T21	30-Homohopane-22S	1.99	28.2		2.00
H31R	T22	30-Homohopane-22R	1.99	26.0		2.00
T22A	T22A	T22a-Gammacerane/C32-diahopane	1.99	11.6		2.00
H32S	T26	30,31-Bishomohopane-22S	1.99	17.1		2.00
H32R	T27	30,31-Bishomohopane-22R	1.99	11.8		2.00
H33S	T30	30,31-Trishomohopane-22S	1.99	8.78		2.00
H33R	T31	30,31-Trishomohopane-22R	1.99	6.34		2.00
H34S	T32	Tetrakishomohopane-22S	1.99	5.82		2.00
H34R	T33	Tetrakishomohopane-22R	1.99	3.95		2.00
H35S	T34	Pentakishomohopane-22S	1.99		U	2.00
H35R	T35	Pentakishomohopane-22R	1.99		U	2.00
d27S	S4	13b(H),17a(H)-20S-Diacholestane	1.99	42.9		2.00
d27R	S5	13b(H),17a(H)-20R-Diacholestane	1.99	24.6		2.00
d28S	S8	13b,17a-20S-Methyldiacholestane	1.99	20.0		2.00
aa27S	S12	14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12)	1.99	36.8		2.00
aa27R	S17	14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17)	1.99	35.1		2.00
d29R	S18	Unknown Sterane (S18)	1.99	10.0		2.00
d29S	S19	13a,17b-20S-Ethyldiacholestane	1.99	1.69	J	2.00
aa28S	S20	14a,17a-20S-Methylcholestane	1.99	21.9		2.00
aa28R	S24	14a,17a-20R-Methylcholestane	1.99	8.58		2.00
aa29S	S25	14a(H),17a(H)-20S-Ethylcholestane	1.99	11.3		2.00
aa29R	S28	14a(H),17a(H)-20R-Ethylcholestane	1.99	9.62		2.00
bb27R	S14	14b(H),17b(H)-20R-Cholestane	1.99	18.8		2.00
bb27S	S15	14b(H),17b(H)-20S-Cholestane	1.99	16.6		2.00
bb28R	S22	14b,17b-20R-Methylcholestane	1.99	14.1		2.00
bb28S	S23	14b,17b-20S-Methylcholestane	1.99	14.7		2.00
bb29R	S26	14b(H),17b(H)-20R-Ethylcholestane	1.99	20.0		2.00
bb29S	S27	14b(H),17b(H)-20S-Ethylcholestane	1.99	10.6		2.00
RC26/SC27TA	RC26/SC27TA	C26,20R- +C27,20S- triaromatic steroid	1.99		U	2.00
SC28TA	SC28TA	C28,20S-triaromatic steroid	1.99		U	2.00
RC27TA	RC27TA	C27,20R-triaromatic steroid	1.99		U	2.00
RC28TA	RC28TA	C28,20R-triaromatic steroid	1.99		U	2.00

Surrogates (% Recovery)	
Naphthalene-d8	94
Phenanthrene-d10	76
Benzo[a]pyrene-d12	120
5B(H)Cholane	105

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	MOBIL VELOCITE No.10	MOBIL VACTRA No. 2 WAY OIL	MOBIL VACTRA No. 4	Reference Material - Reserve Tank Oil
Lab ID	1611009-11	1611009-12	1611009-13	1611009-14
Matrix	Product	Product	Product	Product
Reference Method	Modified 8270D	Modified 8270D	Modified 8270D	Modified 8270D
Batch ID	SO120216B02	SO120216B02	SO120216B02	SO120216B02
Date Collected	11/22/2016	11/22/2016	12/01/2016	11/21/2014
Date Received	11/28/2016	11/28/2016	12/01/2016	11/25/2014
Date Prepped	12/02/2016	12/02/2016	12/02/2016	12/02/2016
Date Analyzed	12/07/2016	12/07/2016	12/07/2016	12/07/2016
Sample Size (wet)	0.1055	0.1046	0.1026	0.1017
% Solid	100.00	100.00	100.00	100.00
File ID	F312051621.D	F312051623.D	F312051624.D	F312051625.D
Units	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Final Volume	20	20	20	20
Dilution	1	1	1	1
Reporting Limit	1.90	1.91	1.95	1.97

Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	Result		SSRL	Result
2	D0	cis/trans-Decalin		U	1.90		U	1.91	0.322	J	1.95	4.11
2	D1	C1-Decalins	1.22	J	1.90		U	1.91	1.42	J	1.95	16.0
2	D2	C2-Decalins	3.72		1.90		U	1.91		U	1.95	131
2	D3	C3-Decalins	3.91		1.90		U	1.91		U	1.95	261
2	D4	C4-Decalins	12.0	G	1.90		U	1.91		U	1.95	776
2	BT0	Benzothiophene		U	1.90		U	1.91		U	1.95	0.199
2	BT1	C1-Benzo(b)thiophenes		U	1.90		U	1.91		U	1.95	2.42
2	BT2	C2-Benzo(b)thiophenes	1.93		1.90		U	1.91	0.469	J	1.95	6.89
2	BT3	C3-Benzo(b)thiophenes	2.19		1.90		U	1.91		U	1.95	
2	BT4	C4-Benzo(b)thiophenes	4.22		1.90		U	1.91		U	1.95	
2	N0	Naphthalene	0.170	JB	1.90	0.363	JB	1.91	0.305	JB	1.95	6.52
2	N1	C1-Naphthalenes	0.374	JB	1.90	0.999	JB	1.91	1.24	JB	1.95	13.2
2	N2	C2-Naphthalenes	3.56		1.90	1.17	J	1.91	1.61	J	1.95	26.4
2	N3	C3-Naphthalenes	9.70		1.90	1.92		1.91	2.56	G	1.95	38.2
2	N4	C4-Naphthalenes	16.4		1.90	2.29	G	1.91	2.78		1.95	58.6
2	B	Biphenyl	0.232	J	1.90	0.143	J	1.91	0.212	J	1.95	5.57
3	DF	Dibenzofuran	0.200	J	1.90	0.0438	J	1.91	0.0676	J	1.95	2.44
3	AY	Acenaphthylene	0.0476	J	1.90		U	1.91		U	1.95	7.20
3	AE	Acenaphthene	0.218	J	1.90		U	1.91		U	1.95	3.07
3	F0	Fluorene	0.195	JB	1.90	0.129	JB	1.91	0.160	JB	1.95	2.04
3	F1	C1-Fluorenes	2.78		1.90	0.360	J	1.91		U	1.95	11.3
3	F2	C2-Fluorenes	14.3		1.90	2.37		1.91	1.52	J	1.95	38.3
3	F3	C3-Fluorenes	34.0		1.90	7.35		1.91	3.02		1.95	61.3
3	A0	Anthracene	0.239	J	1.90		U	1.91		U	1.95	1.30
3	P0	Phenanthrene	1.62	J	1.90	0.250	J	1.91	0.290	J	1.95	5.41
3	PA1	C1-Phenanthrenes/Anthracenes	9.26		1.90	1.37	J	1.91	0.660	J	1.95	22.3
3	PA2	C2-Phenanthrenes/Anthracenes	21.7		1.90	5.69		1.91	2.37		1.95	25.9
3	PA3	C3-Phenanthrenes/Anthracenes	18.8		1.90	10.2		1.91	3.50		1.95	18.7
3	PA4	C4-Phenanthrenes/Anthracenes		U	1.90		U	1.91		U	1.95	
3	RET	Retene		U	1.90		U	1.91		U	1.95	
3	DBT0	Dibenzothiophene	3.31		1.90	0.256	J	1.91	0.200	J	1.95	1.27
3	DBT1	C1-Dibenzothiophenes	28.0		1.90	1.98		1.91	1.21	J	1.95	7.55
3	DBT2	C2-Dibenzothiophenes	61.6		1.90	10.5		1.91	3.90		1.95	12.8
3	DBT3	C3-Dibenzothiophenes	66.0		1.90	21.1		1.91	6.64		1.95	15.9
3	DBT4	C4-Dibenzothiophenes	36.2		1.90	15.4		1.91	5.55		1.95	17.9
4	BF	Benzo(b)fluorene		U	1.90		U	1.91		U	1.95	
4	FL0	Fluoranthene		U	1.90		U	1.91		U	1.95	0.463
4	PY0	Pyrene		U	1.90		U	1.91		U	1.95	1.78
4	FP1	C1-Fluoranthenes/Pyrenes		U	1.90		U	1.91		U	1.95	5.48
4	FP2	C2-Fluoranthenes/Pyrenes		U	1.90		U	1.91		U	1.95	7.49
4	FP3	C3-Fluoranthenes/Pyrenes		U	1.90		U	1.91		U	1.95	7.10
4	FP4	C4-Fluoranthenes/Pyrenes		U	1.90		U	1.91		U	1.95	7.81
4	NBT0	Naphthobenzothiophenes	0.762	J	1.90		U	1.91		U	1.95	
4	NBT1	C1-Naphthobenzothiophenes	3.97		1.90	1.76	J	1.91	1.11	J	1.95	3.80
4	NBT2	C2-Naphthobenzothiophenes	4.06		1.90	2.45		1.91	2.08		1.95	5.13
4	NBT3	C3-Naphthobenzothiophenes		U	1.90		U	1.91	2.31		1.95	
4	NBT4	C4-Naphthobenzothiophenes		U	1.90		U	1.91		U	1.95	
4	BA0	Benz[a]anthracene		U	1.90		U	1.91		U	1.95	
4	C0	Chrysene/Triphenylene	0.414	J	1.90		U	1.91		U	1.95	0.437
4	BC1	C1-Chrysenes		U	1.90		U	1.91		U	1.95	1.56
4	BC2	C2-Chrysenes		U	1.90		U	1.91		U	1.95	
4	BC3	C3-Chrysenes		U	1.90		U	1.91		U	1.95	
4	BC4	C4-Chrysenes		U	1.90		U	1.91		U	1.95	

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

		Client ID	MOBIL VELOCITE No.10			MOBIL VACTRA No. 2 WAY OIL			MOBIL VACTRA No. 4			Reference Material - Reserve Tank Oil
		Lab ID	1611009-11			1611009-12			1611009-13			1611009-14
		Matrix	Product			Product			Product			Product
		Reference Method	Modified 8270D			Modified 8270D			Modified 8270D			Modified 8270D
		Batch ID	SO120216B02			SO120216B02			SO120216B02			SO120216B02
		Date Collected	11/22/2016			11/22/2016			12/01/2016			11/21/2014
		Date Received	11/28/2016			11/28/2016			12/01/2016			11/25/2014
		Date Prepped	12/02/2016			12/02/2016			12/02/2016			12/02/2016
		Date Analyzed	12/07/2016			12/07/2016			12/07/2016			12/07/2016
		Sample Size (wet)	0.1055			0.1046			0.1026			0.1017
		% Solid	100.00			100.00			100.00			100.00
		File ID	F312051621.D			F312051623.D			F312051624.D			F312051625.D
		Units	mg/Kg			mg/Kg			mg/Kg			mg/Kg
		Final Volume	20			20			20			20
		Dilution	1			1			1			1
		Reporting Limit	1.90			1.91			1.95			1.97
Class	Abbrev	Analytes	Result		SSRL	Result		SSRL	Result		SSRL	Result
5	BBF	Benzo[b]fluoranthene		U	1.90		U	1.91		U	1.95	
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene		U	1.90		U	1.91		U	1.95	
5	BAF	Benzo[a]fluoranthene		U	1.90		U	1.91		U	1.95	
5	BEP	Benzo[e]pyrene		U	1.90		U	1.91		U	1.95	
5	BAP	Benzo[a]pyrene		U	1.90		U	1.91		U	1.95	
5	PER	Perylene		U	1.90	0.891	J	1.91		U	1.95	
6	IND	Indeno[1,2,3-cd]pyrene		U	1.90		U	1.91		U	1.95	
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene		U	1.90		U	1.91		U	1.95	
6	GHI	Benzo[g,h,i]perylene	0.444	J	1.90		U	1.91		U	1.95	0.540
3	CAR	Carbazole	0.260	J	1.90		U	1.91		U	1.95	
3	4MDT	4-Methyldibenzothiophene	11.5		1.90	1.31	J	1.91	0.603	J	1.95	3.37
3	2MDT	2/3-Methyldibenzothiophene	11.9		1.90		U	1.91		U	1.95	
3	1MDT	1-Methyldibenzothiophene	4.24		1.90	0.368	J	1.91	0.242	J	1.95	0.651
3	3MP	3-Methylphenanthrene	1.07	J	1.90	0.162	J	1.91	0.134	J	1.95	3.96
3	2MP	2-Methylphenanthrene	1.39	J	1.90	0.191	J	1.91	0.107	J	1.95	3.82
3	2MA	2-Methylanthracene		U	1.90		U	1.91		U	1.95	0.542
3	9MP	9/4-Methylphenanthrene	3.85		1.90	0.479	J	1.91	0.239	J	1.95	5.40
3	1MP	1-Methylphenanthrene	1.42	J	1.90	0.248	J	1.91	0.121	J	1.95	2.64
t23	T4	C23 Tricyclic Terpane	203		1.90	133		1.91	25.6		1.95	121
t24	T5	C24 Tricyclic Terpane	55.2		1.90	33.2		1.91	5.73		1.95	62.3
t25	T6	C25 Tricyclic Terpane	60.7		1.90	36.1		1.91	6.23		1.95	55.2
te24	T6a	C24 Tetracyclic Terpane	214		1.90	154		1.91	31.4		1.95	23.2
t26S	T6b	C26 Tricyclic Terpane-22S	25.1		1.90	13.3		1.91	3.46		1.95	25.1
t26R	T6c	C26 Tricyclic Terpane-22R	22.9		1.90	13.4		1.91	5.06		1.95	24.0
t28S	T7	C28 Tricyclic Terpane-22S	29.4		1.90	16.5		1.91	3.37		1.95	28.4
t28R	T8	C28 Tricyclic Terpane-22R	29.2		1.90	20.1		1.91	3.88		1.95	27.4
t29S	T9	C29 Tricyclic Terpane-22S	28.3		1.90	20.7		1.91	5.59		1.95	22.5
t29R	T10	C29 Tricyclic Terpane-22R	41.4		1.90	25.1		1.91	6.80		1.95	23.4
Ts	T11	18a-22,29,30-Trisnorneohopane-TS	240		1.90	122		1.91	34.4		1.95	27.4
t30S	T11a	C30 Tricyclic Terpane-22S	18.6		1.90	20.7		1.91	4.13		1.95	12.7
t30R	T11b	C30 Tricyclic Terpane-22R	20.9		1.90	15.4		1.91	5.65		1.95	16.3
Tm	T12	17a(H)-22,29,30-Trisnorhopane-TM	248		1.90	399		1.91	96.6		1.95	17.6
BNH	T14a	17a/b,21b/a 28,30-Bisnorhopane	12.0		1.90	7.67		1.91	3.26		1.95	4.44
25N	T14b	17a(H),21b(H)-25-Norhopane	5.96		1.90	9.23		1.91	3.62		1.95	9.45
H29	T15	30-Norhopane	773		1.90	1580		1.91	515		1.95	52.7
C29Ts	T16	18a(H)-30-Norneohopane-C29Ts	118		1.90	111		1.91	45.6		1.95	10.9
X	X	17a(H)-Diahopane	7.89		1.90	15.5		1.91	6.54		1.95	4.25
M29	T17	30-Normoretane	46.0		1.90	110		1.91	48.9		1.95	10.1
OL	T18	18a(H)&18b(H)-Oleananes		U	1.90	10.1		1.91	4.45		1.95	
H30	T19	Hopane	516		1.90	1220		1.91	512		1.95	68.6
M30	T20	Moretane	30.0		1.90	89.9		1.91	42.4		1.95	6.06
H31S	T21	30-Homohopane-22S	246		1.90	660		1.91	369		1.95	26.7
H31R	T22	30-Homohopane-22R	179		1.90	526		1.91	302		1.95	24.7
T22A	T22A	T22a-Gammacerane/C32-diahopane	40.1		1.90	176		1.91	108		1.95	6.65
H32S	T26	30,31-Bishomohopane-22S	115		1.90	378		1.91	253		1.95	18.2
H32R	T27	30,31-Bishomohopane-22R	74.3		1.90	283		1.91	198		1.95	16.4
H33S	T30	30,31-Trishomohopane-22S	58.8		1.90	292		1.91	215		1.95	13.4
H33R	T31	30,31-Trishomohopane-22R	35.7		1.90	197		1.91	153		1.95	7.34
H34S	T32	Tetrakishomohopane-22S	28.2		1.90	234		1.91	205		1.95	8.26
H34R	T33	Tetrakishomohopane-22R	19.1		1.90	172		1.91	155		1.95	7.46
H35S	T34	Pentakishomohopane-22S	22.2		1.90	317		1.91	294		1.95	8.53
H35R	T35	Pentakishomohopane-22R	14.1		1.90	197		1.91	187		1.95	6.44
d27S	S4	13b(H),17a(H)-20S-Diacholestane	83.4		1.90	43.7		1.91	9.23		1.95	77.0
d27R	S5	13b(H),17a(H)-20R-Diacholestane	36.8		1.90	14.0		1.91	4.03		1.95	43.2
d28S	S8	13b,17a-20S-Methyldiacholestane	53.3		1.90	74.5		1.91	15.3		1.95	26.2
aa27S	S12	14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12)	164		1.90	123		1.91	27.7		1.95	103
aa27R	S17	14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17)	216		1.90	221		1.91	51.2		1.95	95.1
d29R	S18	Unknown Sterane (S18)	17.4		1.90	14.9		1.91	3.05		1.95	26.5
d29S	S19	13a,17b-20S-Ethyldiacholestane	24.7		1.90	21.4		1.91	5.01		1.95	2.43
aa28S	S20	14a,17a-20S-Methylcholestane	76.1		1.90	66.4		1.91	17.7		1.95	33.9
aa28R	S24	14a,17a-20R-Methylcholestane	62.6		1.90	101		1.91	27.5		1.95	24.1
aa29S	S25	14a(H),17a(H)-20S-Ethylcholestane	111		1.90	157		1.91	42.8		1.95	40.4
aa29R	S28	14a(H),17a(H)-20R-Ethylcholestane	93.9		1.90	165		1.91	61.2		1.95	36.6
bb27R	S14	14b(H),17b(H)-20R-Cholestane	254		1.90	228		1.91	47.8		1.95	68.0
bb27S	S15	14b(H),17b(H)-20S-Cholestane	217		1.90	205		1.91	45.7		1.95	64.9
bb28R	S22	14b,17b-20R-Methylcholestane	121		1.90	181		1.91	39.9		1.95	41.1
bb28S	S23	14b,17b-20S-Methylcholestane	170		1.90	229		1.91	54.2		1.95	61.5
bb29R	S26	14b(H),17b(H)-20R-Ethylcholestane	254		1.90	352		1.91	94.2		1.95	99.7
bb29S	S27	14b(H),17b(H)-20S-Ethylcholestane	197		1.90	250		1.91	82.1		1.95	51.8
RC26/SC27TA	RC26/SC27TA	C26,20R- +C27,20S- triaromatic steroid	17.9		1.90	29.7		1.91	6.39		1.95	4.22
SC28TA	SC28TA	C28,20S-triaromatic steroid	28.1		1.90	55.6		1.91	15.0		1.95	9.40
RC27TA	RC27TA	C27,20R-triaromatic steroid	27.2		1.90	44.6		1.91	15.5		1.95	4.12
RC28TA	RC28TA	C28,20R-triaromatic steroid	7.30		1.90	15.2		1.91	6.08		1.95	

Surrogates (% Recovery)				
Naphthalene-d8	101	91	91	139
Phenanthrene-d10	89	97	99	61
Benzo[a]pyrene-d12	119	113	103	119
5B(H)Cholane	107	102	100	101

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	New Oil
Lab ID	1611009-15
Matrix	Product
Reference Method	Modified 8270D
Batch ID	SO120216B02
Date Collected	12/18/2014
Date Received	12/22/2014
Date Prepped	12/02/2016
Date Analyzed	12/07/2016
Sample Size (wet)	0.1017
% Solid	100.00
File ID	F312051626.D
Units	mg/Kg
Final Volume	20
Dilution	1
Reporting Limit	1.97

Class	Abbrev	Analytes		SSRL	Result		SSRL
2	D0	cis/trans-Decalin		1.97	0.367	J	1.97
2	D1	C1-Decalins		1.97	2.09		1.97
2	D2	C2-Decalins		1.97	3.56		1.97
2	D3	C3-Decalins		1.97	5.96		1.97
2	D4	C4-Decalins		1.97	23.2		1.97
2	BT0	Benzothiophene	J	1.97		U	1.97
2	BT1	C1-Benzo(b)thiophenes		1.97	0.557	J	1.97
2	BT2	C2-Benzo(b)thiophenes		1.97	0.627	J	1.97
2	BT3	C3-Benzo(b)thiophenes	U	1.97		U	1.97
2	BT4	C4-Benzo(b)thiophenes	U	1.97		U	1.97
2	N0	Naphthalene		1.97	0.654	JB	1.97
2	N1	C1-Naphthalenes		1.97	1.83	J	1.97
2	N2	C2-Naphthalenes		1.97	6.27		1.97
2	N3	C3-Naphthalenes		1.97	22.6		1.97
2	N4	C4-Naphthalenes		1.97	46.6		1.97
2	B	Biphenyl		1.97	1.92	J	1.97
3	DF	Dibenzofuran		1.97	0.999	J	1.97
3	AY	Acenaphthylene	G	1.97		U	1.97
3	AE	Acenaphthene	G	1.97	0.248	J	1.97
3	F0	Fluorene		1.97	2.15		1.97
3	F1	C1-Fluorenes		1.97	12.8		1.97
3	F2	C2-Fluorenes		1.97	44.1		1.97
3	F3	C3-Fluorenes		1.97	72.5		1.97
3	A0	Anthracene	J	1.97		U	1.97
3	P0	Phenanthrene		1.97	7.32		1.97
3	PA1	C1-Phenanthrenes/Anthracenes		1.97	27.5		1.97
3	PA2	C2-Phenanthrenes/Anthracenes		1.97	44.7		1.97
3	PA3	C3-Phenanthrenes/Anthracenes		1.97	36.6		1.97
3	PA4	C4-Phenanthrenes/Anthracenes	U	1.97	33.0		1.97
3	RET	Retene	U	1.97		U	1.97
3	DBT0	Dibenzothiophene	J	1.97	3.27		1.97
3	DBT1	C1-Dibenzothiophenes		1.97	20.9		1.97
3	DBT2	C2-Dibenzothiophenes		1.97	30.3		1.97
3	DBT3	C3-Dibenzothiophenes		1.97	31.4		1.97
3	DBT4	C4-Dibenzothiophenes		1.97	19.7		1.97
4	BF	Benzo(b)fluorene	U	1.97		U	1.97
4	FL0	Fluoranthene	J	1.97		U	1.97
4	PY0	Pyrene	J	1.97	0.533	J	1.97
4	FP1	C1-Fluoranthenes/Pyrenes		1.97	5.02		1.97
4	FP2	C2-Fluoranthenes/Pyrenes		1.97		U	1.97
4	FP3	C3-Fluoranthenes/Pyrenes		1.97		U	1.97
4	FP4	C4-Fluoranthenes/Pyrenes		1.97		U	1.97
4	NBT0	Naphthobenzothiophenes	U	1.97		U	1.97
4	NBT1	C1-Naphthobenzothiophenes		1.97		U	1.97
4	NBT2	C2-Naphthobenzothiophenes		1.97		U	1.97
4	NBT3	C3-Naphthobenzothiophenes	U	1.97		U	1.97
4	NBT4	C4-Naphthobenzothiophenes	U	1.97		U	1.97
4	BA0	Benz[a]anthracene	U	1.97		U	1.97
4	C0	Chrysene/Triphenylene	J	1.97	0.461	J	1.97
4	BC1	C1-Chrysenes	J	1.97		U	1.97
4	BC2	C2-Chrysenes	U	1.97		U	1.97
4	BC3	C3-Chrysenes	U	1.97		U	1.97
4	BC4	C4-Chrysenes	U	1.97		U	1.97

Project Name: Cardno ERI - Former XOM Jalk Fee Property
Project Number: 850.0087.000

Client ID	New Oil
Lab ID	1611009-15
Matrix	Product
Reference Method	Modified 8270D
Batch ID	SO120216B02
Date Collected	12/18/2014
Date Received	12/22/2014
Date Prepped	12/02/2016
Date Analyzed	12/07/2016
Sample Size (wet)	0.1017
% Solid	100.00
File ID	F312051626.D
Units	mg/Kg
Final Volume	20
Dilution	1
Reporting Limit	1.97

Class	Abbrev	Analytes		SSRL	Result		SSRL
5	BBF	Benzo[b]fluoranthene	U	1.97		U	1.97
5	BJKF	Benzo[j]fluoranthene/Benzo[k]fluoranthene	U	1.97		U	1.97
5	BAF	Benzo[a]fluoranthene	U	1.97		U	1.97
5	BEP	Benzo[e]pyrene	U	1.97		U	1.97
5	BAP	Benzo[a]pyrene	U	1.97		U	1.97
5	PER	Perylene	U	1.97		U	1.97
6	IND	Indeno[1,2,3-cd]pyrene	U	1.97		U	1.97
6	DA	Dibenz[ah]anthracene/Dibenz[ac]anthracene	U	1.97		U	1.97
6	GHI	Benzo[g,h,i]perylene	J	1.97	0.635	J	1.97
3	CAR	Carbazole	U	1.97	0.638	J	1.97
3	4MDT	4-Methyldibenzothiophene		1.97	10.6		1.97
3	2MDT	2/3-Methyldibenzothiophene	U	1.97	6.40		1.97
3	1MDT	1-Methyldibenzothiophene	J	1.97	1.38	J	1.97
3	3MP	3-Methylphenanthrene		1.97	4.76		1.97
3	2MP	2-Methylphenanthrene		1.97	5.11		1.97
3	2MA	2-Methylanthracene	J	1.97		U	1.97
3	9MP	9/4-Methylphenanthrene		1.97	8.20		1.97
3	1MP	1-Methylphenanthrene		1.97	4.47		1.97
t23	T4	C23 Tricyclic Terpane		1.97	285		1.97
t24	T5	C24 Tricyclic Terpane		1.97	131		1.97
t25	T6	C25 Tricyclic Terpane		1.97	56.4		1.97
te24	T6a	C24 Tetracyclic Terpane		1.97	10.4		1.97
t26S	T6b	C26 Tricyclic Terpane-22S		1.97	14.5		1.97
t26R	T6c	C26 Tricyclic Terpane-22R		1.97	13.6		1.97
t28S	T7	C28 Tricyclic Terpane-22S		1.97	7.63		1.97
t28R	T8	C28 Tricyclic Terpane-22R		1.97	7.10		1.97
t29S	T9	C29 Tricyclic Terpane-22S		1.97	5.25		1.97
t29R	T10	C29 Tricyclic Terpane-22R		1.97	5.27		1.97
Ts	T11	18a-22,29,30-Trisnorneohopane-TS		1.97	14.0		1.97
t30S	T11a	C30 Tricyclic Terpane-22S		1.97	3.86		1.97
t30R	T11b	C30 Tricyclic Terpane-22R		1.97	4.19		1.97
Tm	T12	17a(H)-22,29,30-Trisnorhopane-TM		1.97	7.26		1.97
BNH	T14a	17a/b,21b/a 28,30-Bisnorhopane		1.97		U	1.97
25N	T14b	17a(H),21b(H)-25-Norhopane		1.97	3.50		1.97
H29	T15	30-Norhopane		1.97	54.0		1.97
C29Ts	T16	18a(H)-30-Norneohopane-C29Ts		1.97	8.68		1.97
X	X	17a(H)-Diahopane		1.97	2.47		1.97
M29	T17	30-Normoretane		1.97	4.01		1.97
OL	T18	18a(H)&18b(H)-Oleananes	U	1.97		U	1.97
H30	T19	Hopane		1.97	48.2		1.97
M30	T20	Moretane		1.97	4.18		1.97
H31S	T21	30-Homohopane-22S		1.97	25.8		1.97
H31R	T22	30-Homohopane-22R		1.97	21.8		1.97
T22A	T22A	T22a-Gammacerane/C32-diahopane		1.97	6.26		1.97
H32S	T26	30,31-Bishomohopane-22S		1.97	15.0		1.97
H32R	T27	30,31-Bishomohopane-22R		1.97	10.0		1.97
H33S	T30	30,31-Trishomohopane-22S		1.97	10.1		1.97
H33R	T31	30,31-Trishomohopane-22R		1.97	6.00		1.97
H34S	T32	Tetrakishomohopane-22S		1.97	5.42		1.97
H34R	T33	Tetrakishomohopane-22R		1.97	5.28		1.97
H35S	T34	Pentakishomohopane-22S		1.97	4.78		1.97
H35R	T35	Pentakishomohopane-22R		1.97	4.02		1.97
d27S	S4	13b(H),17a(H)-20S-Diacholestane		1.97	18.6		1.97
d27R	S5	13b(H),17a(H)-20R-Diacholestane		1.97	9.42		1.97
d28S	S8	13b,17a-20S-Methyldiacholestane		1.97	6.63		1.97
aa27S	S12	14a(H),17a(H)-20S-Cholestane/13b(H),17a(H)-20S-Ethyldiacholestane (S12)		1.97	22.2		1.97
aa27R	S17	14a(H),17a(H)-20R-Cholestane/13b(H),17a(H)-20R-Ethyldiacholestane (S17)		1.97	19.4		1.97
d29R	S18	Unknown Sterane (S18)		1.97	3.56		1.97
d29S	S19	13a,17b-20S-Ethyldiacholestane		1.97		U	1.97
aa28S	S20	14a,17a-20S-Methylcholestane		1.97	9.50		1.97
aa28R	S24	14a,17a-20R-Methylcholestane		1.97	6.23		1.97
aa29S	S25	14a(H),17a(H)-20S-Ethylcholestane		1.97	10.2		1.97
aa29R	S28	14a(H),17a(H)-20R-Ethylcholestane		1.97	12.0		1.97
bb27R	S14	14b(H),17b(H)-20R-Cholestane		1.97	14.4		1.97
bb27S	S15	14b(H),17b(H)-20S-Cholestane		1.97	13.7		1.97
bb28R	S22	14b,17b-20R-Methylcholestane		1.97	8.84		1.97
bb28S	S23	14b,17b-20S-Methylcholestane		1.97	12.5		1.97
bb29R	S26	14b(H),17b(H)-20R-Ethylcholestane		1.97	24.5		1.97
bb29S	S27	14b(H),17b(H)-20S-Ethylcholestane		1.97	14.1		1.97
RC26/SC27TA	RC26/SC27TA	C26,20R- +C27,20S- triaromatic steroid		1.97		U	1.97
SC28TA	SC28TA	C28,20S-triaromatic steroid		1.97	2.42		1.97
RC27TA	RC27TA	C27,20R-triaromatic steroid		1.97		U	1.97
RC28TA	RC28TA	C28,20R-triaromatic steroid	U	1.97		U	1.97

Surrogates (% Recovery)		
Naphthalene-d8	§	101
Phenanthrene-d10		63
Benzo[a]pyrene-d12		128
5B(H)Cholane		105

U: The analyte was analyzed for but not detected at the sample specific level reported.
B: Found in associated blank as well as sample.
J: Estimated value, below quantitation limit.
E: Estimated value, exceeds the upper limit of calibration.
NA: Not Applicable
D: Secondary Dilution Performed
D1: Tertiary Dilution Performed
ª: Value outside of QC Limits.
§: Surrogate value outside of acceptable range.
X: It is not possible to calculate RPD, one result is below the detection limit, the other is above reporting limit.
G: Matrix Interference.
P: Greater than 40% RPD between the two columns, the higher value is reported according to the method.
I: Due to interference, the lower value is reported.
N: Spike recovery outside control limits.
E: Estimated due to Interference. (Metals)
¤: Duplicate outside control limits.
P: Spike compound. (Metals)
J: Below CRDL, Project DL, or RL but greater than or equal to MDL
C: Sample concentration is > 4 times the spike level, recovery limits do not apply. (Metals)
S: Spike Compound. (Organics)
§: RPD criteria not applicable to results less than 5 times the reporting limit. (Metals)
T: Tentatively identified corexit compound.
C: Co-elution.
Z: Result not surrogate corrected.
DL: Surrogate result diluted out of sample.
W: Matrix interference may be present based on chemical reasonableness evaluation.

EXHIBIT 5

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August 25, 2017

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Los Angeles Region
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SUBJECT **Response to Continental Heat Treating's Allegations**
Former ExxonMobil Jalk Fee Property
10607 Norwalk Boulevard
Santa Fe Springs, California
CRWQCB-LAR Case No. 0203; Site I.D. No. 1848000

Mr. Changkuon:

At the request of ExxonMobil Environmental Services Company (EMES), on behalf of ExxonMobil Production Company (ExxonMobil), Cardno has prepared this *Response to Continental Heat Treating's Allegations* for the above-referenced site. Representatives of Continental Heat Treating (CHT) submitted several documents to the California Regional Water Quality Control Board – Los Angeles Region (CRWQCB-LAR) from March 2015 to June 2017, which dispute the facts of ExxonMobil's site conceptual model and evidence that CHT is the source of chlorinated solvents in soil at Jalk Fee. As neither CHT, nor the CRWQCB-LAR uploaded the documents to GeoTracker or sent copies to ExxonMobil when originally submitted, we only recently became aware of these documents, therefore are now providing this response to the allegations made by CHT in their documents.

The enclosed report from Cardno and the supporting reports in the appendices, which were prepared by experts in forensic science and aerial photo interpretation, demonstrate the inaccuracies of CHT's claims, and again demonstrate that CHT is the source of the chlorinated solvents in soil on the Jalk Fee property, including:

- ExxonMobil never used or stored chlorinated solvents at the Jalk Fee property (Site).
- The distribution of chlorinated solvents in soil and soil gas do not support CHT's allegations of dumping by third parties on the Jalk Fee property but point to CHT as the source.
- CHT used and stored extensive quantities of chlorinated solvents, primarily PCE, in its degreasing operations from approximately 1969 to 1995.
- CHT stored, used and generated significant quantities of quench oil and quench oil sludge as part of its heat treating operations. These types of oils are not used or generated in exploration and production (E&P) activities.
- A process flow diagram of CHT's historical operations, provided by CHT's consultant (Waterstone), shows that the mineral and waste oils used and generated in CHT's operations, including used quench oil, were commingled with PCE in the course of CHT's operations.
- CHT had poor operational and waste management practices that resulted in spills of chlorinated solvents and other chemicals, including used quench oil/quench oil sludge and waste oil, to the ground surface.
- CHT received various agency citations and notices of violation (NOVs) for its releases to the ground.

- CHT’s waste disposal manifests only account for a small percentage of the amount of PCE that CHT generated or disposed of, based on its own statements.
- Information provided by CHT’s consultant (Waterstone) on CHT operations and quench oil chemistry provided further confirmation of the conclusions reached in the 2016 forensic study by NewFields that found quench oil/quench oil sludge, a mineral oil unique to the heat treating process, were co-located with PCE in shallow soil on the Jalk Fee property along the property boundary with CHT.

There is only one obvious source of PCE on the Jalk Fee and CHT properties and this source resulted from CHT’s operations, including its waste disposal practices. CHT’s chemical use history, the distribution of PCE at the properties, and forensic analysis provide further evidence that CHT is the source of chlorinated solvents on the Jalk Fee property.

Please call the undersigned at (832) 544-3413 with any questions regarding the content of this document.

Sincerely,

Marla D Madden

Marla D. Madden
Lead Project Manager

Attachment: *Response to Continental Heat Treating’s Allegations,* prepared by Cardno.

C: w/attachment
Mr. Thomas Clark, Coast Aluminum and Architectural Inc./Clark Holdings, LLC, Property Owner (Jalk Fee)
Ms. Michelle F. Smith, Property Owner (Jalk Fee)
Mr. Howard Schwimmer, Rexford
Mr. Preston Brooks, Cox Castle Nicholson LLP
Mr. Elizabeth Weaver, Norton Rose Fulbright US LLP
Ms. Sara Morey, EMES

C: w/o attachment
Mr. James Anderson, Cardno

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August 25, 2017
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Ms. Marla D. Madden
ExxonMobil Environmental Services Company
8941 Atlanta Avenue, #384
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SUBJECT **Response to Continental Heat Treating's Allegations**
Former ExxonMobil Jalk Fee Property
10607 Norwalk Boulevard
Santa Fe Springs, California
CRWQCB-LAR Case No. 0203; Site I.D. No. 1848000

Ms. Madden:

At the request of ExxonMobil Environmental Services Company (EMES), on behalf of ExxonMobil US Production Company (ExxonMobil), Cardno has prepared this *Response to Continental Heat Treating's Allegations* for the above-referenced site (Plate 1). In Cardno ERI's *Request to Name Continental Heat Treating as Discharger* dated March 25, 2015 (March 2015 Report), and Cardno's *Additional Evidence in Support of Request to Name Continental Heat Treating as Discharger* dated February 8, 2017 (February 2017 Report), compelling evidence was presented to the California Regional Water Quality Control Board - Los Angeles Region (CRWQCB-LAR) which demonstrated:

1. ExxonMobil never used or stored chlorinated solvents at the Jalk Fee property (Site).
2. Continental Heat Treating (CHT) used and stored extensive quantities of chlorinated solvents in its degreasing operations from approximately 1969 to 1995.

3. CHT stored, used, and generated significant quantities of quench oil and waste oil sludge as part of its heat treating operations. These types of oils are not used, or generated in oil production activities.
4. CHT had poor operational and waste management practices that resulted in spills of chlorinated solvents and other chemicals, including used quench oil and waste oil, to the ground surface.
5. CHT received various agency citations and notices of violation (NOVs) for their releases of chlorinated solvents, waste oils, and other chemicals to the ground.
6. Mineral oils found in the shallow soil on the Jalk Fee property, co-located with PCE along the property boundary with CHT, included used quench oil and quench oil sludge, products unique to the heat-treating business.

In the following listed submittals to the CRWQCB-LAR, various unsupported and inaccurate allegations were made regarding evidence presented by ExxonMobil to the CRWQCB-LAR:

- DDSF, Del Guercio, Springer & Francis, LLP's (DDSF) letter, *ExxonMobil is the Discharger of Waste* dated, May 22, 2015 (DDSF, 2015).
- DDSF's letter, *Continental Heat Treating*, dated January 31, 2017 (DDSF, 2017a).
- DDSF's letter, *Continental Heat Treating*, dated May 23, 2017 (DDSF, 2017b).
- DDSF's letter, *Continental Heat Treating*, dated June 1, 2017 (DDSF, 2017c).
- Waterstone Environmental, Inc.'s (Waterstone) report, *Response to Cardno's Report of Additional Evidence in Support to Name Continental Heat Treating as Discharger* (Waterstone Report), dated April 27, 2017 (Waterstone, 2017).

Claims made by CHT related to the NewFields' forensic study, alleged uncontrolled dumping at Jalk Fee, and non-CHT sources of chlorinated solvents are addressed first followed by responses to the remaining allegations. CHT's allegations are summarized in italics, followed by Cardno's detailed response.

FORENSIC STUDY DEMONSTRATING USED QUENCH OIL/QUENCH OILSLUDGE IN SOIL ON JALK FEE PROPERTY

Cardno and ExxonMobil contend that heat treating quench oil was co-located with chlorinated solvents in the soil samples taken on the Jalk Fee Property and suggest this proves CHT is responsible for the chlorinated solvents located on Jalk Fee. However, these contentions are fallacious, as they do not demonstrate any compelling information supporting their claim that heat treating quench oil is located in the soil samples on the Jalk Fee Property; the evidence demonstrates otherwise. PCE is not present in virgin quench oil, the quench oil that was *used, or any waste quench oil at CHT's facility, therefore any co-location of these chemicals would be purely coincidental.*

ExxonMobil engaged NewFields, a leader in environmental forensics, as an independent consultant to conduct a forensic study of soil samples collected on the Jalk Fee property in the area where the highest PCE concentrations in soil are located and directly north of the property boundary with CHT (Plates 2 and 3). NewFields' analysis was presented as part of Cardno's February 2017 Report and demonstrated that the shallow soil on the Jalk Fee Site, directly north of the CHT equipment storage and repair area, contains used quench oil/quench oil sludge and varying types/mixtures of other mineral oil sludge/waste, co-located with PCE, consistent with the waste that was generated by CHT's operations during the years when it was also using PCE in its degreasing operations (Cardno, 2017; NewFields, 2017a).

NewFields prepared a detailed point-by-point response (NewFields, 2017b) to Waterstone's allegations (Waterstone, 2017) about the forensic investigation, which is included as Appendix A to this report. Briefly, the responses are summarized as follows:

1) Waterstone's Report includes a pre-1995 process flow diagram of CHT's operations, which was provided by CHT and shows that both PCE and used quench oil were present in some wastes generated by CHT's heat treating operations (see Figure 4 of Appendix A).
2) Waterstone's analysis of chromatograms reviewed by NewFields' and generated by laboratories used to analyze the soil samples ignored inter-laboratory analytical and presentation differences, which when considered clearly show the quench oils historically used at CHT (and analyzed by Waterstone) are virtually identical to the quench oil reference material from the heat treating facility used in the NewFields forensic study. In other words, by providing chromatograms representing CHT's on-site quench oil (which when corrected for presentation differences, closely matched the exemplar quench oil used by CHT), Waterstone's work confirms that used quench oil/quench oil sludge from CHT are present in Jalk Fee soil near the CHT property boundary (co-located with PCE).
3) Waterstone's study of the aromatic content of CHT's quench oils only analyzed for 17 different PAHs, whereas Newfieds' study analyzed for 50 different PAHs, which is typical for forensic analyses. Waterstone then incorrectly concluded that the concentrations of PAHs in CHT's and NewFields' quench oils were significantly different. When the same number of PAH analytes are compared, there was no disparity in total PAH concentration between CHT samples and Newfield's quench oils, including in the oils in on-site soil near the CHT property boundary.

4) Because quench oils are de-aromatized, the low aromatic content found in oils in soil samples from the subject site along the CHT property boundary is further evidence that used quench oil/quench oil sludges are present in several of the soil samples.
5) Other soil samples from the forensic study contained varying types/mixtures of mineral oil sludges/wastes characteristically used in metal working (e.g., cutting oils, machining forming) that would have been generated by CHT in cleaning/washing arriving metal parts. Such oils are not consistent with or used in exploration and production field operations such as those conducted at the Jalk Fee property.
6) The new information provided by Waterstone provides further support for NewFields' conclusion that used quench oil/ quench oil sludges, which are unique to the heat-treating process, are co-located with PCE in the shallow soil on the Jalk Fee property along the property boundary with CHT.

CHT's ALLEGATIONS OF DUMPING AND NON-CHT SOURCES OF CHLORINATED SOLVENTS ON OR ADJACENT TO JALK FEE PROPERTY

ExxonMobil clearly had no control of the Jalk Fee Property for a period of over 50 years, so they have no knowledge of what chemicals were used or dumped during that time. As demonstrated previously through historic aerial photos, it is clear that the Jalk Fee property was an unsecured property upon which dumping occurred with easy access from Norwalk Boulevard for almost its entire existence as an oil field. It was, in effect, an uncontrolled waste dumping ground for over 50 years. Therefore, beginning in 1994, it became a "controlled" dumping ground due to its use as a land treatment unit for receipt of impacted soil.

Cardno's February 9, 2017 report attempts to address only the former trucking operations; it does not even mention the historical aerial photographs, initial Mobil consultant report references, DTSC Preliminary Assessments, EPA investigations, and other documentation identifying sources of chlorinated solvents on the Jalk Fee Property, including: 1) decades of unrestricted dumping; 2) the former boneyard; 3) historic solvent vapor discharges from borings in the eastern section of the site; 4) the former tenant that used solvents; and 5) Mobil employee discussions of off-site solvent dumping that may have occurred near the northern property boundary.

Charles Sotelo was a CHT employee during the periods 1982-1991 and 2004 – present. During Mr. Sotelo's first period of employment, Mr. Sotelo stated he witnessed several tank trucks come onto the Jalk Fee property and discharged dark oily liquids onto the site (DDSF, 2015).

ExxonMobil failed to mention or acknowledge that the occupant of 12110 Clark Street (Duncan Industries) to the north of the Jalk Fee property had an active degreaser.

The SFSFD (City of Santa Fe Springs Fire Department) report describes, "Dug illegal trench in dirt field & illegal sewer lines- spilling diesel, oil & solvent to the ground and will not clean up."..The address written on the SFSFD report for the field where dumping occurred in 10601 Norwalk Blvd, and this is the address associated with the "notch" on the northeast corner of the Jalk Fee Site and which at that time was occurred by Maple John Construction & Development Co.

Some of the above statements reference aerial photos presented in the DDSF letter dated January 31, 2017 as evidence of uncontrolled dumping. On these aerial photos, CHT highlighted the presence of alleged sumps, the presence of dark colored soil, earth moving equipment, trucks and apparent land farming operations. However, there is not a single aerial photo that shows activities at Jalk Fee that are inconsistent with those of an operating exploration and production oil field in the time period in which the aerial photos were taken. The aerial photos do not demonstrate uncontrolled dumping or the introduction of chlorinated solvents.

An example of the unsubstantiated dumping allegations made by CHT is a 1963 aerial photo that CHT states showed dump trucks coming on site and dumping dark-stained soil. ExxonMobil commissioned Aero-Data Corporation, a firm experienced with aerial photo evaluation, to review the interpretations in the DDSF letter. Aero-Data evaluated the 1963 photo and a subsequent photo and found that, in fact, trucks from an adjacent off-site road construction project in Norwalk Boulevard were simply using the eastern edge of the Site as a turnaround, so that trucks could re-enter traffic safely (Aero-Data, 2017) (Appendix B). There was no evidence of dumping.

The Site features and actions alleged in the DDSF letters and Waterstone Report to be indicators of uncontrolled dumping and, by inference, to be sources of chlorinated solvents are individually discussed in the following subsections.

Sumps

Sumps are a standard part of exploration and production operations, they were used to hold petroleum-based fluids, and are not indicators of uncontrolled dumpling. Further, the purpose of sumps was to hold drilling mud, oil, and oily produced water from activities such as drilling or workover of oil wells, or tank batteries; therefore, the sumps would exclusively have contained petroleum-related liquids and have not contained chlorinated solvents. The sumps would be associated with and located in proximity to other oil field infrastructure, such as oil wells or tank batteries, and not in isolated areas. As part of ExxonMobil's historic assessment activities, various former sumps were sampled over multiple investigations, including for chlorinated solvents, and none of these sump areas were found to contain anything more than trace chlorinated solvent concentrations (Levine Fricke, 1991; Alton, 1997, Alton, 1998; TRC Alton, 2000).

While some of the structures identified as sumps in the aerial photos in the DDSF letter are, in fact, sumps associated with exploration and production operations as explained above, many of the smaller dark areas labeled as sumps by DDSF, especially those along the CHT/Jalk Fee property boundary, are not sumps at all. Aero-Data reviewed the original photograph film and identified that what DDSF called sumps were actually a piece of dust on the film, sheds, shadows from trees, sheds and other elevated structures, and remnant features from a pipeline (Appendix B). This was, in fact, a failed desperate attempt by DDSF to identify any structure or area along the CHT property boundary as a sump when, in fact, there were no sumps along the CHT property boundary.

Dark-Colored Soil and Landfarming

The Jalk Fee property was an operating exploration and production facility from the 1920s to the 1990s. The presence of dark-colored, petroleum-stained soil can result from these operations and is commonly found on oil fields. It in no way represents uncontrolled dumping from off-site sources or the presence of chlorinated solvents.

Further, oil fields have periodic construction activities that require moving and use of soil for the construction of roads, drilling pads, installation of piping, and construction of tankage and berms. This often requires large equipment (e.g. graders, dump trucks) to move the soil. In addition, landfarming (the spreading of petroleum-containing soil to aerate and bioremediate the petroleum hydrocarbons) was an accepted industry practice at oil fields. Thus, the appearance of trucks and earth-moving equipment, the presence of dark-colored, petroleum-containing soil, and the spreading and remediation of such soil on the property were part of normal oil field operations during the time frame of the aerial photos, and are not indicators of uncontrolled dumping on the Jalk Fee property, nor the introduction of chlorinated solvents.

In 1993 and 1994, two biocells were constructed on site to bioremediate petroleum-containing soil from the Jalk Fee and three other ExxonMobil-operated oil field sites from the Santa Springs oil field area. The southern boundary (berm) of the biocells were more than 60 feet from the Jalk Fee / CHT property boundary. The scope of work for this project was presented in McLaren Hart's *Remedial Action Plan*, dated December 21, 1993, which was approved by the CRWQCB-LAR (McLaren Hart, 1993). As stated in McLaren Hart's First Quarter 1994 Status Report:

> The principal objective of the land treatment operation is to reduce the concentration of total recoverable petroleum hydrocarbons (TRPH) in soil transported to the land treatment wells to below 1,000 parts per million (ppm). As presented in the RAP, the soil transported to the Jalk

> Fee Site is derived solely from properties in the Mobil Operated Santa Fe Springs Oil Field, including the Jalk Fee, DeWenter Jordan/Green, Baker/Humble properties and Oil Well 732-C. The biocells were monitored and sampled per CRWQCB requirements and, upon reaching standards, soils were removed and returned to excavations on the same oil field properties (McLaren Hart, 1994).

Lastly, the areas beneath the former biocells were later sampled for chlorinated solvents as part of site investigations and soil excavations leading up to sale of the property and redevelopment, and chlorinated solvents were not detected, except for an occasional low concentration, in the soil samples (Alton, 1997; Alton, 1998; TRC Alton, 2000).

Rather than illegal dumping of “dark-stained soils”, movement and bioremediation of petroleum-containing soil were standard oil field practices, done with regulatory oversight, and in no way were these bioremediation activities evidence of uncontrolled dumping or a potential source of chlorinated solvents.

As presented in Cardno’s March 2015 Report, ExxonMobil confirmed by contacting oil production personnel that chlorinated solvents were not used by ExxonMobil Production at oil field sites, which is true for both Jalk Fee and the other former ExxonMobil oil field sites in California (Cardno ERI, 2015). Further, chlorinated solvents were not historically used in oil field operations across the industry. Oil production sites typically use petroleum-based solvents, as they are readily and cheaply available, not chlorinated-based solvents. This is further supported from a state-wide review of the State Water Resource Control Board’s GeoTracker system which did not identify chlorinated solvent contamination resulting from oil field operations, and discussion with the Central Valley Regional Water Quality Control Board and Santa Barbara County Environmental Health Services, two jurisdictions with many historical exploration and production remediation sites, who indicated that they were not aware of any oil field sites that had chlorinated solvent contamination. These facts have been raised several times to the CRWQCB-LAR and have not been disputed.

Former Truck Parking Area

CHT claimed that a historic on-site trucking operation is evidence of an on-site source of PCE. ExxonMobil’s expert aerial photo interpreter (Aero-Data) previously confirmed that in the mid-1980s parked trucks were observed in the northcentral part of the subject site. The expert also confirmed that no storage tanks or buildings of the size necessary for truck repairs were observed in the northcentral area of the Site in the aerial photos. Although CHT alleged that the trucks were tankers, implying they were dumping waste on site, Aero-Data saw no evidence of tanker trucks in any of the aerial photos, and interpreted they were mostly likely box trailer trucks (Appendix B) (Cardno ERI, 2015).

The truck parking was in the same area that McLaren Hart conducted a soil gas investigation in 1996 in direct response to the question of whether a trucking operation was a potential source of PCE (McLaren Hart, 1996). The investigation concluded there was no source of PCE in the trucking area. The soil gas PCE concentrations found in the truck parking area were low and were four orders of magnitude lower than found at the property boundary with CHT. The source of PCE in soil gas is clearly along the property boundary with CHT and laterally diffuses from there, as low concentrations were only detected in two of the 18 soil gas samples collected by McLaren Hart (the other 16 samples had no detectable concentrations), which is consistent with lateral transport from the source area along the CHT property boundary (McLaren Hart, 1996).

Lastly, soil boring B22, with a maximum concentration of PCE of 5.46 mg/kg at 10 feet bgs, has also been alleged to be associated with the truck parking area (Plate 2). However, the aerial photo analysis confirmed that the location of B22 was well outside the perimeter of the area where the trucks were observed to be parking. Further, the maximum PCE concentration measured in B22 is 3 to 4 orders of magnitude lower than the concentrations measured in the source area along the CHT property boundary. Thus, dissolved-phase and/or soil gas migration from the property boundary source area is likely the cause of the PCE concentrations at B22 (Cardno ERI, 2015).

Former Boneyard

Waterstone alleged that the boneyard could be a potential source of chlorinated solvents. A boneyard is simply an area in which exploration and production equipment that may be reused at a future date or is no longer required, was stored. The boneyard is located more than 500 feet from where the chlorinated solvents in soil have been found along the CHT/Jalk Fee property boundary. Additionally, Levine-Fricke investigated the boneyard area with a series of trench samples and soil borings. The analyses conducted included analyzing for chlorinated solvents, and no chlorinated solvents were detected in these soil samples. Therefore, the boneyard could not have been a source of chlorinated solvents (Levine Fricke, 1991).

Historic Solvent Vapor Discharges from Borings in the Eastern Section of the Site

All of the historical soil and soil gas investigations have indicated the source of chlorinated solvents is along the CHT/Jalk Fee property boundary and that concentrations decrease by orders of magnitude moving to the north and east, confirming that the concentrations are the result of lateral migration from the CHT property boundary and not a separate source to the north or east. The presence of vapors in historical borings in the southeastern portion of the Site is consistent with where laterally transported concentrations have been identified, ExxonMobil's site conceptual model, and the source along the CHT/Jalk Fee boundary, and is not indicative of a separate source area.

Former Tenant that Used Solvents

ExxonMobil has conducted an extensive review of its lease files, and there is no evidence in the files that the property was leased to or operated by any company other than Hathaway Oil. While an old report prepared by one of ExxonMobil's former consultants stated that a portion of the property was leased by a company that utilized chlorinated solvents, ExxonMobil has since thoroughly investigated this statement and has found no information or documents that support this claim, including lease documents to other companies.

Off-Site Solvent Dumping Alleged to have Occurred Near the Northern Property Boundary

CHT alleged that solvent dumping along the northern property boundary, the adjacent property to the north (Duncan Industries) which operated a degreaser, and from a trucking company that allegedly operated onsite (associated with the adjacent parcel northeast of the Site (Maple John Construction and Development Co.)), may be sources of the chlorinated solvents on the southeastern portion of the Jalk Fee property.

Levine Fricke investigated the area of the northern property boundary specifically in response to the allegations above, and other than a trace detection of PCE of 0.035 mg/kg, the soil samples along the northern property boundary had no detectable concentrations of PCE. In addition, portions of the northern boundary and central eastern area of the Site were sampled during previous soil removal activities prior to sale and redevelopment of the property, and no chlorinated solvents were found (Levine Fricke, 1991; Alton, 1997; Alton, 1998; TRC, 2000).

As the PCE concentrations in soil and soil gas decrease by more than 4 orders of magnitude moving north from the CHT property boundary across the Jalk Fee site, there is no mechanism by which PCE released at the northern property boundary could have migrated across the property, leaving no trace in the northern half of the property, and resulted in the source area which has been well substantiated along the Jalk Fee/CHT property boundary.

Sotelo Statements on Alleged Tanker Truck Dumping

Mr. Sotelo stated that the dumping occurred 20 to 25 feet north of the property boundary. The attached Plate 3 shows the location of all elevated PCE concentrations in shallow soil (=/<10 feet bgs) on the Jalk Fee property. These concentrations range from 100s to 10,000s mg/kg of PCE and only in two locations (i.e., immediately north of the CHT equipment storage and repair area, and immediately north of the CHT building between CHT's 575 gallon PCE aboveground storage tank and the degreaser) all within 10 to 12 feet of the property boundary.

For the distribution of PCE observed in soil at Jalk Fee to have resulted from dumping by vacuum trucks, the tanker truck would have had to illegally enter an oil field site, pull up right along the property boundary, and have been carrying thousands of gallons of PCE (not oil or produced oily water). On a property which is 8.8 acres in size, much of it well away from roads and adjacent businesses, its strains credulity to think that a tanker truck driver would have decided to pull up right along the property boundary, in full view of CHT's employees and Norwalk Boulevard, to illegally dump a load of waste that happened to contain the same chlorinated solvent being used at the adjacent business.

On the other hand, vacuum trucks are commonly used in oil production operations to transport petroleum fluids. Mr. Sotelo stated he observed, "dark oily looking liquids", which is consistent with the oil or produced oily water that would have been held in a vacuum truck on an oil field site, and clearly not liquid chlorinated solvents. While there is no evidence of sumps right along the property boundary, there were historic sumps within the southeast quadrant of the Jalk Fee site, and normal operations would have the produced oily water discharged into a sump prior to skimming and collection of the oil.

Regulatory References

The EPA report referenced in Waterstone's allegations above, in fact, states, "TCE, PCE, and 1,1-DCE have been found in high concentrations in the groundwater. Based on studies of past site activities and sampling performed by Alton Geoscience, this contamination may be due to past and present activities at Continental Heat Treat rather than Jalk Fee" (EPA, 1999).

CHT's POOR WASTE HANDLING AND MANAGEMENT PRACTICES

Contrary to Cardno's and ExxonMobil's arguments, waste handling practices by CHT were very good, especially with respect to chlorinated solvents, and there were no documented releases or poor waste handling practices by CHT that resulted in either quench oil, waste oil, or chlorinated solvents that resulted in releases impacting the Jalk Fee property.

CHT was issued numerous NOVs and demands by regulatory agencies to address spills, releases, and improper waste handling practices including spills to the ground. Specifically, there were three reported PCE degreaser fires, earthquake damage to equipment, a documented release from the degreaser to subsurface soil, and citations for poor handling practices for waste solvents and waste oil. It should also be noted that the regulatory files do not cover the entire timeframe when CHT used PCE in its operations (1969 to 1995), but begin in 1978, a time when regulatory oversight of hazardous materials was starting.

The NOVs and agency demands included:

- A Los Angeles County, Department of Health Services NOV, dated March 16, 1985, directing CHT "to remove oil from the ground in rear storage area" (LADHS, 1985).
- A 1989 Los Angeles County Department of Health Services NOV documenting that CHT needed to do the following items (italic font indicates items hand written by inspector) (LADHS, 1989).
    - Discontinue disposal of hazardous waste to unauthorized point(s) *any waste oil onto the ground*
    - *"Remove and legally dispose of oily surface in rear asphalted yard".*
    - Store hazardous waste in compatible containers that are closed and in good condition…*"keep lids and bungs on, don't overfill"*
    - Properly label all containers with the following words*: "Hazardous waste" – "PERC"*
    - *"Label waste oil as waste oil"*
    - Submit to this office *"all completed manifests"*
    - Submit to this office a copy of your facilities hazardous materials contingency plan and employee training plan (underline added by inspector)
- A County of Los Angeles Fire Department Order to Comply, dated October 6, 1994, to investigate an area below the degreaser, in which subsurface soil were subsequently found to be impacted with PCE (LAFD, 1994).

These documents and numerous others presented in Cardno's March 2015 and February 2017 reports demonstrate CHT's long history of poor housekeeping and waste management practices (Cardno ERI, 2015; Cardno, 2017).

Cardno conducted file reviews with the Department of Toxic Substances Control (DTSC), and ExxonMobil's outside counsel, Norton, Rose Fulbright US LLP submitted a Freedom of Information Act request to USPEA to obtain any documentation for CHT's legal disposal of PCE. Only 12 manifests were located, which span from 1984 and 1991 and indicate a total of only 4,330 gallons of PCE being taken to a legal offsite disposal facility during its 26 years of generating spent PCE (1969 to 1995) (Table 1).

However, a County of Los Angeles survey report, dated May 19, 1989, indicated that CHT was generating 2,200 gallons of PERC per year (County, 1989), and in its 1982 South Coast Air Quality Management District application, CHT reported that its 575 gallon AST had "26 refills per yr", indicating CHT used up to 14,950 gallons of PCE per year. While the exact quantity of spent PCE that was generated by CHT is not known, clearly tens of thousands of gallons were used, while the disposal of less than 5,000 gallons to a legal disposal facility can be accounted for.

STORAGE AND MOVEMENT OF PCE AT CHT

Cardno claims CHT had a "575-gallon outdoor aboveground storage tank (AST) for PCE located off the northwest corner of CHT's building, which was located along the property boundary with Jalk Fee." This is also untrue. The planned site map included in the SCAQMD October 31, 1979 application for permit to construct and operate the 575 gallon AST does not reflect the actual final location of that AST…CHT's employees identify that the PCE AST was located approximately 20 feet southeast of the location set out on the site map".

Whether the AST was located at the position shown on the application CHT submitted to the SCAQMD, or 20 feet to the southeast as stated by Waterstone, the 575-gallon AST was located near the northern boundary of the CHT property and handled large quantities of PCE. According to the SCAQMD documentation, the tank was filled up to 15 times a year, which represents use of up to 15,000 gallons of PCE per year. CHT stated in previous submittals that no pipes connected the tank with the degreaser, and that the PCE was manually transported in drums via forklift to the degreaser (DDSF, 2017a; 2017b, 2017c). This transport was likely done on frequent basis, and would have required pumping the PCE from the AST to the transport container(s). As the SCAQMD documentation does not indicate that there was secondary containment around the AST, each time the tank was filled, and each time PCE was transferred to a drum represents a possible discharge opportunity of PCE to the ground.

ALLEGATIONS OF DUMPING AT OMEGA

Interestingly, ExxonMobil is identified as a potentially responsible party for the dumping of waste at the nearby Omega Superfund Site [Omega], which includes contamination similar to that in the subsurface of the Jalk Fee Property. Specifically, ExxonMobil was named because over a period of three years from 1988 to 1991, eight different ExxonMobil entities ranging from automobile service stations to Exxon Chemical Corporation sent waste to the Omega site. Thus, it is not unlikely that during the prior fifty years ExxonMobil related facilities may likewise have dumped solvents on the ExxonMobil owned Jalk Fee property.

This allegation by CHT is false. Waste was legally sent from Exxon Chemical Company (Exxon) and by other affiliated entities to the Omega Facility, which at the time was a licensed facility authorized to accept such waste. ExxonMobil has never been identified as or accused of dumping waste on the Omega facility. Further, Jalk Fee was owned by Mobil Oil Corporation (Mobil) during its years of operation as an oil field and Mobil did not transport waste to Omega. The merger between Mobil and Exxon did not occur until 1999, by which time PCE had already been identified and assessed on the Jalk Fee property. Therefore, Exxon Chemical Company had no relationship with Mobil and would not have accessed the Jalk Fee property, prior to 1988, as falsely insinuated by CHT.

CHLORINATED SOLVENTS NOT USED AT OILFIELDS

….the "Townlots Project", which is located just a few blocks away, where significant soil contamination with chlorinated solvents was identified and remediated prior to development of this former oil field property located at the southwest corner of Telegraph Road and Bloomfield Avenue. This site is in the public record and confirms not only that chlorinated solvents are commonly used in oil fields, but that this was the general practice in other oil operations within the Santa Fe Springs Oil Field (Waterstone, 2009).

In its report, Waterstone claimed to have firsthand knowledge of a nearby site, which was a former oil field property that had significant chlorinated solvent soil contamination (Townlots Project). The implication was that ExxonMobil's information that chlorinated solvents were not chemicals used during oil exploration and production activities was incorrect.

Cardno conducted file reviews using the DTSC's Envirostor database, and the hard copy files in the CRWQCB-LAR's office for the Townlots Project (10485 Bloomfield Avenue, Santa Fe Springs), which is also known as the Beaumon Trust (Beaumon) Property (12525 Park Avenue, Santa Fe Springs) (DTSC, 2017). As demonstrated by the information in the agency files, Waterstone's assertion was disingenuous. Although the Beaumon property was used in oil production operations from ~the 1920s to the 1950s, the site was later used for a drum recycling business from 1971 to 1984. An interview with Richard Espinoza, a former forklift operator for Ameron, one of the businesses that sent drums to the Beaumon property, stated, "some of the drums contained waste solvent and sludge." Mr. Jesse Ruiz, the General Foreman for Ameron, stated that "30-60 drums per load" were picked up and taken to the Beaumon property, indicating a high volume of drums and waste passing through the property. In 1985, the City of Santa Fe Springs contacted the owners "to discuss the condition of the Subject Property, which reportedly was covered with 55-gallon drums (some full of chemicals), 5 gallon plastic buckets and had chemical residues on the dirt surface of the site", and in January 1986, "City Health Officers respond to a complaint alleging that drums of hazardous waste are abandoned on the Subject Property. Approximately 140 steel drums, many corroded or open, are observed on the Subject Property." (Waterstone, 2005).

The information in the agency files makes it clear that the chlorinated solvent contamination on the property was the result of the extremely poor handling practices by the drum recycling business that operated on the property for 13 years and allowed waste and residues in the drums to be released onto the dirt surface of the property. In fact, Waterstone was the environmental consultant for this property, and in one of their reports to the CRWQCB-LAR, stated, "a number of VOCs including chlorinated compounds exist beyond the boundaries of the Beaumon Trust Property indicating that the drum recycling activities have caused offsite impact", which contradicts the implication in the 2017 Waterstone Report that the PCE on the property was from historical oil field activities (Waterstone, 2005).

The operation of a drum recycling business on the Townlots property has nothing to do with the Jalk Fee site or E&P operations and in no way confirms that chlorinated solvents are commonly used in oil fields or that this was a general practice in other oil operations within the Santa Fe Springs Oil Field.

SITE CONCEPTUAL MODEL

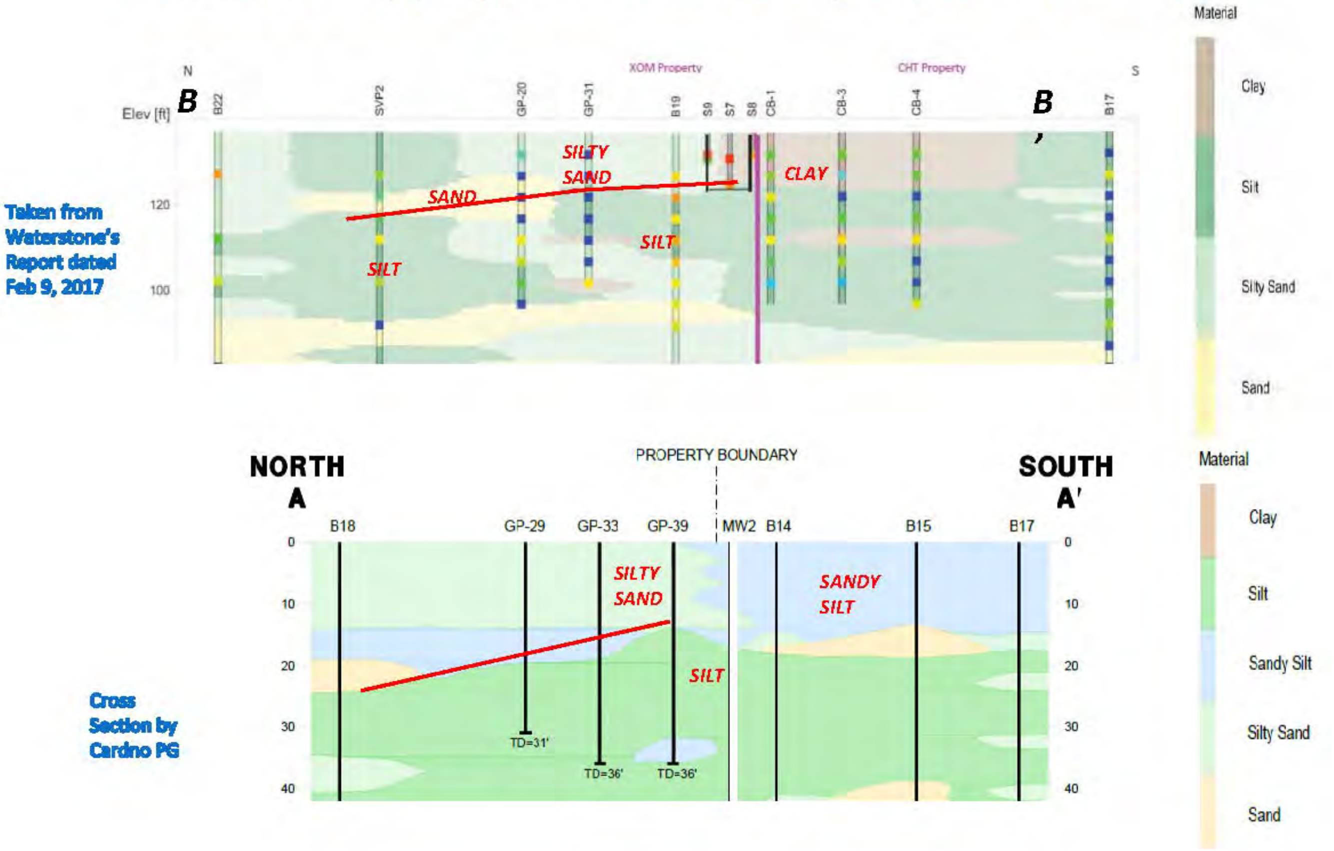
ExxonMobil's Site Conceptual Model SCM) did not fully explain how alleged PCE released by CHT at the property boundary would have migrated onto and across the Jalk Fee property. Since CHT began operations, the property line has been fenced and the CHT Property has been fully paved for surface flow to the southwest.

Cardno and ExxonMobil fully stand by the site conceptual model previously submitted to the CRWQCB-LAR in Cardno's February 2015 Report and February 2017 Report (Cardno ERI, 2015; Cardno, 2017). CHT's allegations confuse regional topography and regional groundwater flow with local subsurface site stratigraphy. Surface topography and regional groundwater flow in the saturated zone do not have effect on contaminant migration in the shallow vadose zone, whereas the local site stratigraphy can significantly influence the movement of contaminants in the soil. Both the distribution of PCE in soil and the local site stratigraphy confirm ExxonMobil's site conceptual model as evidenced by:

- The local site stratigraphy, which includes a lower permeability layer of silt at 15 feet bgs near the property boundary between CHT and Jalk Fee, slopes downward to approximately 25 feet bgs when moving north away from the property boundary.
- The elevated concentrations of PCE in shallow soil (< 10 feet bgs) are only found immediately along the Jalk Fee / CHT property boundary.
- As one moves away from the immediate vicinity of the property boundary, elevated concentrations of PCE of similar magnitude are only found in deeper soil along the silt layer and not in samples collected from shallower depths, indicating lateral and downward migration from the property boundary.

This northward dipping lower permeability layer, which supports the site conceptual model, is shown below, as well as in Plates 2 and 4 and Appendix E. It should be noted that one of the cross sections was generated by Waterstone and is taken from their report (Waterstone, 2017).

Northward Dipping Low Permeability Layer on Jalk Fee



Taken from Waterstone's Report dated Feb 9, 2017

Cross Section by Cardno PG

SAMPLING HISTORY

Even this history is indicative of ExxonMobil's slanted bias as ExxonMobil failed to sample adequately for chlorinated VOCs and instead devoted most of its historic sample efforts to TPH. On those limited occasions when chlorinated VOCs were analyzed…

CHT apparently has not adequately reviewed ExxonMobil's extensive investigation activities. ExxonMobil's consultants have collected a very substantial data set for PCE, in which approximately 450 soil samples collected on the Jalk Fee property have been analyzed for chlorinated solvents (Plates 1 and 2). In contrast, only approximately 75 soil samples have been collected on the CHT property for PCE analysis, many of which were actually collected during ExxonMobil's 2012 investigation, leaving areas such as the PCE-containing soil beneath and surrounding CHT's former degreaser inadequately investigated.

IDENTIFICATION OF NATIVE SOIL

Cardno made an attempt to collect soil samples that were in the native soil and not the backfill soil for borings in excavation SB49 or other soil samples collected during the October 2016 investigation outside of the excavation boundaries. However, if one closely examines their boring logs for this investigation, it is very clear that they did not accomplish this very important task.

Where fill material was observed and interpreted in some samples, Cardno logged them as fill on the logs (Cardno, 2017). Cardno stands by its interpretation that most of the samples analyzed during the 2016 forensic investigation were collected in native soil for the following reasons.

The SB49 excavation proceeded to depths ranging from 6 to 13 feet bgs; Waterstone appears to have assumed that any samples from shallower depths would be in fill material. However, the excavation would not have had sheer walls, and the sidewalls would have sloughed, or been sloped from the center of the excavation outward to meet OSHA requirements. Therefore, samples shallower than 6 to 13 feet bgs along the perimeter of the excavation could have been in native soil.

The fact that many of the soil samples collected during the 2016 forensic investigation contained both PCE and used quench oil as demonstrated by NewFields is proof that the samples were of native soil, as the releases of PCE and used quench oil were all prior to the 2000 excavation and backfill of SB49, and the soil impacts wouldn't have migrated upward after the excavation was backfilled (Cardno, 2017; Newfield, 2017).

Waterstone asserted that the presence of trace gravel in several of the samples was evidence that the soil was not native. During site redevelopment after the excavation was backfilled, base material would likely have been imported to the Site. During grading activities, the top several feet of surface soil would have been disturbed and become mixed with the imported gravel base, thus a trace amount of gravel in near surface soil is common at redeveloped properties. Further, where trace gravel was reported, in general the gravel disappeared within the first few top feet of the boring.

All soil logging during the forensic investigation was performed by one of Cardno's Professional Geologist's (PG). Several borings were advanced outside of the footprint of the SB49 excavation to ensure native soil was accurately identified. Based upon review of logs from previous CHT and Jalk Fee investigations and the observations during sampling, Cardno's PG identified reddish-brown sandy silt or clay silt in shallow soil in the majority of the borings, including those located well outside of the SB49 excavation footprint where fill material would not be expected at those depths. Below the reddish-brown soil, a poorly graded sand was typically found. Where fill material was observed at the near surface, it was logged as fill. Based upon the occurrence of the reddish-brown sandy silt or clayey silt at varying depths and its presence in both the borings within the SB49 excavation footprint and outside of the former excavation, this soil is clearly native at the Site, and Cardno stands by its interpretation and that the samples from the forensic study correctly represented native soil.

Backfill of SB49 Excavation

The second event that could have an even more dramatic effect on the TPH fingerprint is that the SB49 Excavation had varied bottom depths (6-13 feet bgs), and once the final depth was achieved, it appears to have been backfilled with former TPH impacted soil that was thermally desorbed offsite by American Remedial Technologies (ART) and brought back onsite as backfill material for this excavation.

Cardno reviewed the trucking logs and Keantan Laboratories (Keantan) compaction report contained in TRC's Site Closure Report and Risk Assessment Report dated November 28, 2000, which documented the excavation and backfill activities associated with SB49 (TRC Alton, 2000).

According to the trucking logs, importing of thermally treated soil to the Site from ART only occurred on November 13 and 14th, 2000 (Appendix C). According to the Keantan report, SB49 was tested for compaction, and thus backfilled, from 9 feet bgs to 2 to 3 feet bgs on November 8 and 9, 2000 (Appendix D). Therefore, while the top 2 to 3 feet of the SB49 excavation could have been backfilled with thermally treated soil, the sequence of dates demonstrate that the vast majority of the excavation, from 2 to 3 to 13 feet bgs, could not have been backfilled with thermally treated soil from ART. Additionally, as NewFields' explains in its response, the hydrocarbons found in the soil samples during the forensic study were altered by weathering and bioremediation, and not by thermal desorption, thus the soil used to backfill the SB49 excavation had no effect on the TPH fingerprints in the forensic evaluation (Appendix A).

CONCLUSIONS

While CHT's allegations were spurious or disproved in the responses above, Waterstone did provide several pieces of information in its report that further supported ExxonMobil's site conceptual model, including the pre-1995 CHT operations process flow diagram that showed how PCE and quench oil/waste oil became mixed, the cross-section showing the northward dipping silt layer on the Jalk Fee property, and the forensic analysis of quench oils used by CHT that were very similar to the fingerprints and PAH content of the quench oil obtained by NewFields and found in site soil samples collected on the Jalk Fee property during ExxonMobil's forensic study.

The following can be concluded based upon the evidence provided to the CRWQCB-LAR in Cardno's March 2015 Report and February 2017 Report (Cardno ERI, 2015; Cardno, 2017), the additional evidence provided in the February 2017 Waterstone Report (Waterstone, 2017), and subsequent research presented in this report.

- Only CHT used, stored and disposed of PCE, which was in large quantities.
- CHT's waste manifests only account for a small percentage of CHT PCE disposal.
- Only CHT had episodic waste releases documented by agency NOVs and notices.
- There is no evidence of any chlorinated solvent use or storage on the Jalk Fee property.
- Review of the GeoTracker database did not identify an oil field site that caused chlorinated contamination, further supporting the position that chlorinated solvents were not used in exploration and production operations which supports other data showing Jalk Fee is not the source of PCE contamination.
- The distribution of PCE in soil is consistent with releases occurring from the CHT property.
    - All high concentrations of PCE in shallow soil (<10 feet bgs) are present directly along the CHT facility boundary with Jalk Fee.
    - The PCE in soil gas is also highest at the CHT property boundary with Jalk Fee.
    - The surface covering of the two sites (CHT paved and Jalk Fee unpaved) affected the migration and distribution of PCE released by CHT.
    - The stratigraphy of the upper vadose zone soil, with a northward dipping low permeable silt layer at 15 to 25 feet bgs, overlain by higher permeable sand and silty sand, provided a localized preferential pathway for migration of subsurface PCE northward on the Jalk Fee property.
- CHT's process flow diagram shows that the mineral and waste oils used and generated in CHT's operations would commingle with PCE.
- The forensics demonstrate that used quench oil/quench oil sludge, a mineral oil unique to the heat treating process, is co-located with PCE in shallow soil on the Jalk Fee property, along the boundary with CHT. Further:
    - CHT's heat treating process required large quantities of quench oil.
    - Oil field operations do not use quench oil.
    - CHT generated wastes containing both PCE and quench oil.
    - CHT spilled oils as demonstrated by agency citations.

There is only one obvious source of PCE contamination on the Jalk Fee and CHT properties and this source resulted from CHT operations, including its waste disposal practices. The use history, distribution of PCE and forensics clearly demonstrate that CHT is the source of chlorinated solvents on the Jalk Fee property.

LIMITATIONS

For documents cited that were not generated by Cardno, the data taken from those documents is used "as is" and is assumed to be accurate. Cardno does not guarantee the accuracy of this data and makes no warranties for the referenced work performed nor the inferences or conclusions stated in these documents.

This document and the work performed have been undertaken in good faith, with due diligence and with the expertise, experience, capability and specialized knowledge necessary to perform the work in a good and workmanlike manner and within all accepted standards pertaining to providers of environmental services in California at the time of investigation. No soil engineering or geotechnical references are implied or should be inferred. The evaluation of the geologic conditions at the site for this investigation is made from a limited number of data points. Subsurface conditions may vary away from these data points.

For questions concerning this report, please contact Mr. James Anderson at 805 644 4157, extension 181805.

Sincerely,

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exp. 9/30/17
NO 8360
STATE OF CALIFORNIA

Enclosures:

References
Acronym List

Plate 1	Generalized Site Plan
Plate 2	Generalized Site Plan – Eastern Half
Plate 3	PCE Concentrations in Shallow Soil (</= 10 Feet bgs)
Plate 4	Cross Section A – A’
Table 1	Summary of CHT Manifests from File Reviews
Appendix A	NewFields’ *Response to report by Waterstone Environmental, Inc. entitled “Cardno’s Report of Additional Evidence in Support to Name Continental Heat Treating as Discharger for the ExxonMobil Jalk Fee Property” dated February 9, 2017*, dated August 21, 2017.
Appendix B	Aero-Data Corporation LLC’s *Interpretation of Additional Aerial Photographs Covering the Jalk Fee Site in Santa Fe Springs, California,* dated August 24, 2017
Appendix C	Trucking Logs from TRC’s *Site Closure Report and Risk Assessment Report,* dated November 28, 2000
Appendix D	Keantan Laboratories report from TRC’s *Site Closure Report and Risk Assessment Report,* dated November 28, 2000
Appendix E	Figure 4 from Waterstone Environmental, Inc.’s *Response to Cardno’s Report of Additional Evidence in Support to Name Continental Heat Treating as Discharger for the ExxonMobil Jalk Fee Property dated February 9, 2017*, dated April 27, 2017

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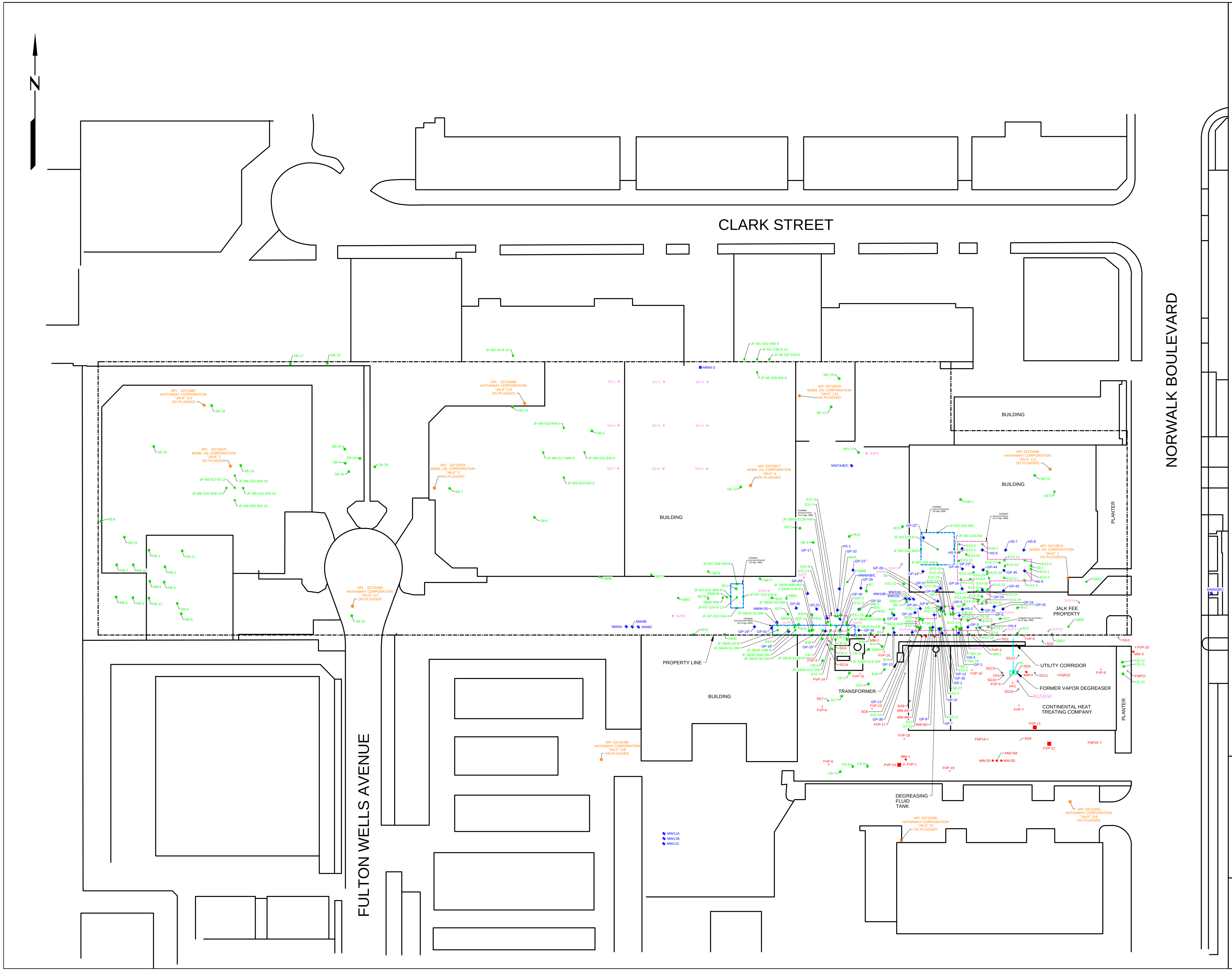
ACRONYM LIST

µg/L	Micrograms per liter
µs	Microsiemens
1,2-DCA	1,2-dichloroethane
acfm	Actual cubic feet per minute
AS	Air sparge
bgs	Below ground surface
BTEX	Benzene, toluene, ethylbenzene, and total xylenes
CEQA	California Environmental Quality Act
cfm	Cubic feet per minute
COC	Chain of Custody
CPT	Cone Penetration (Penetrometer) Test
DIPE	Di-isopropyl ether
DO	Dissolved oxygen
DOT	Department of Transportation
DPE	Dual-phase extraction
DTW	Depth to water
EDB	1,2-dibromoethane
EPA	Environmental Protection Agency
ESL	Environmental screening level
ETBE	Ethyl tertiary butyl ether
FID	Flame-ionization detector
fpm	Feet per minute
GAC	Granular activated carbon
gpd	Gallons per day
gpm	Gallons per minute
GWPTS	Groundwater pump and treat system
HVOC	Halogenated volatile organic compound
J	Estimated value between MDL and PQL (RL)
LEL	Lower explosive limit
LPC	Liquid-phase carbon
LRP	Liquid-ring pump
LUFT	Leaking underground fuel tank
LUST	Leaking underground storage tank
MCL	Maximum contaminant level
MDL	Method detection limit
mg/kg	Milligrams per kilogram
mg/L	Milligrams per liter
mg/m^3	Milligrams per cubic meter
MPE	Multi-phase extraction
MRL	Method reporting limit
msl	Mean sea level
MTBE	Methyl tertiary butyl ether
MTCA	Model Toxics Control Act
NAI	Natural attenuation indicators
NAPL	Non-aqueous phase liquid
NEPA	National Environmental Policy Act
NGVD	National Geodetic Vertical Datum
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and Maintenance
ORP	Oxidation-reduction potential
OSHA	Occupational Safety and Health Administration
OVA	Organic vapor analyzer
P&ID	Process & Instrumentation Diagram
PAH	Polycyclic aromatic hydrocarbon
PCB	Polychlorinated biphenyl
PCE	Tetrachloroethene or perchloroethylene
PID	Photo-ionization detector
PLC	Programmable logic control
POTW	Publicly owned treatment works
ppmv	Parts per million by volume
PQL	Practical quantitation limit
psi	Pounds per square inch
PVC	Polyvinyl chloride
QA/QC	Quality assurance/quality control
RBSL	Risk-based screening levels
RCRA	Resource Conservation and Recovery Act
RL	Reporting limit
scfm	Standard cubic feet per minute
SSTL	Site-specific target level
STLC	Soluble threshold limit concentration
SVE	Soil vapor extraction
SVOC	Semivolatile organic compound
TAME	Tertiary amyl methyl ether
TBA	Tertiary butyl alcohol
TCE	Trichloroethene
TOC	Top of well casing elevation; datum is msl
TOG	Total oil and grease
TPHd	Total petroleum hydrocarbons as diesel
TPHg	Total petroleum hydrocarbons as gasoline
TPHmo	Total petroleum hydrocarbons as motor oil
TPHs	Total petroleum hydrocarbons as stoddard solvent
TRPH	Total recoverable petroleum hydrocarbons
UCL	Upper confidence level
USCS	Unified Soil Classification System
USGS	United States Geologic Survey
UST	Underground storage tank
VCP	Voluntary Cleanup Program
VOC	Volatile organic compound
VPC	Vapor-phase carbon



EXPLANATION

⊕	MW11C	Groundwater monitoring well
●	SEP-2	Soil Boring
■	SB86	Soil sample location
■	T9B-1	Test pit soil sample location
▲	B1/VEW	Soil vapor extraction well
◇	SVP7	Soil vapor sampling well
◈	SVP14	Deep multi-depth soil vapor well
◇	SVP13	Shallow multi-depth soil vapor well
⌖	HS-9	Geoprobe boring - Alton Geoscience (1997)
	a	Geoprobe boring - McLaren Hart (1996)
⊕	MW-6S	Continental Heat Treating groundwater monitoring well
+	FVP-20	Continental Heat Treating soil vapor sampling probe
⌖		Continental Heat Treating soil vapor sampling probe at 5'
⌖		Continental Heat Treating soil vapor sampling probe at 15'
■	PVP-1A	Continental Heat Treating soil sample location
⊗	MMW-3	Destroyed groundwater monitoring well
⊗	JALK 118	Plugged and abandoned oil well

SOURCE:
Modified from a map provided by
GOOGLE EARTH

APPROXIMATE SCALE

0 120 240
FEET

FN 1155.R27.P1

GENERALIZED SITE PLAN

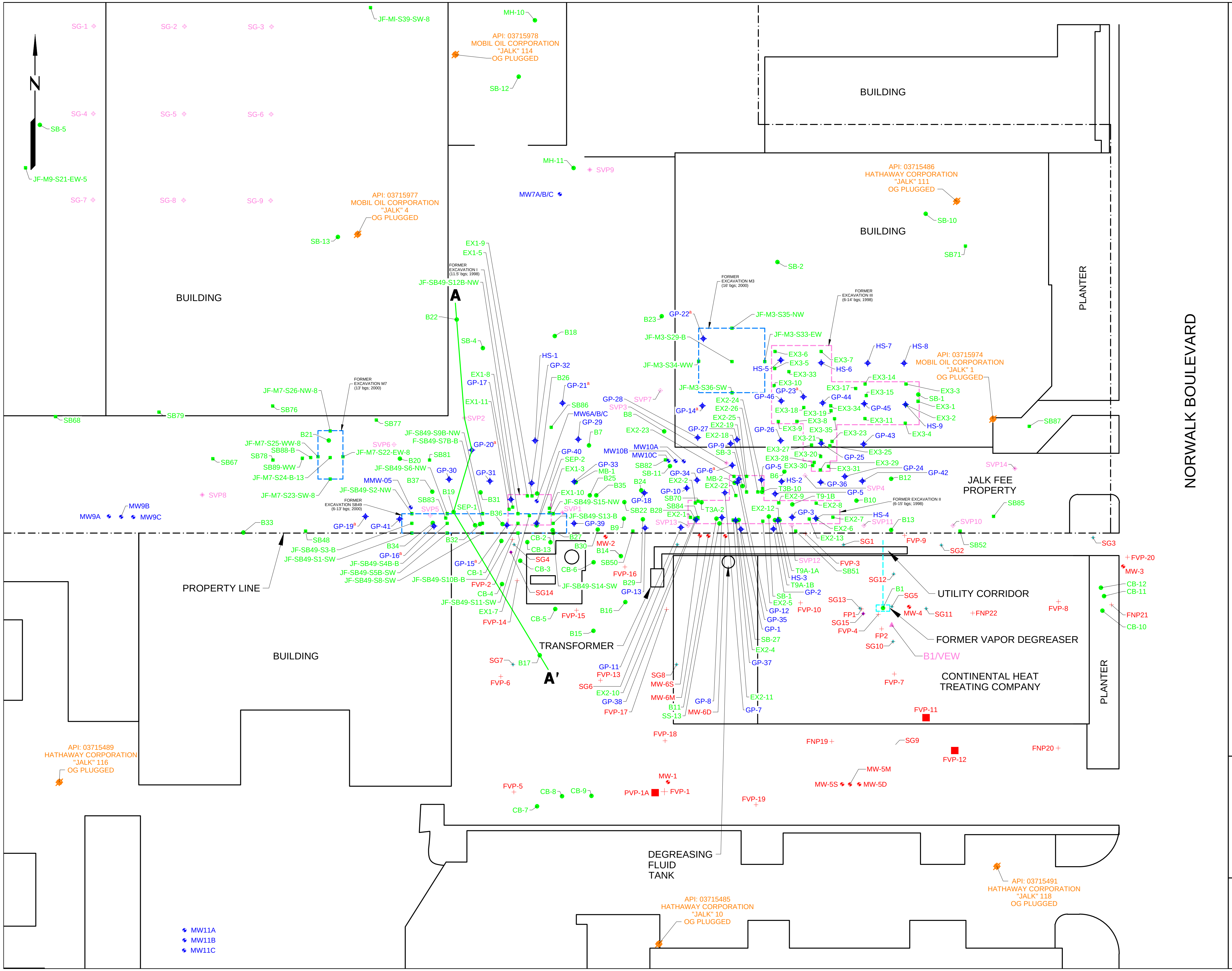
FORMER EXXONMOBIL JALK FEE PROPERTY
10607 Norwalk Boulevard
Santa Fe Springs, California

Cardno
Shaping the Future

PROJECT NO.
1155

PLATE
1

DATE: 08/23/17



EXPLANATION

✦	MW11C	Groundwater monitoring well
●	SEP-2	Soil Boring
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■	T9B-1	Test pit soil sample location
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✦	HS-9	Geoprobe boring - Alton Geoscience (1997)
	a	Geoprobe boring - McLaren Hart (1996)
✦	MW-6S	Continental Heat Treating groundwater monitoring well
+	FVP-20	Continental Heat Treating soil vapor sampling probe
✦		Continental Heat Treating soil vapor sampling probe at 5'
✦		Continental Heat Treating soil vapor sampling probe at 15'
■	PVP-1A	Continental Heat Treating soil sample location
✱	JALK 118	Plugged and abandoned oil well
A ── A'		Line of cross-section

SOURCE:
Modified from a map
provided by
GOOGLE EARTH

APPROXIMATE SCALE

0 60 120
FEET

FN 1155.R27.P2

GENERALIZED SITE PLAN EASTERN HALF

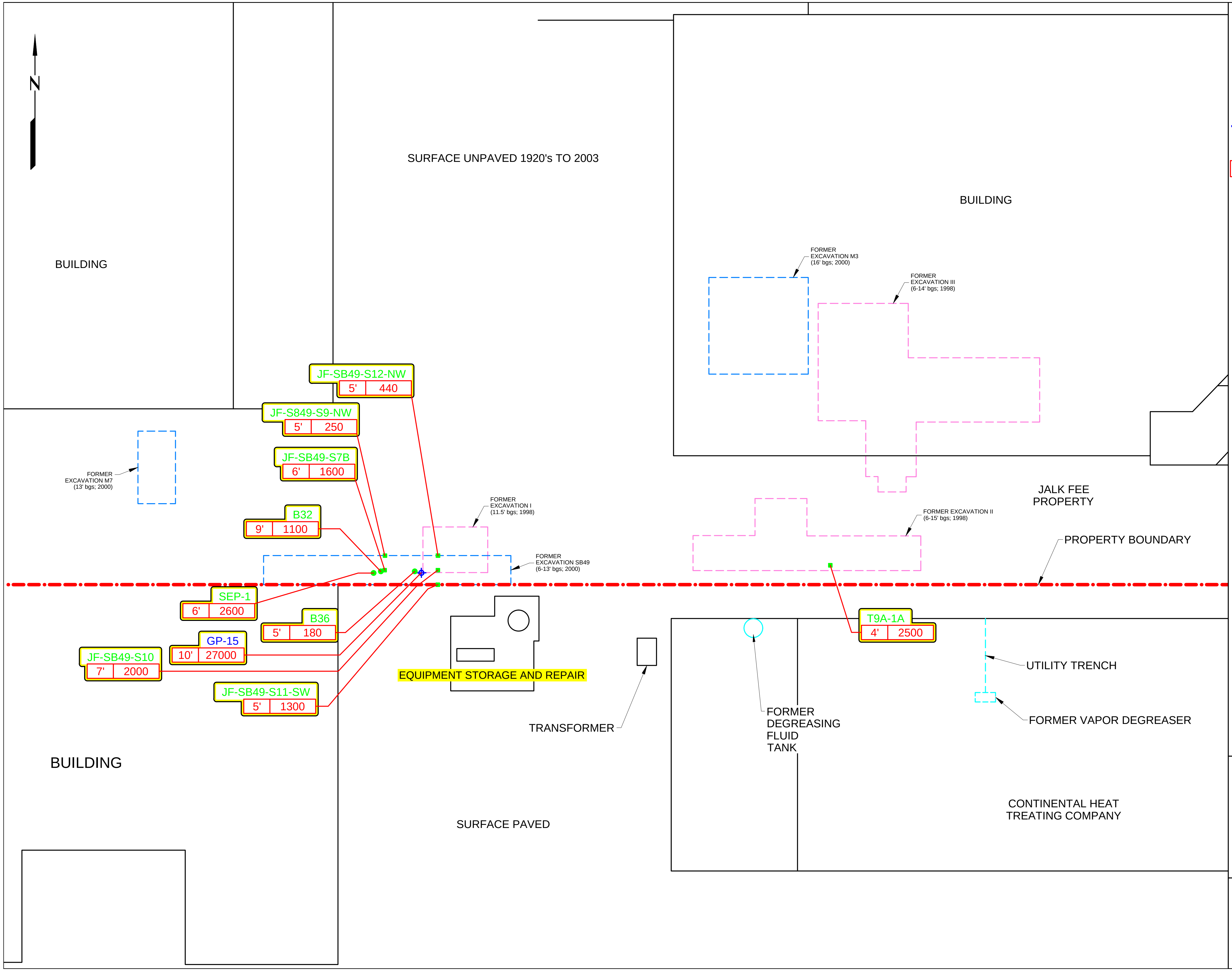
FORMER EXXONMOBIL JALK FEE PROPERTY
10607 Norwalk Boulevard
Santa Fe Springs, California

Cardno
Shaping the Future

PROJECT NO.
1155

PLATE
2

DATE: 08/23/17



EXPLANATION

●	B37	Soil Boring
■	JF-SB49-S12-NW	Soil sample location
■	T9A-1A	Test pit soil sample location
⌖	GP-15	Geoprobe boring
	SAMPLE I.D. DEPTH | RESULT	PCE concentration in soil in milligrams per kilogram

SOURCE:
Modified from a map
provided by
GOOGLE EARTH

APPROXIMATE SCALE
0 40 80
FEET

FN 1155.R27.P3

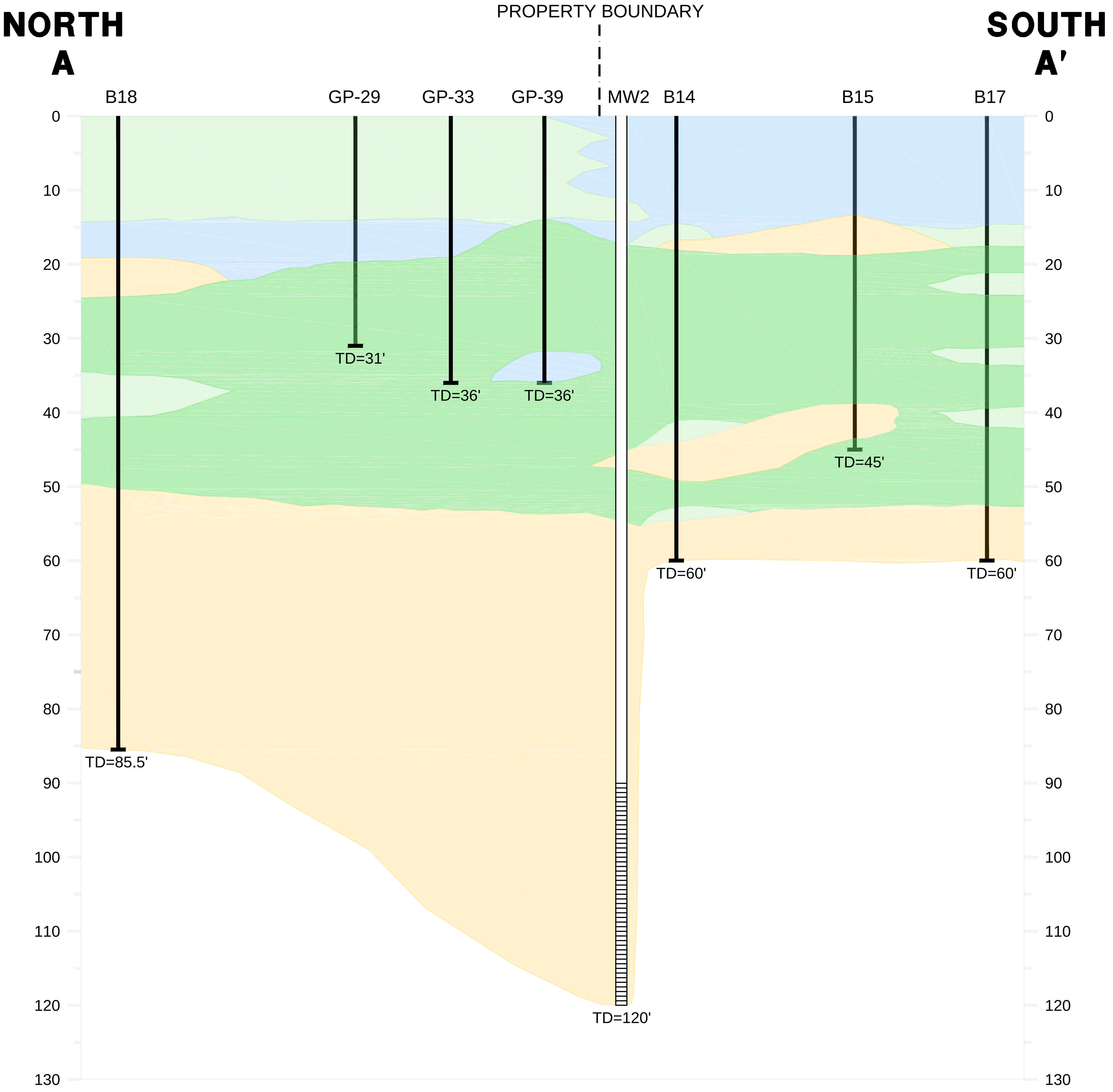
PCE SOIL CONCENTRATIONS EQUAL OR GREATER THAN 100 PPM IN TOP 10 FT

FORMER EXXONMOBIL JALK FEE PROPERTY
10607 Norwalk Boulevard
Santa Fe Springs, California

PROJECT NO.
1155

PLATE
3

DATE: 08/23/17



EXPLANATION

Material

🟫 Clay

🟩 Silt

🟦 Sandy Silt

🟩 Silty Sand

🟨 Sand

APPROXIMATE SCALE

0 30 60
Feet

FN 1155.R27.P4

CROSS-SECTION A-A'

FORMER EXXONMOBIL JALK FEE PROPERTY
10607 Norwalk Boulevard
Santa Fe Springs, California

Cardno
Shaping the Future

PROJECT NO.
1155

PLATE
4

TABLE 1
SUMMARY OF CHT MANIFESTS FROM FILE REVIEWS
FORMER EXXONMOBIL JALK FEE PROPERTY
10607 NORWALK BOULEVARD
SANTA FE SPRINGS, CALIFORNIA

CHT Manifests						
Manifest #	Generation Date	Quantity	Unit	Containers	Disposal Facility	Waste
83678173	9/7/1984	275	Gallons	5 drums	Acto Kleen	Waste-Perchlorethylene-ORM-A
83678192	10/19/1984	150	Gallons	3 drums	Acto Kleen	Waste-Perchlorethylene-ORM-A
84281562	3/14/1985	440	Gallons	8 drums	Acto Kleen	Waste EA-Perchlorethylene-ORM-A
87746409	10/10/1988	605	Gallons	11 drums	AAD Disposal	RA Waste Perchlorethylenea ORM- A UN1897
87746417	3/21/1989	400	Gallons	10 drums	AAD Disposal	Waste Perchlorethylene-ORM-A UN1897
87746425	6/8/1989	200	Gallons	4 drums	AAD Disposal	RQ Waste Perchlorethylene-Liquid-ORM-A UN1897
89511415	10/17/1989	150	Gallons	4 drums	AAD Disposal	Waste Liquid Perchlorethylene-ORM-A UN1897
89511429	2/15/1990	440	Gallons	11 drums	Omega Recovery	Waste Liquid Perchlorethylene-ORM-A UN1897
89511442	8/5/1990	500	Gallons	12 drums	Omega Recovery	Waste Liquid Perchlorethylene-UN1897
89511496	10/22/1990	450	Gallons	11 drums	Omega Recovery	Waste Perchlorethylene-UN1897
89511484	3/12/1991	370	Gallons	8 drums	AAD Disposal	Waste Liquid Perchlorethylene UN1897 ORM-A
91016340	11/15/1991	350	Gallons	8 drums	Omega Recovery	Waste Liquid Perchlorethylene UN1897 ORM-A
	TOTAL	4,330				

APPENDIX A

NEWFIELDS' *RESPONSE TO REPORT BY WATERSTONE ENVIRONMENTAL, INC. ENTITLED "CARDNO'S REPORT OF ADDITIONAL EVIDENCE IN SUPPORT TO NAME CONTINENTAL HEAT TREATING AS DISCHARGER FOR THE EXXONMOBIL JALK FEE PROPERTY" DATED FEBRUARY 9, 2017,*

DATED AUGUST 21, 2107

NewFields
Perspective. Vision. Solutions.

August 21, 2017

James Anderson
Cardno
4572 Telephone Road, #916
Ventura, CA 93003

RE: Response to report by Waterstone Environmental, Inc. entitled "Response to Cardno's Report of Additional Evidence in Support of Request to Name Continental Heat Treating as Discharger for the ExxonMobil Jalk Fee Property" dated February 9, 2017

Dear Mr. Anderson,

NewFields Environmental Forensics Practice, LLC (NewFields) was retained by ExxonMobil Corporation (ExxonMobil) to evaluate the nature of contamination, particularly perchloroethlyene (PCE) and hydrocarbons found at the former Jalk Fee facility (the Site). NewFields is a leader in environmental forensics, specializing in helping our clients source and delineate hydrocarbon, PCB, chlorinated solvent, and other forms of environmental contamination. For more than 30 years NewFields scientists have developed modifications to existing standard methods allowing for the collection of environmental forensic data, and have published hundreds of peer-reviewed journal articles, book chapters, and technical reports describing the analytical methodologies and interpretation of environmental data.

Our opinions pertaining to the nature and source of PCE and hydrocarbon contamination found at the Site are detailed in a report, entitled "*Forensic Signature of Hydrocarbons in Soil at the Former Jalk Fee Facility*" dated February 7, 2017. In their report entitled "*Response to Cardno's Report of Additional Evidence in Support of Request to Name Continental Heat Treating as Discharger for the ExxonMobil Jalk Fee Property dated February 9, 2017*", Waterstone Environmental, Inc. (Waterstone) challenged some of the conclusions in our report.

The purpose of this letter is to point out and rebut erroneous statements in the Waterstone report, particularly those challenging our conclusions regarding the chemical character and source of contamination in soils from the Site presented in our February 7th report. We have identified three major errors that we discuss in the following sections, *viz*.:

1) Waterstone's assessment of our and their laboratories' chromatograms ignored inter-laboratory analytical differences, which when considered clearly show quench oils historically used at the CHT site (analyzed by Waterstone) are virtually identical to the quench oil reference material from the heat treatment facility used in the NewFields forensic study, which in turn closely resembles the quench oil sludges present in Jalk Fee soil near the CHT property boundary.
2) Waterstone's assessment of the low total PAH concentrations in quench oils and oil-water separator waste oil samples provided by CHT from its operations (CHT samples), versus the higher total PAH concentrations in the oils within Jalk Fee (Site) soils near the CHT property boundary, ignored the fact that different numbers of PAH analytes were measured. When the exact same number of PAH analytes are compared, there is no disparity in total PAH concentration between CHT samples and quench oil sludges found in Site soils near the CHT property boundary.

3) Waterstone’s assessment of the nickel and vanadium ratios in the Site soils led to an erroneous conclusion the petroleum in these soils was southern California crude oil – not quench oil sludge and other mineral oil wastes. To the contrary, the metals’ concentrations and ratios in the Site soil samples actually support our conclusion that the soils do not contain crude oil.

Following our discussions of these three major errors, we present an enumerated inventory of 24 additional responses to other inaccurate or irrelevant statements contained in the Waterstone report.

After considering the new data presented in the Waterstone report (and described herein), we re-affirm the conclusions originally offered in our February report: that the shallow soil on the Jalk Fee Site directly north of the CHT equipment storage and repair areas contains used quench oil sludge and varying types/mixtures of mineral oil sludges, consistent with the waste that was generated by CHT’s operations during the years when it was also using PCE in its degreasing operations.

Major Rebuttal Points

(1) Waterstone's assessment of our and their laboratories' chromatograms ignored inter-laboratory analytical differences, which led to Waterstone's erroneous conclusions regarding disparity between prospective source samples collected from the CHT facility and Site soils.

Waterstone collected and had analyzed six samples from the CHT facility and presented these data in their report. These samples were analyzed by a commercial laboratory (Jones Environmental, Inc., Santa Fe Springs) where numerous routine environment tests were conducted. Among these tests was "TPH Extended carbon range (C8-C43) by EPA Method 8015M by GC/FID" that provided a chromatogram of each sample, which are reproduced and described in the Waterstone report (p. 23-26).

Waterstone's presentation of these chromatograms concluded with the claim that "it is clear that the CHT oil samples are uniquely distinct, with only QOS-1 and QOS-2 even vaguely resembling" (page 26, paragraph 2) the new and used quench oil samples analyzed by NewFields. Although not explicitly stated by Waterstone, because we had shown and concluded the S-9-B32 and S-14-B27 soils, and likely the S-5-B36 soil, each contained used quench oil sludge, the Waterstone claim quoted above would also imply these soils are "uniquely distinct" from used quench oil. The figure shown on page 27 of the Waterstone report, although it is not described by Waterstone, leaves the impression the six CHT samples are very different from the quench oils and Site soils analyzed by NewFields. However, rather than different, they are actually very similar to each other and Waterstone's "uniquely distinct" and "vaguely resembling" claims are wrong and may reflect inexperience interpreting chromatograms.

The "uniquely distinct" character of the CHT quench oils and NewFields quench oils chromatograms easily are eliminated if the chromatograms from the two laboratories are scaled comparably. To make this point clear we have re-scaled the chromatogram of the fresh and used quench oils we had analyzed and included in our report to match the scale of the chromatogram of the fresh and used quench oils from CHT from Waterstone's report (QOS-1 and QOS-2). Figure 1 shows that the fresh quench oils from CHT (Fig. 1A) and from NewFields study (Fig. 1B) are, in fact, highly comparable to one another (and not "uniquely distinct"). Both fresh quench oils have an unresolved complex mixture (UCM) hump that spans from ~C14 to C28 and reaches a maximum at ~C22. The resolved peaks atop the UCM from the quench oil from the NewFields study appear higher, but this is largely a function of the low resolution of the CHT sample's chromatogram that produced broader, shorter peaks. In other words, the analytical method utilized in the analysis of the NewFields samples was optimized for forensic analyses of hydrocarbons, and included a slow GC oven heating rate and long elution time leading to better resolution of peaks in the GC chromatogram, whereas the method utilized in the analysis of the CHT sample included a faster GC oven heating rate and short elution time leading to poorer peak resolution. These characteristics, particularly the UCM maximum at ~C22 is atypical of petroleum fuels and other products, but as evidenced here, is typical of quench oils.

The chromatograms for the used quench oils from CHT (Fig. 1C) and NewFields (Fig. 1D) also demonstrate the UCMs' maxima both occur at ~C22. Despite their shared maximum at ~C22 some differences between these two used quench samples are acknowledged; e.g., the used quench oil analyzed by NewFields is broader boiling than CHT's used quench oil. This difference, however, is easily explained by the degree to which these different oils had been used (at the time of sampling), wherein greater use causes greater broadening of the UCM hump (see Other Rebuttal Point 13 below). As previously demonstrated in our report, and as demonstrated herein again in Figure 2 (but presented at the same scale as the CHT chromatograms), the S-9-B32 soil is highly comparable to the used quench oil, exhibiting the same UCM maximum ~C22. Minor differences in the shape of the UCM are attributable to variation due to weathering (affecting the lower boiling components) and oxidation during use (affecting the higher boiling components; see Other Rebuttal Point 13 below).

The alleged disparity identified by Waterstone between the CHT quench oils and NewFields quench oils – and the implied dissimilarity between CHT quench oils and the quench oil sludges in the S-9-B32 and S-14-B27 soils, and likely the S-5-B36 soil – are eliminated when the samples' chromatograms are compared at the same scales (Figs. 1-2). In conclusion, quench oil sludges are present in S-9-B32 and S-14-B27, and likely the S-5-B36 soil sample. This is confirmed by their comparison to quench oils and used quench oils as originally presented in the NewFields study and by their comparison herein to the CHT quench oils and used quench oils from the Waterstone Report.

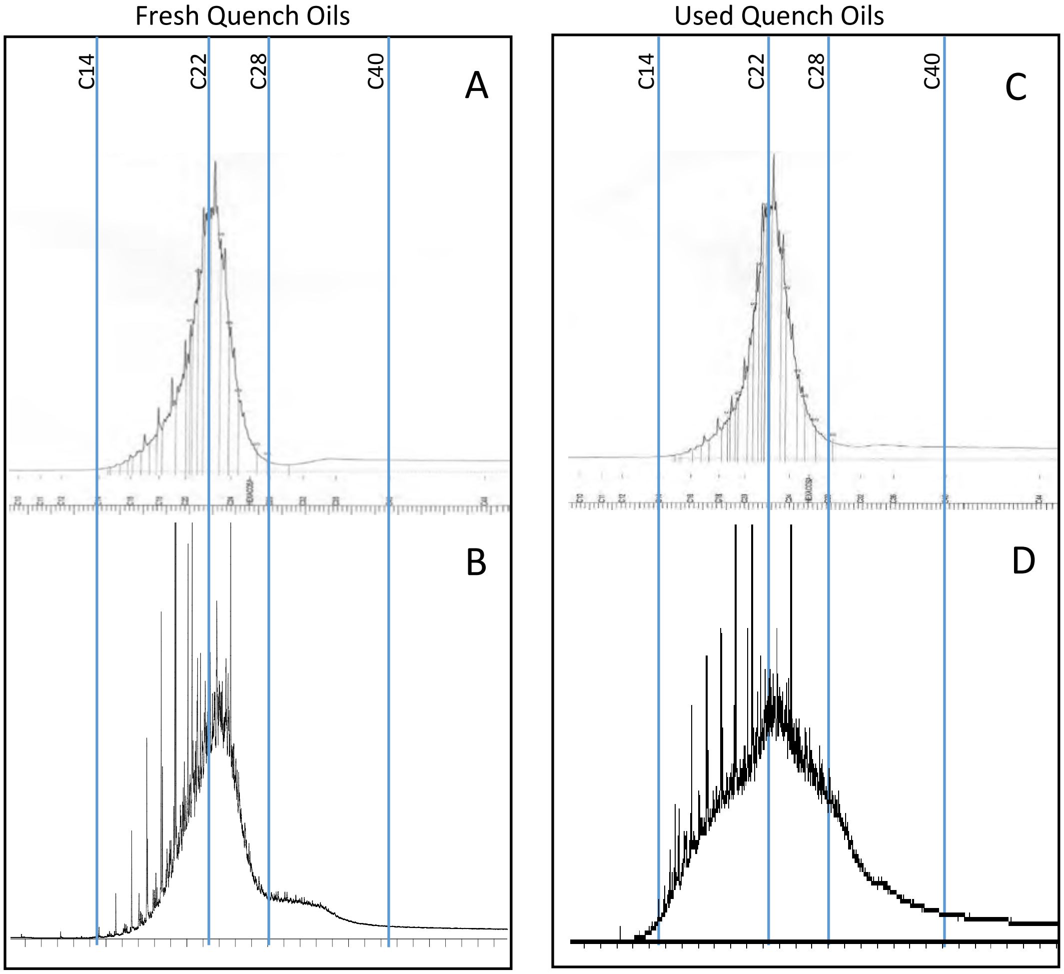


Figure 1: Comparably scaled GC/FID chromatograms of (A) fresh quench oil from CHT (QOS-1), (B) fresh quench oil analyzed by NewFields, (C) used quench oil from CHT (QOS-2), and (D) used quench oil analyzed by NewFields. All four samples exhibit the UCM maximum at ~C22 typical of quench oil and atypical of petroleum fuels.

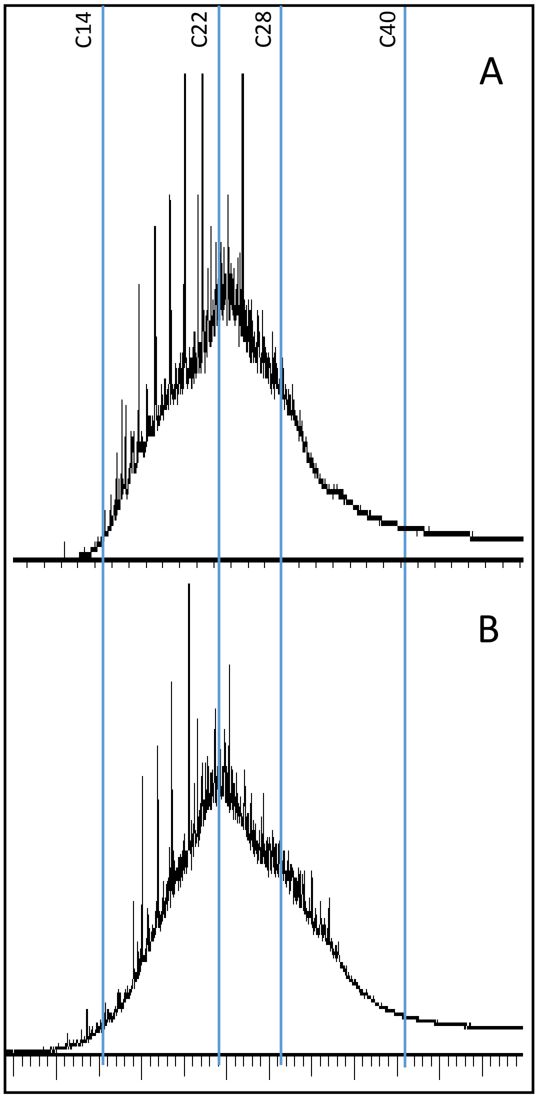


Figure 2: Comparably scaled GC/FID chromatograms of (A) used quench oil analyzed by NewFields and (B) Jalk Fee soil sample S-9-B32 analyzed by NewFields shown at the same scale as the CHT chromatograms.

(2) Waterstone's assessment of the low total PAH concentrations in CHT quench oils and oil-water separator waste oil samples – versus the higher total PAH concentrations in the oils within Site soils near the CHT property boundary – ignored the fact that different numbers of PAH analytes were measured and led to the erroneous conclusion the Site soils did not contain used quench oil wastes.

As noted above, Waterstone collected and had analyzed six samples from the CHT facility and presented these data in their report. The analyses included measuring the concentration of 17 priority pollutant PAHs via EPA Method 8270C. The concentrations of total PAHs detected in the six samples ranged from "non-detect" in the fresh quench oil (QOS-1) to 72.19 mg/kg in the used quench oil (QOS-4).

Waterstone compared the maximum total PAH concentration in the six CHT samples (72.19 mg/kg) to the total PAH concentrations in the oils within Site soils (normalized for TPH) as reported by NewFields. The soils' total PAH concentrations were higher (520 to 6,400 mg/kg). Waterstone claimed this disparity showed "the petroleum identified by NewFields in all ten of the soil samples they analyzed is not quench oil, vacuum quench oil, or waste oil generated by CHT" and alleged this "quantitative comparison analysis is also a more reliable approach" than chromatographic fingerprinting.

Waterstone is comparing "apples" to "oranges." Waterstone's lab measured only 17 individual PAH analytes in their samples whereas NewFields (Alpha) measured 50 PAHs, so naturally the concentration of "total" PAHs is lower in the CHT samples analyzed by Waterstone's lab. In fact, when the NewFields total PAH concentrations are recalculated to include only the same 17 priority pollutant PAHs measured and totaled by Waterstone's lab (Table 2), the CHT used quench oil's PAH concentration (72.19 mg/kg) is directly comparable to the sum of the 17 PAHs in the three soil samples NewFields concluded to contain used quench oil sludge (S-9-B32, S-14-B27, and likely S-5-B36), whose total PAH concentrations for the 17 priority pollutant PAHs ranged from 28 to 80 mg/kg (Table 2). By contrast, the three soil samples analyzed by NewFields in 2012 that contain crude oil (S-15-B10, S-80-B10, and S-80-B11) contained 350 to 2,400 mg/kg "total" 17 PAHs; i.e., much higher concentrations (Table 2).

In conclusion, Waterstone's claim is wrong. When the same list of PAH analytes are compared there is no disparity in PAH concentration between the CHT-supplied quench oil samples and the oils within the Site soils near the CHT property boundary (Table 2). These results further confirm our conclusion that quench oil sludge is present in Site soils near the CHT property boundary (S-9-B32, S-14-B27, and likely S-5-B36).

Table 2: Concentrations of PAHs in the Jalk Fee Site soils and used quench oils reported as the total of 50 analytes (as originally reported by NewFields) and as the total of 17 analytes (as per the CHT sample data reported by Waterstone). Asterisk indicates soils NewFields concluded contained quench oil sludges. nc=not calculable because TPH was not detected; these samples were concluded to be "clean".

	mg_{TPAH}/ kg_{TPH} (50 analytes)	mg_{TPAH}/kg_{TPH} (17 analytes)
S-9-B32*	940	80
S-14-B27*	820	28
S-5-B36*	520	74
S-9-B34	4,200	310
S-5-B34	2,200	320
S-6-B28	6,400	3,800
S-8-B24	3,600	1,400
S-3-B35	2,700	200
S-16-B26	nc	nc
S-16-B30	nc	nc

Used Quench oil (Waterstone/CHT)	Na	72
Used Quench Oil (NewFields)	450	42

Soil samples NewFields concluded to contain quench oil sludge contain comparably low PAHs to the used quench oils, including used quench oil from CHT.

(3) Waterstone's assessment of the nickel and vanadium ratios in the Site soils led to an erroneous conclusion that the petroleum in these soils was southern California crude oil – not quench oil sludge and other mineral oil wastes.

In an attempt to demonstrate the petroleum in Site soils along the property boundary is not attributable to quench oil sludge and other mineral oil wastes, Waterstone claimed the ratios of nickel (Ni) and vanadium (V) in the Jalk Fee soils analyzed by NewFields had a V/Ni ratio of ~2 "indicating typical of vanadium to nickel rations (sic) present in crude oil" from southern California (page 29, paragraph 1).

This claim has no relevance for the following reasons:

a) There is no relationship between the concentrations of Ni or V and TPH (oil) in any of the Site soils (Fig. 3B-C); Ni and V concentrations do not increase with the amount of oil (TPH) as should occur if these two metals actually were coming from the petroleum in the soils. For example, the S-16-B30 soil contained no detectable TPH (nd < 2.57 mg/kg) yet contained 19.8 and 35.2 mg/kg of Ni and V, respectively. The most highly impacted soil, S-3-B35, contained 1,760 mg/kg TPH but only 14.2 and 36.2 mg/kg of Ni and V. Thus, the "cleanest" Jalk Fee soil contained lower and comparable concentrations of Ni and V (respectively) as the soil containing the most petroleum. In fact, the concentrations of V and Ni in the Jalk Fee soils narrowly ranged from 15-50 and 10-31 mg/kg, respectively, whereas the TPH concentrations varied over 4 orders of magnitude (nd to 1,760 mg/kg; Fig. 3B-C).

b) The actual V/Ni ratios for the soils studied ranged from a minimum of 1.2 to maximum of 2.6, which were respectively obtained from on the two Site soil samples that contained the two highest concentrations of TPH (S-3-B35 and S-5-B32; see Table 1). These data are plotted in Figure 3A. Thus, if the V/Ni ratios in these two most highly-impacted soils were due to the presence of southern California crude oil in the soils (as claimed by Waterstone), they should have ratios of ~2 (or very similar), not a difference of more than 100%;

c) Finally, the average concentrations of V and Ni in 50 California soils are 112 and 57 mg/kg, respectively.[1] These average concentrations are higher than were measured in any of the Jalk Fee Site soils. Thus, Ni and V in the Jalk Fee soils are readily attributable to background, not petroleum.

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[1] Kearney Foundation (1996) Background concentrations of trace and major elements in California soils. Kearney Foundation of Soil Science, Div. of Agriculture and Natural Resources, Univ. of California. https://envisci.ucr.edu/downloads/chang/kearney_special_report_1996.pdf, last accessed July 12, 2017.

In conclusion, Waterstone's attempt to show the presence of crude oil in the Site soils using Ni and V ratios is flawed. They alleged the quantitative V/Ni ratio is "more reliable than eyeballing chromatograms". This clearly is not the case, as the concentrations of V and Ni (and the V/Ni ratio) in site soils are consistent with background concentrations and have no correlation with the concentration of hydrocarbons found in these soils.

Table 1: TPH and Vanadium and Nickel Concentrations and Ratio in the soils analyzed by NewFields (nd = not detected).

Sample Name	TPH (mg/kg)	Vanadium (mg/kg)	Nickel (mg/kg)	V/Ni Ratio
S-16-B30	nd	35.2	19.8	1.8
S-16-B26	nd	27.8	20.0	1.4
S-5-B36	117	39.3	15.9	2.5
S-8-B24	191	49.4	22.5	2.2
S-5-B34	433	34.7	14.2	2.4
S-14-B27	850	15.2	9.56	1.6
S-6-B28	1,150	38.2	31.3	1.2
S-9-B32	1,330	33.4	15.0	2.2
S-3-B35	1,760	36.4	14.2	2.6

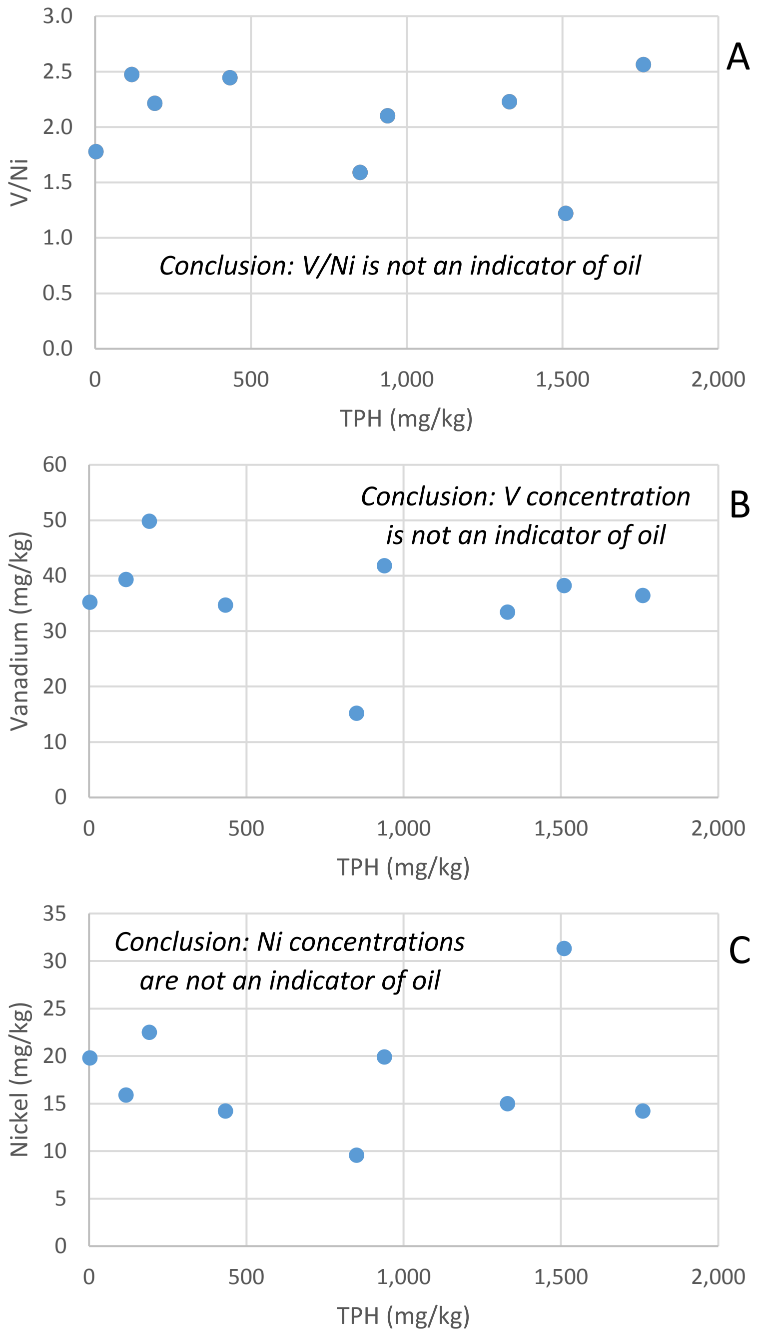

Figure 3: Plots relating the concentration of oil (as TPH) in Jalk Fee site soils to (A) V/Ni ratio, (B) vanadium concentration, and (C) nickel concentration in the soils analyzed by NewFields. The lack of any correlation between the metals and TPH demonstrates the metals are not attributable to the oil (as alleged to be southern California crude oil by Waterstone). All data from Table 1.

Additional Enumerated Rebuttal Points

1) Waterstone states that PCE and quench oil-containing waste should not co-occur, and to do so would be "purely coincidental" (page 2, paragraph 5). PCE and quench oil wastes did co-occur in post-quench solvent degreasing prior to 1995 (see Waterstone Fig. 5, reproduced and discussed further below). Regardless, intermittent discharges ("onto ground and asphalt top at rear yard") at the same location(s) over time would commingle PCE and petroleum wastes, and therefore is not "purely coincidental". Intermittent discharges to ground would also explain heterogeneity in character of petroleum and proportions of PCE/petroleum; i.e., there is no expectation of a relationship between concentration of PCE and petroleum when mixed and diverse wastes are being disposed of.

2) Waterstone states PCE and quench oil would never occur together therefore ExxonMobil's assumption they did (may have) is "patently erroneous" (page 11, paragraph 4). This claim contrasts with subsequent statements by Waterstone (page 22); "Smaller parts…were cleaned of oil using the vapor degreaser" and "residual oil was...cleaned again before shipment using either the former vapor degreaser or parts washer". The "oil" referenced in these subsequent sentences is quench oil residues left on the parts after quenching. The “patently erroneous” claim also conflicts with flowchart on and annotated herein as Figure 4) that shows the "degreaser" was used on small parts from Beaver-Matic Heat Treaters and "All Parts" from the Hayes Vacuum Heat Treaters (as highlighted with red circles on the figure below). So, as the Waterstone report illustrates, the solvent (PCE) in the vapor degreaser would clearly have become contaminated with quench oil prior to 1995 when the vapor degreaser operation ceased.

   Additionally, Fig. 4 shows that other forms of petroleum (mineral oils) used in metal part production by the original manufacturers that arrived at CHT (not only quench oil) also came into contact with PCE. Specifically, Fig. 4 shows the PCE degreaser generated an oil sludge (highlighted with a blue circle), which would have been comprised of mixtures of metalworking oil residues present on arriving parts, and which required disposal. This mixed sludge would also have likely contained PCE residue.

   In summary, the flow diagram of pre-1995 CHT operations provided by Waterstone (Fig. 4 herein) shows multiple waste streams that could, when occasionally discharged "onto ground and asphalt top at rear yard" contain PCE and/or various petroleum wastes. These include:

   a) arriving parts were PCE-degreased yielding a sludge (blue circle; Fig. 4). The sludge would have included a mixture of any metal working (cutting and machining) oil residues on arriving parts plus residual PCE;
   b) post-quench degreasing with PCE would have generated a mixture of variably used/aged quench oils and residual PCE (red circles; Fig. 4); and
   c) oil and sludge from the oil-water separator would have contained variably used/aged quench oil from any post-quench aqueous wash of any "large parts".

According to Fig. 4 all of these wastes were "disposed immediately or stored in drums at the site's HW storage area". However, agency NOVs issued to CHT document that disposal or releases also occurred "onto ground and asphalt top at rear yard".

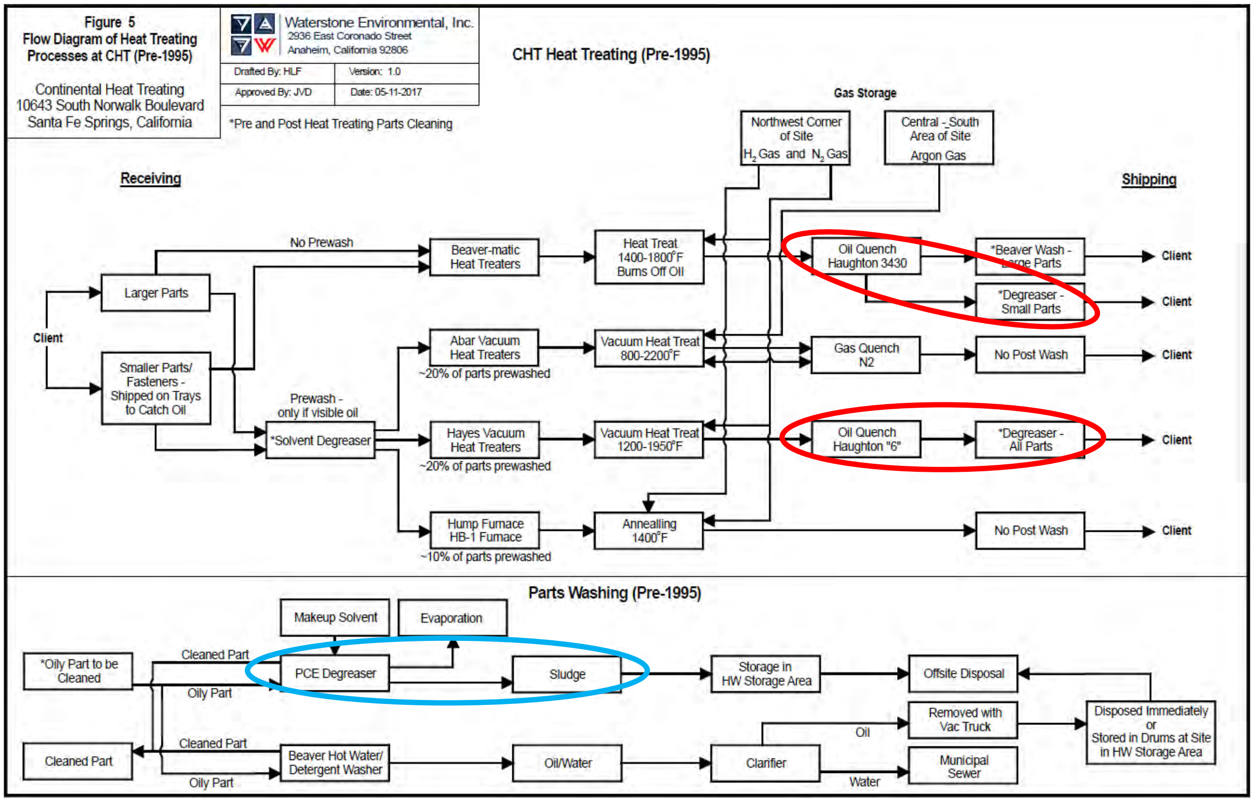

Figure 4: Reproduction of Figure 5 from the Waterstone report with red and blue annotations added. See text for description.

3) Waterstone states that Alpha Analytical is not a CA certified laboratory (page 12, paragraph 1). Alpha is NELAC certified for EPA methods (including Methods 8015 and 8270, utilized herein), QA, data handling, etc.. There is no certification for modifications to these methods for forensic purposes. Additionally, Alpha's forensic methods are used by both California Dept. of Fish & Wildlife and Federal agencies.

4) Waterstone states "Newfields entire forensic investigation hinges on the false premise that quench oil on the CHT property contains elevated levels of PCE…" (page 12, paragraph 2). This statement is untrue and not a premise to our investigation or of our conclusions. We demonstrated that oil consistent with used quench oil (i.e., a dearomatized oil spanning a very distinct and atypical boiling range) co-occurred in soils along the property boundary with varying amounts and types of mixed oils/sludges/wastes (also mostly dearomatized). This could reasonably represent the types of mixed metalworking oils and sludges CHT would have generated when washing arriving parts (see Fig. 4; blue circle). CHT also handled PCE, which it used to clean parts before and after quenching. When the chemistry is interpreted in view of CHT's record of poor waste management practices along with

notices of violation, there is a convincing explanation for the source of petroleum and PCE in the area's soils. In summary, Waterstone (particularly the flow diagram shown in Fig. 4 herein) has confirmed that before 1995 CHT generated the types of wastes that could explain the observed chemistry of the soils. Thus, there is no "false premise" included the NewFields data interpretation.

5) Waterstone states the co-location of quench oil and PCE is "merely coincidental" (page 12, paragraph 2). The co-location of these materials is not coincidental, because (1) post-quench sludge/waste containing both petroleum and PCE may have been disposed or released in the same location, and/or (2) different sludges/wastes may have been disposed or released in the same location, (3) only CHT used quench oil and PCE in its operations thereby generating waste streams containing quench oil sludge and/or PCE.

6) Waterstone states "hydrocarbons located on Jalk Fee property are not quench oil" (page 12, paragraph 2). This statement is based on Waterstone's erroneous assessment of the chromatograms, which we have addressed above in our first major rebuttal point. Nonetheless, it is worth stating that the petroleum in *all* the soils is not *pure* quench oil, but a mixture of quench oil, quench oil sludge, and/or mineral oil sludges (i.e., the type of waste stream that are generated during metalworking operations).

7) Waterstone states "thermally desorbed" soils were used to backfill at the Site (page 14, paragraph 2). In our experience, thermal desorption/remediation of soil normally targets only VOCs, which would not alter the soils' DRO- and RRO-dominated hydrocarbon signatures. Furthermore, soil samples that contained DRO show retention of pristane and phytane (and an absence of similarly volatile n-alkanes, n-C_{17} and n-C_{18}) indicating their alteration had been via biodegradation and not thermal treatment.

8) Waterstone states that soil sample S-9-B32 was collected in back-fill soil (most likely from thermally treated offsite soils) and not native soil (page 15, paragraph 2). There is a chemical response to this claim. Specifically, the S-9-B32 soil is the clearest example of quench oil sludge-bearing soil studied. Its unusual UCM shape (e.g., max at ~C22) is atypical of all common petroleums. Furthermore, the petroleum in this soil is a dearomatized oil. These features make it the clearest case for the presence of used quench oil sludge in the soils studied. In addition, this sample exhibits the highest PCE concentration, suggesting these materials may have been discharged together as a post-quench solvent sludge pre-1995 (e.g., see red circles in Fig. 4 above). In any case, there is clear evidence this soil's petroleum is not thermally treated crude oil or other petroleum (as suggested by Waterstone). Evidence against Waterstone's claim includes the fact that the "front end" of this soil's petroleum is biodegraded but not thermally altered, as evidenced by the retention of pristane and phytane (and absence of similarly volatile n-alkanes, n-C_{17} and n-C_{18}).

9) Waterstone states sample S-14-B27 soil appears to be the only soil sample collected by Cardno from the SB49 excavation area that was collected in native soils (not back-filled soil; page 15, paragraph 3). There is a chemical response to this claim. Specifically, the oil in the

S-14-B27 soil (acknowledged as native by Waterstone) is nearly identical to the oil in the S-9-B32 soil (alleged to be fill by Waterstone). This comparability is true with respect to their TPH fingerprints, low PAH concentrations, PAH patterns, and biomarkers. How can both a native soil and a fill soil contain the same type of unique petroleum? Given both of these soils contain the clearest examples of used quench oil sludge-laden soils (and both contain PCE), their chemical comparability supports the case both of these soils (S-9-B32 and S-14-B27) are native soils impacted with CHT-derived wastes.

10) Waterstone states sample S-3-B35 was collected in fill below the asphalt surface (page 16, paragraph 1). Although not explicitly stated, we believe Waterstone is implying that the S-3-B35 soil sample may contain asphalt. If so, we disagree. While the character of the TPH (chromatogram) in this sample is consistent with mineral oil/sludge or with asphalt, our conclusion is based on the fact that the PAH content is only consistent with that of mineral oil/sludge. The relatively low TPAH/PAH content of this sample (2,700 mg/kg) is much lower than new or used asphalt (~10,000 to 50,000 mg/kg; e.g., Emsbo-Mattingly and Litman, 2016[2]); see additional comment # 14 below). Thus, the low TPAH/TPH content of the petroleum in the S-3-B35 soil sample indicates that it does not contain asphalt particles, but rather a mineral oil/sludge.

11) Waterstone states that Cardno overstated NewFields' conclusion (page 19, paragraph 1). We concluded that only samples S-9-B32, S-14-B27 and likely S-5-B36 contained used quench oil sludge. The other soils studied contained varying types/mixtures of mineral oil sludges/wastes, such as are commonly used in metalworking (cutting/machining/forming) that would have been generated by CHT in washing arriving metal parts. However, it is important to note that the three soils samples that contained used quench oil sludge were each collected closest to the property boundary and all next to each other. Therefore, there is a "hot-spot" of used quench oil sludge contamination at the property boundary. Notably, these three soil samples also contained the three highest concentrations of PCE among the soils we studied.

12) Waterstone states that NewFields' used quench oil reference sample has no COC and the sample came from another heat treating facility with no effort to correlate to CHT operations (page 19, paragraph 1). Given the unavailability of quench oil used by CHT, we originally presented the data available to us to demonstrate the character of used quench oil analyzed from another facility. Waterstone's criticism of this comparison is now moot since Waterstone provided data for new and used CHT quench oils that – as was demonstrated in our first Major Rebuttal – are comparable to the new and used quench oil samples from another facility we originally provided (see above). Thus, comparison of the Site soils to the CHT quench oil (instead of our used quench oil from another facility) leads us to the same conclusions we'd originally reached.

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[2] Emsbo-Mattingly, S.D. and Litman, E. (2016) Polycyclic aromatic hydrocarbon homolog and isomer fingerprinting. In: S.A. Stout and Z. Wang, Eds., Standard Handbook Oil Spill Environmental Forensics, Fingerprinting and Source Identification, Academic Press, Boston, p. 255-312.

13) Waterstone states sample S-9-B32 only “vaguely” resembles (page 18, paragraph 1) the used quench oil analyzed by NewFields as the soil "has both a broader light end and much broader heavy end range than either of the quench oil sample comparison" and these differences are "very noticeable" and therefore are not a "definitive match” to the quench oil standards analyzed” (page 20, paragraph 1). As mentioned above, the C22 max, UCM shape, and low aromatic content of the S-9-B32 (as well as S-14-B27 and S-5-B36), is highly diagnostic for used quench oils, as evidenced by comparison to the used quench oils in our original report and in the Waterstone report.

    Regarding Waterstone’s specific statements quoted above, comparison of the soil samples to the fresh quench oil is largely irrelevant since fresh quench oil was not likely ever disposed of into soils. Comparison to the used quench oil, however, is relevant, although differences among used quench oils (whether they are from another facility or CHT) are expected, and therefore some differences between a small number of used quench oil references and the Site’s soils are also expected. Firstly, used quench oils are not the same as used quench oil sludge. Specifically, the former will slowly crack, oxidize and polymerize/condense over time/use but is still capable of continued use in quenching, whereas the latter is a very highly-oxidized material that accumulates in quench tanks and on filters and heat exchangers. Quench oil sludge is no longer adequate for continued use in quenching, and thus requires removal and disposal.[3] As such, fresh quench oil, used quench oil, and used quench oil sludge represent a continuum of materials – not three specific materials. Thus, the chemical fingerprints of these materials will vary over time/use as the degree of oxidation/polymerization/condensation changes and as mixing with other waste oils (e.g., tramp oils) can occur.

    We provided an example of how fresh quench oil’s boiling range (chromatogram) will change upon use in our comparison of fresh and used quench oil from another heat treating facility that showed there is a clear broadening of the chromatogram in the used quench oil. This broadening is consistent with thermal cracking and oxidation/polymerization/ condensation of the oil upon use whereupon both lower boiling and higher boiling compounds (including some PAHs) are formed (respectively) during use. After continued use the higher boiling compounds become increasingly abundant, and the viscosity of the used quench oil increases to the point that its useful life ends, i.e., as quench oil sludge.

    Waterstone has provided another example showing how used quench oil becomes enriched in heavy end range (i.e., oxidized and polymerized) compounds, wherein the chromatogram for the used vacuum quench oil (QOS-4) is highly[4] enriched in heavy end range (oxidized/ polymerized/condensed) compounds compared to the fresh vacuum quench oil (QOS-3).

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[3] MacKenzie, D.S. and Lazerev, I. (undated) Care and maintenance of quench oils, Houghton International, Inc., Valley Forge, PA. https://www.houghtonintl.com/sites/default/files/resources/article_-_care_and_maintenance_of_quench_oils.pdf, accessed last July 12, 2017.

[4] We disagree with Waterstone’s claim the increase in heavy end compounds in the used vacuum quench oil is only “slight”; page 24.

These examples serve to demonstrate the continuum described above. If NewFields or Waterstone had a quench oil *sludge* (ready for disposal) available for study our expectation would be that it would be even higher boiling than the used quench oils analyzed by both NewFields and Waterstone.

With specific regard to Waterstone's statements regarding the S-9-B32 sample (quoted above), the S-9-B32 soil's chromatogram does not contain a broader light end than the used quench oil (as Waterstone states). Instead the front ends are highly comparable with the S-9-B32 soil actually containing a slightly reduced light end consistent with minor environmental weathering (see Fig. 5 in our Feb. 2017 report). We agree that the S-9-B32 soil's chromatogram does contain a broader heavy end than the used quench oil reference sample, but (as noted in the previous two paragraphs) this difference is easily explained by the fact that the soil's used quench oil sludge is simply more highly oxidized/polymerized/ condensed than the used quench oil reference sample. This allegedly "very noticeable" difference is minor when interpreted in light of the continuum, since it only reflects the specific character of the used quench oil at the time it was sampled. In other words, a more oxidized/polymerized/condensed used quench oil sludge (if one had been available for study) would have a broader heavy end (and somewhat higher PAH concentration) than the used quench oil reference sample we analyzed. Alternatively, the presence of other metalworking oil residues within the quench oil sludge (such as are abundant in Waterstone's oil-water separator sample from CHT) could easily increase the proportion of heavy end (higher boiling) components in the Site's soils. Thus, the "vague" resemblance, "very noticeable" differences, and lack of "definitive match" claims by Waterstone regarding the S-9-B32 soil and used quench oil simply do not account for the continuum of quench oil-used quench oil-quench oil sludge. The greater proportion of heavy end in the S-9-B32 soil does not change the fact that the S-9-B32 soil contains quench oil sludge, it simply contains more sludge than the used quench oil reference sample.

The S-14-B27 and S-5-B36 soils also contain quench oil sludges (note C22 max) that contain even more heavy ends, which we attribute to their containing a greater proportion of heavy (oxidized/polymerized) sludge than the S-9-B32 soil. Such differences are absolutely expected for multiple discharges of variably used (oxidized/polymerized) quench oil sludges and should not be used to preclude a "definitive match" as Waterstone claims.

14) Waterstone states that NewFields intentionally left out results of numerous metalworking oils we had analyzed (page 21, paragraph 12). As stated on p. 2 of our report, the relevance of these samples to CHT operations was unknown. We had hypothesized CHT may have received metal parts with various metalworking oil residues, but were uncertain what these may have been. However, when we compared GC chromatograms of the Site soil samples from the property boundary with CHT to those of the metalworking oils, it became clear that 1) the used quench oil signature was more clearly realized in three of the soils samples, and 2) the heavier fractions in other soils likely represented mixtures by mineral oil sludges, not any one specific metalworking oil. Therefore, we proceeded to focus our report on the comparison of the used quench oil signature to the soil samples. All of the metalworking

oils, compositions, however, confirm our contention that these types of oil had a low PAH content due to dearomatization of their base stocks during refining; each contained 0.2 to 1,400 mg_{TPAH}/kg_{TPH} (avg: 390 mg_{TPAH}/kg_{TPH}); i.e., much lower than crude oil and other non-dearomatized petroleums. Thus, if such oils found their way into parts washing sludges (such as likely occurred at CHT), these sludges would also be relatively low in PAH concentration (such as in the Site soils).

15) Waterstone states that the heterogeneity in PCE isotopes and petroleum mixes in soils could not possibly have come from CHT: it was "not physically possible" and "sources of PCE and quench oil used have not varied" (page 21, paragraph 4). This is not true and reflects Waterstone's misunderstanding of what causes variability in isotopic signatures. Multiple discharges of PCE, spent quench oil, and other wastes (sludges) over time would result in such heterogeneity, even if PCE came from the same supplier over an extended time period.

16) Waterstone acknowledges that CHT's vapor degreaser was used to clean small parts after quenching until 1995 (page 21, paragraph 1; see also red circle in Figure 4 above). Thus, prior to 1995, quench oil and PCE did co-occur in waste. This contradicts Waterstone's earlier claim that quench oil and PCE do not co-occur in waste.

17) Waterstone states "Large volumes of waste quench oil are rarely generated" (page 22, paragraph 4). This is not true for sludges or other wastes containing quench oil. Quench oil sludge disposal is an industry-wide issue for the heat treating industry.[5] Additionally, this claim does not include waste quench oil that ends up in the post-quench washes, and ultimately the oil-water separator. In fact, the POWS-1 sample Waterstone collected and analyzed in Feb. 2017 is predominantly (est. > 50% by mass) comprised of quench oil (see Fig. on pg. 26 of Waterstone report). Therefore, waste containing quench oil is (still) generated in large volumes at CHT. (Notably, the oil-water separator oil also contains RRO-range petroleum that is suggested by Waterstone to be a mixture of metalworking oils. This is the type of mixed RRO-range petroleums found in the soils.)

18) Waterstone states that a "small" increase in RRO is evident in the used vacuum quench oil (page 24, paragraph 1). Comparison of the new and used vacuum quench oil clearly shows a large increase in RRO due to oxidation upon use. As discussed above (Other Rebuttal Point #13) this serves to illustrate how/why sludges form (as oxidation progresses and viscosity increases) in quench tanks, filters and heat exchangers.

19) Waterstone states that there is a great variability of quench oil used in the industry (page 25, paragraph 1). Only the new quench oil that CHT "just started using" is markedly different in composition and is irrelevant with respect to historic practices at CHT. Comparison of the regular and vacuum quench oils used by CHT "historically" are, on the other hand, highly similar to one another in that both contain a prominent DRO component

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[5] Liscic, B. et al. (2003) Non-lubricating process fluids: Steel quenching technology. In: Fuels and Lubricants Handbook, G.E. Totten, Ed. ASTM Manual Series, MNL37WCD, p. 587-634.

with paraffins and UCM max at C22 – and are highly similar to the quench oils from the heat treating facility presented in the NewFields study. Thus, though limited to the samples analyzed by NewFields and Waterstone, the variability among historically used quench oils is not significant.

20) Waterstone states that the oil water separator sample (PWOS-1) is a mix of quench oils and other metalworking oils (page 26, paragraph 1). We agree. The oil-water separator oil is exactly the type of waste mix that was found in the Jalk Fee site soils. The only difference in this particular oil water separator sample is the very high prominence of quench oil (i.e. the C14-C28 fraction is estimated to represent more than 50% of the TPH mass). If the quench oil component were reduced or eliminated, then the heavier fraction would dominate the chromatogram. An oil-water separator sample dominated by heavier material could explain the range of fingerprints observed in the Jalk Fee Site soils.

21) Waterstone states that chromatograms from CHT quench oil samples are "uniquely distinct" and include a more pronounced peak at C21-C23. As discussed further in our Major Rebuttal Point #1, Waterstone is demonstrating inexperience reviewing and interpreting chromatograms owing to the different gas chromatography heating rates used in the collection of these data, which was much higher at Jones Environmental Lab than at Alpha Analytical, and the disparate horizontal and vertical scaling of chromatograms. This is why the chromatograms of the CHT samples look different (to an untrained eye). Also, their claim that 70% of the mass is in the "C21-C23 carbon range" is clearly inaccurate; they likely mean 70% is within the C15-C28 DRO range, which is exactly comparable to the S-9-B32 soil sample (73% DRO).

22) Waterstone states that PCE was not detected in the CHT samples collected in Feb. 2017 (page 29, paragraph 1). This is irrelevant if PCE has not been used at the facility since 1995 (~22 years before the samples they analyzed were collected).

23) Waterstone states that the FTIR analysis of other oils are comparable to quench oils and therefore suggests that there are many possible sources for the petroleum found in soils (page 32, paragraph 1). FTIR lacks specificity in distinguishing oils, which is why it is not a forensic tool. FTIR measures functional group bond types and abundance and does not demonstrate that the configurations of these bonds are the same in "matching" samples (only that they exist in comparable proportions). This is obvious in the fact that the FTIR spectra for a "naphthene-paraffin-based oil" (Shell Apiezon Oil J) matches that for a "surfactant" (Miller-Stephenson MS-15-EN-Rust). The FTIR peaks at 2850-2950 n are typical of alkyl C-H bonds, ~1450 n are likely methylene groups, and ~1375 n are likely methyl groups. The absence of peaks < 1000 n and between ~1500 and 1700 n indicates these oils contain low levels of aromatics (i.e., they are dearomatized petroleum products, as recognized by NewFields).

After considering the new data presented in the Waterstone report (and described herein), we re-affirm the conclusions originally offered in our February report: that the shallow soil on the Jalk Fee Site directly north of the CHT equipment storage and repair areas contains used quench oil sludge and varying types/mixtures of mineral oil sludges, consistent with the waste that was generated by CHT's operations during the years when it was also using PCE in degreasing operations, and inconsistent with ExxonMobil's operations.

Thank you for the opportunity to respond to the Waterstone report. Please let us know if you have any questions concerning the content of this letter.

Sincerely,

Mark J. Benotti, Ph.D.
Sr. Environmental Chemist

Scott A. Stout

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APPENDIX B

AERO-DATA CORPORATION LLC'S
INTERPRETATION OF ADDITIONAL AERIAL PHOTOGRAPHS COVERING THE JALK FEE SITE IN SANTA FE SPRINGS, CALIFORNIA,
DATED AUGUST 24, 2017

Interpretation of Additional Aerial Photographs Covering
the Jalk Fee Site
in Santa Fe Springs, California

Randall Grip

Aero-Data Corporation LLC

August 25, 2017

Introduction

Aero-Data Corporation was originally engaged to perform an historical aerial photographic study for the Jalk Fee site, a former oil field as well as the adjacent Continental Heat Treating (CHT) property to the south of Jalk Fee. Specifically, I was asked to obtain aerial photographs from the 1968 through 2000 and produce imagery for viewing and analysis.

For the purposes of this report, I was provided Demetriou, Del Guercio, Spring & Francis LLP's letter dated January 31, 2017 for the Continental Heat Treating and ExxonMobil Jalk Fee Property which contained additional aerial photographs and interpretations of those photographs by CHT's representative. I was subsequently provided the scans of the original photos acquired by CHT's representative. This report includes my commentary on those interpretations as well as additional observations I have made.

Statement of Qualifications

My name is Randall W. Grip. I have a Bachelor of Science Degree in Geography from Louisiana State University. I am vice-president of Aero-Data Corporation. Aero-Data specializes in aerial mapping and environmental studies using aerial photography and historical maps. Over the past 19 years, I have provided expert photo-interpretation and photogrammetry services for environmental assessment purposes. During this work, I have participated in studies and obtained and interpreted aerial photographs of sites throughout the United States as well as in other foreign nations.

My expertise is in review and analysis of readily available aerial photography. The processes I use include include research and acquisition of stereoscopic photography, high resolution photogrammetric scanning, geo-registration of stereo images, and digital orthophoto production. I have been qualified as an expert witness in the fields of photo-interpretation and photogrammetry.

Aero-Data's client list includes many major corporations as well as government agencies such as the US Department of Justice, the Louisiana Department of Natural Resources, and the Louisiana Department of Environmental Quality.

Information Considered in Forming Opinions

My opinions are based upon aerial photography and maps of the Site as well as my experience and training.

Attachment A is a listing of the additional aerial photographs that I have relied upon for this report.

Production of Geo-Registered Images and Maps

I have produced digital stereo plotter based geo-registered imagery of the different dates of aerial photography obtained for this expert report. The imagery, as well as the geo-referenced maps, are included in Attachment B.

Aero-Data Commentary on CHT's Interpretations by Exhibit

Following is a brief commentary of my observations on and disagreements with CHT's interpretations. I have georeferenced CHT's exhibits to the UTM coordinate system so that north is to the top of the exhibits. They are scaled and cropped to the same area and are included in Attachment B.

Although CHT acquired stereoscopic coverage of the site, it does not appear that CHT utilized stereo viewing techniques during its photo interpretation effort. Nor does it appear that CHT utilized geo-referencing of the photos during its efforts. For many of the features that CHT incorrectly identified as sumps, including those along the Jalk Fee/CHT property boundary; these features, when viewed stereoscopically, are obviously trees, shadows of trees, sheds, roofs of sheds, and shadows of sheds or small features.

My specific disagreements with CHT's interpretations are numbered in red text and superimposed over CHT's original exhibit, which is labeled with yellow text.

Exhibit 4 – 1928 Aerial Photo of Subject Area

Shadows on this date are long and pointing to the northwest. Three features are identified as sumps by CHT on the eastern side of the property. These features are not sumps and are described as follows:

Point #1 - a tree, more clearly seen in the 1938 imagery in the same location.
Point #2 - a vegetated yard also more clearly seen in 1938 and persisting several years.
Point #3 - pipe rack or similar square structure.

Several sump locations are visible but are not identified on CHT's Exhibit 4.

Exhibit 6 – 1938 Aerial Photo of Subject Area

This is a much higher resolution photo date than the 1928 photo.

Point #1 - filled former sump, first seen on the 1928 photos, but not identified by CHT as backfilled.

Exhibit 7 – 1945 Aerial Photo of Subject Area

Shadows on this date are long and pointing to the northeast. Numerous features were incorrectly identified by CHT as sumps. The correct interpretations are:

Point #1 - shadow of a shed.
Point #2 - dark roof of a shed.
Point #3 - low area (likely puddled water) in the parking lot.
Point #4 - shadow of a shed.
Point #5 - shadow of a vertical structure.
Point #6 - small square features could also be associated with an underground pipeline.
Point #7 - small square features could also be associated with an underground pipeline which is observed trending east-west along the same line.

Exhibit 8 – Blow-up of the 1945 Aerial Photo

This exhibit is an enlargement of the eastern side of Exhibit 7. Shadows on this date are long and pointing to the northeast. Numerous features were incorrectly identified by CHT as sumps. The correct interpretations are:

Point #1 - low area puddled area in the parking lot.
Point #2 - shadow of a shed.
Point #3 - roof of a shed.
Point #4 - shadow of a shed.

Point #5 - shadow of a vertical structure.
Point #6 - small square features could also be associated with an underground pipeline.

Exhibit 9 – 1952 Aerial Photo of Subject Area
Numerous features were incorrectly identified by CHT as sumps. The correct interpretations are:

Point #1 - dark signature is visible but it is more likely oiling of the surface than soil deposition.
Point #2 - low level brush/vegetation.
Point #3 - shadow of an elevated feature.
Point #4 - small square features could also be associated with an underground pipeline.
Point #5 - shadows of elevated features.

Exhibit 10 – Blow-up of the 1952 Aerial Photo
This exhibit is an enlargement of the eastern side of Exhibit 9 and further confirms features that were incorrectly identified.

Point #1 - low level brush/vegetation.
Point #2 - small square features could also be associated with an underground pipeline.
Point #3, #4, and #5 - shadows of elevated features.

Exhibit 11 – 1963 Aerial Photo of Subject Area
Numerous features were incorrectly identified as sumps. Also, actions of a dump truck were misinterpreted.

Point #1 - debris and the remnants of a former drilling rig.
Point #2 - shadow of a structure.
Point #3 - moving dump truck originating from road work across the street. (See also Aero-Data's Exhibit on the Dump Truck activities 6/24/1963)
Point #4 - structure similar in appearance to a ladder.
Point #5 - shadow of brush.
Point #6 - low level vegetation or brush.
Point #7 - small square features could also be associated with an underground pipeline

Exhibit 12 – 1963 – Stereo Pair Aerial Photos of Subject Area
Several features were incorrectly identified.

Point #1 - low puddled areas in the parking lot.
Point #2 - moving dump truck originating from road work across the street. (See also Aero-Data's Exhibit on the Dump Truck activities 6/24/1963)

Exhibit 13 – 1966 Aerial Photo of Subject Area
Several features were incorrectly identified as sumps.

Point #1 - shadow of a structure.
Point #2 - artifact on the film (dust from the duplication process). It is only visible on one frame but is not on the sequential photo of the same date.
Point #3 - structure casting a shadow.
Point #4 - small square features could also be associated with an underground pipeline.

Exhibit 15 – 1983 Aerial Photo of Subject Area
Point #1 - CHT identified all of the semi-trailers as tankers. The resolution of this photo date is too low to identify the semi-trailers as tankers. In review of the frames stereoscopically, I have concluded that all of them are more likely box trailers.

Aero-Data Exhibit A - 6/24/1963 Dump Truck Activities

Activities consistent with road construction, including excavation, equipment, workers and traffic cones, are visible on the eastern side of Norwalk Boulevard. In reviewing the two sequential frames of photography, the dump truck visible on the Site appears to have originated from these activities and is using the site as a turn-around to re-enter Norwalk Boulevard traffic.

On frame 55, a worker (probable flag man) is visible in the road stopping traffic to allow a filled dump truck to cross the flow of traffic to the Site. On frame 56, the worker is no longer in the road and the dump truck is visible on the Site.

A second, empty dump truck and earth moving equipment (front end loader) adjacent to it is visible on the shoulder in both frames. It appears the dump truck will be filled by soil excavated from the eastern side of the road by the equipment in motion adjacent to it.

Aero-Data Exhibits B to G - Structure on Southwest corner of CHT Property

I was informed that CHT claims its hazardous waste has always been stored in the southwest corner of the CHT property. I was requested to review the photos to determine when a storage area was present and the year in which it was first identified.

The southwest corner of the CHT property shows a new covered structure constructed sometime between 1/9/1987 and 1/27/1989. Drums are visible on a slab adjacent to the covered structure on 1/4/1990.

Prior to the installation of this covered structure, a large mounded pile was visible in the location on 1975, 1976, and 1978 photos. There was no evidence of drum storage in the southwest area prior to 1/9/1987.

Methods and Materials

Aerial research and acquisition

The historical aerial photography study of the Site began with research for available photo coverage from public vendors. The photo coverage was then obtained in the form of frames consisting of vertical stereoscopic photography in a 9”x9” format and/or orthophotos.

Initial review and date verification

The frame or scan for each photomission (date of photography) was reviewed and examined for proper geographic coverage of the Site and filed into separate folders for each photomission.

Setting up the stereomodels

Two or more raster images for each stereo date of photography were then imported into a digital stereoplotter capable of providing stereoscopic viewing of the images at magnification levels ranging from 1x to 128x. The digital stereoplotter also allows precise mapping of significant environmental features, which are interpreted, in the 3-D imagery.

Ground control (UTM Zone 11N NAD83 Meters) for the initial stereomodel, 2/10/1985, was derived from the USGS Digital Quarter Quads (DOQQs) and quadrangle sheets (1:24,000 scale) of the area. Distant mapped features, hundreds of feet off the Site but which were also visible in the aerial photography, were measured (coordinates derived) from the USGS DOQQs and used as ground control points.

The coordinates of each selected visible ground control point were then entered into a control point file in the digital stereoplotter. The floating dot (measuring point) of the stereoplotter was carefully positioned by the operator with the hand controller, one point at a time, onto each of the visible control points and the coordinates of that point (from the ground control point file) were assigned to the image. When sufficient control points had been visited, accepted and the model checked for residual errors, the stereo model was then confirmed to be level, scaled and locked into the coordinate system. Thus, accurate measurements of heights and distances could now be made within the stereo model area by using the digital stereoplotter.

Other stereo models for the remaining dates of photography were then set up using ground control points derived from the initial stereo model. Thus, the stereo models for all dates accurately register one to another allowing the photo interpreter to detect and map changed areas.

Digital Ortho Production

Next, using the stereomodels and digital stereoplotter, a digital orthophoto was produced for each date of photography. A digital orthophoto is a two-dimensional raster image produced from one or more frames of vertical aerial photography such that most of the distortion caused by terrain displacement and tip and tilt in the mapping camera has been removed, and the resulting raster image is accurately registered to a chosen coordinate system. Thus, each digital orthophoto accurately depicts the roads, building bases and other significant features located within the Site in their true geographic position. However, distortion caused by the height of buildings was not removed. Thus, the bases of these structures are displayed in their true position, while their tops may be displaced.

Digital orthophotos are widely accepted today by both government and industry as an improvement over the base maps and photomosaics previously used to show the locations of features within a geographic area. Digital orthophotos have the accuracy of a stereoplotter or land survey produced map with the resolution of a photograph.

Photointerpretation

Photointerpretation of the Site was conducted primarily on the digital stereoplotter using the same digital stereo models used to produce the digital orthophotos. The digital stereoplotter allows me to view the Site in 3-D on a stereo computer monitor or large computer projection screen, normally at magnification factors ranging from 8X to 32X while identifying and mapping the outlines of features.

When necessary to map very small features, I could zoom to magnification factors as high as 128X. Zoom settings greater than 32X generally do not yield more detail, but they do help in carefully mapping small features.

The interpretation done with the digital stereoplotter captured all features in their true position. Stereo models for different dates were viewed and rapidly toggled back and forth on the stereo display to facilitate the detection of changes that occurred to the Site over time. Each class of significant features mapped was recorded on a separate layer and color-coded. The vector files and images were then exported from the digital stereo plotter to a computer for further use. The digital stereoplotter (soft copy) when used in this manner is an extremely powerful photointerpretation tool. I understand that soft copy was originally developed for the military for photointerpretation purposes. Current development of the technology is ongoing. The cost of development is supported by various military and intelligence gathering organizations, NASA and conventional mapping companies like my own.

GIS

The digital orthophotos with the interpretation overlays were next imported into ArcGIS. ArcGIS is a very popular geographic information system (GIS) produced by ESRI and sold throughout the world. For the purposes of this report, the interpreted images will be referred to as "mapped images".

The interpreted images and registered maps located in the interpretations section of this report contain specific information and opinions which must be viewed by the reader to fully understand this report. These opinions supplement the textual opinions identified in my report. The mapped images (Attachment B) constitute the primary source of information in this report. They were prepared so that they may be displayed using computer generated prints or a computer projection system. The GIS provides a wide range of capabilities such as zooming, turning themes (layers) on and off and measuring distances.

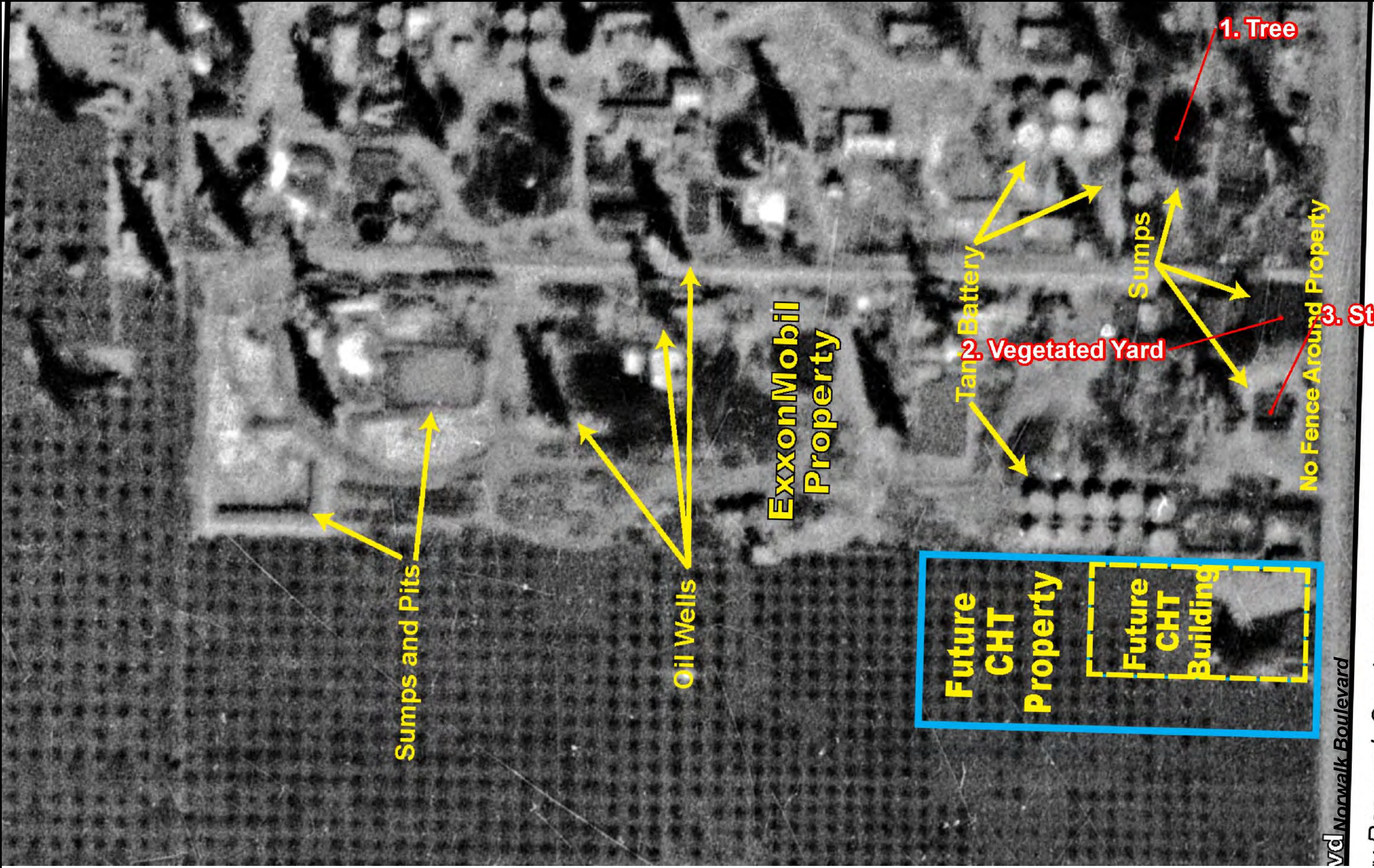
Additional Aerials Relied Upon

Attachment A

Date	Source	Flight/Roll Number	Frame	Ratio
1928	UCSB	c-300	k-352 & k-353	1:18,000
4/28/1938	UCSB	c-5147	6 & 7	1:3,600
1/1/1945	UCSB	c-9250	97 & 98	1:9,600
11/4/1952	UCSB	c-18060	1-1 & 1-2	1:7,200
6/15/1959	UCSB	c-23575	Jan-34	1:4,800
6/24/1963	UCSB	pai-sfs-63	216v-55 & 216v-56	1:4,800
7/25/1966	UCSB	tg-2189	11 & 12	1:6,000
1/1/1976	UCSB	tg-3617	5-3 & 5-4	1:7,200
8/24/1980	USDA	usda-firescope	780-66 & 780-67	1:40,000
4/14/1983	UCSB	ami-la-83	11658 & 11659	1:36,000
5/31/1994	NAPP	napp-2c	6858-105 & 6858-106	1:40,000
3/11/1998		eag-la-98	706	1:42,000
2/2/2000		eag-la-00	707	1:42,000

Attachment B

Aero-Data Commentary on CHT's Interpretations by Exhibit



y Research Service, Map & Imagery Laboratory, UC Santa Barbara Library

Aero-Data Comments on
Exhibit 4
1928 Aerial Photo of Subject Area

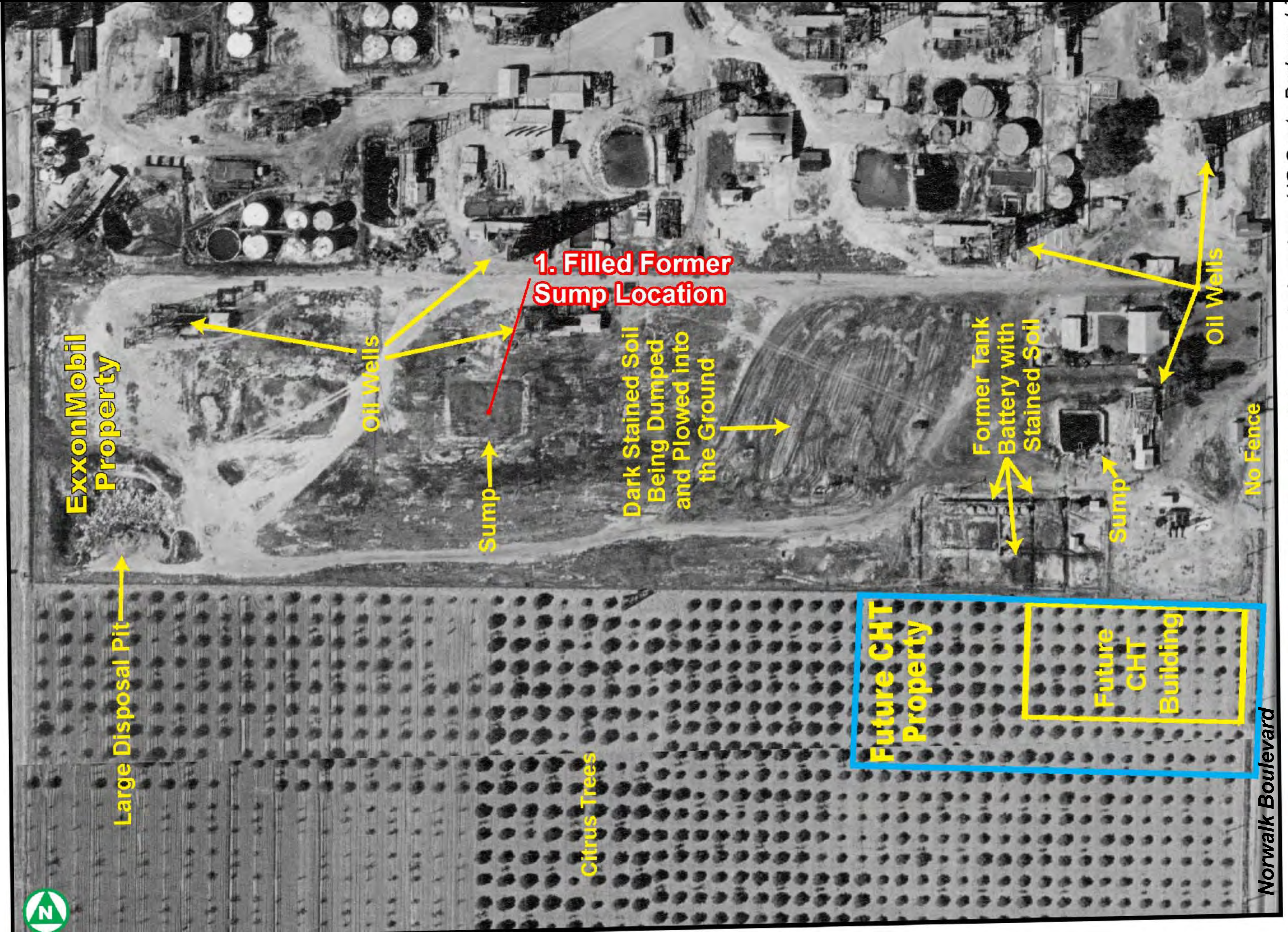
Aero-Data Comments in Red Numbered Text

N
W E
S

100 0 100 Feet

AERO-DATA CORP.
ENVIRONMENTAL
REMOTE SENSING CONSULTING SERVICES
AERIAL PHOTO ACQUISITION
INTERPRETATION and MAPPING

Exhibit 6 - 1938 Aerial Photo of Subject Area



Source: *Aerial Imagery Research Service, Map & Imagery Laboratory, UC Santa Barbara Li*

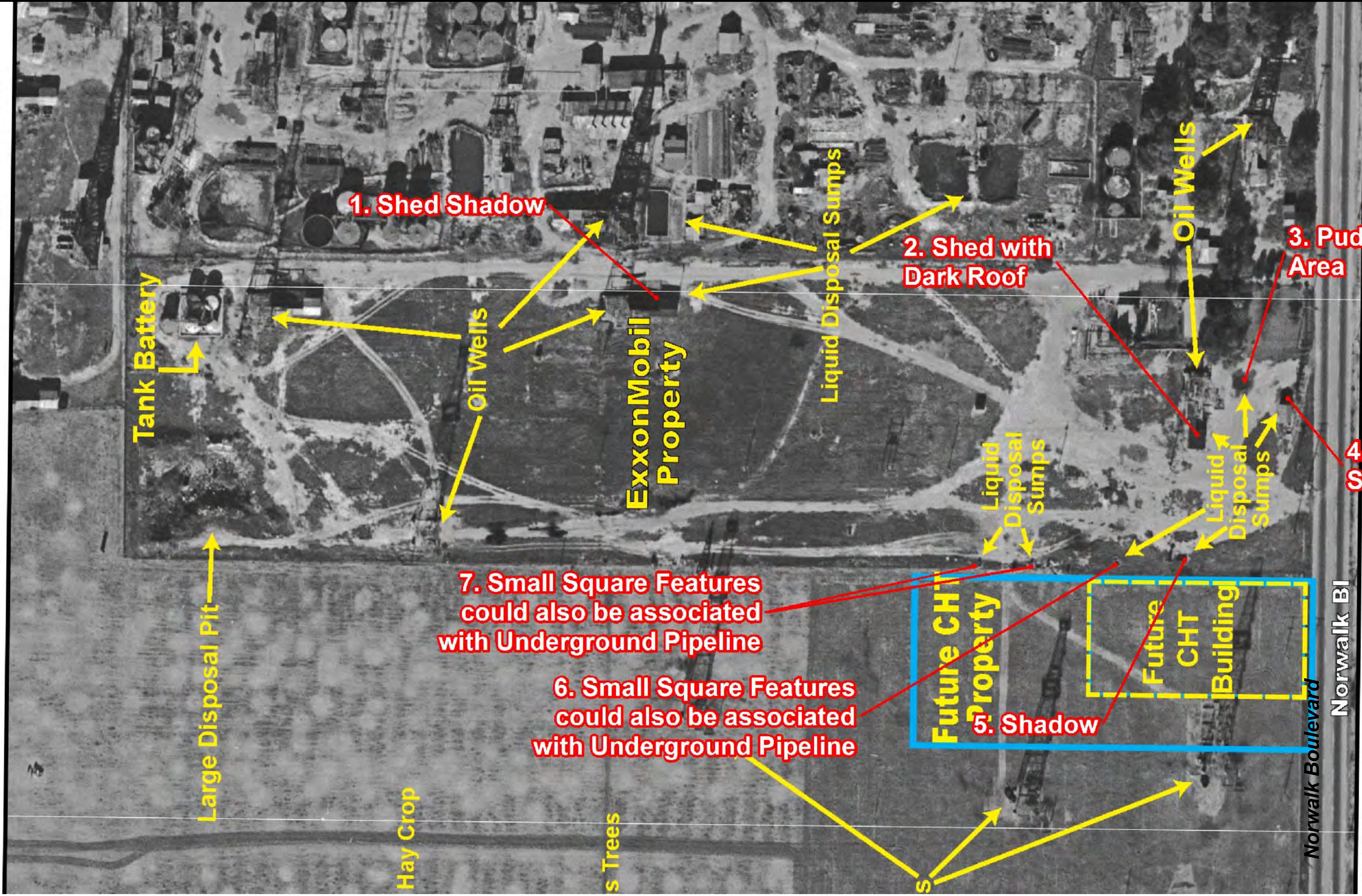
Aero-Data Comments on
Exhibit 6
1938 Aerial Photo of Subject Area

Aero-Data Comments in Red Numbered Text

100 0 100 Feet

AERO-DATA CORP.
ENVIRONMENTAL
REMOTE SENSING CONSULTING SERVICES
AERIAL PHOTO ACQUISITION
INTERPRETATION and MAPPING

Exhibit 7 - 1945 Aerial Photo of Subject Area



: Aerial Imagery Research Service, Map Imagery Laboratory, C Santa Barbara Libra

Aero-Data Comments on
Exhibit 7
1945 Aerial Photo of Subject Area

Aero-Data Comments in Red Numbered Text

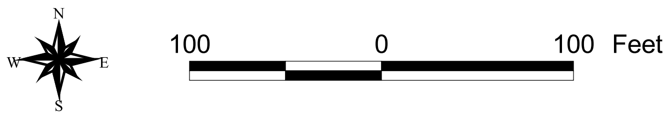
N W E S

100 0 100 Feet

AERO-DATA CORP.
ENVIRONMENTAL
REMOTE SENSING CONSULTING SERVICES
AERIAL PHOTO ACQUISITION
INTERPRETATION and MAPPING

Exhibit 8 - Blow-up of the 1945 Aerial Photo

Source: Aerial Imagery Research Service, Map & Imagery La ry, UC Santa Ba Lib

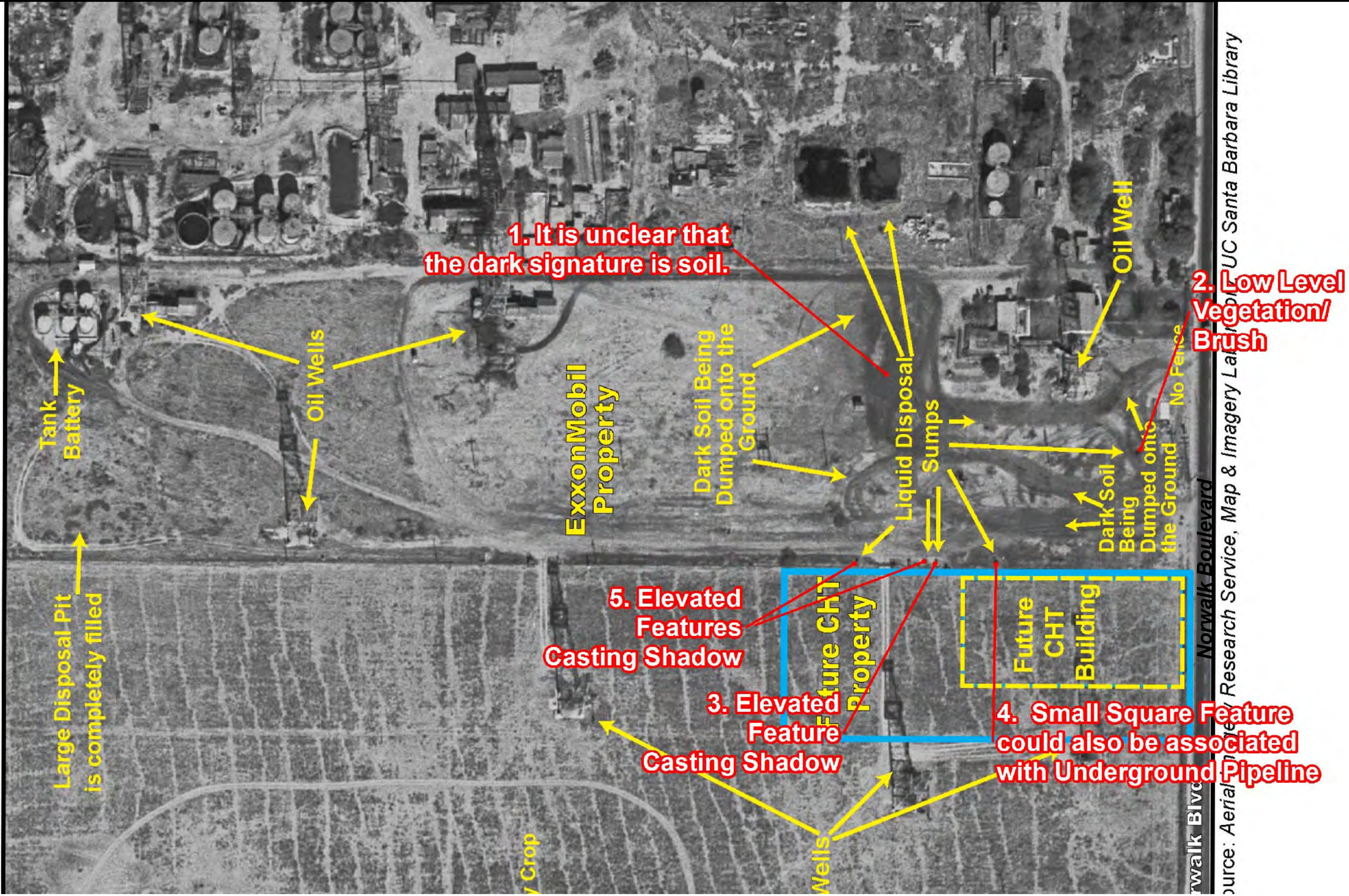


Aero-Data Comments on
Exhibit 8
Blow-up of the 1945 Aerial Photo

Aero-Data Comments in Red Numbered Text

AERO-DATA CORP.
ENVIRONMENTAL
REMOTE SENSING CONSULTING SERVICES
AERIAL PHOTO ACQUISITION
INTERPRETATION and MAPPING

Exhibit 9 - 1952 Aerial Photo of Subject Area



1. It is unclear that the dark signature is soil.

2. Low Level Vegetation/ Brush

3. Elevated Feature Casting Shadow

4. Small Square Feature could also be associated with Underground Pipeline

5. Elevated Features Casting Shadow

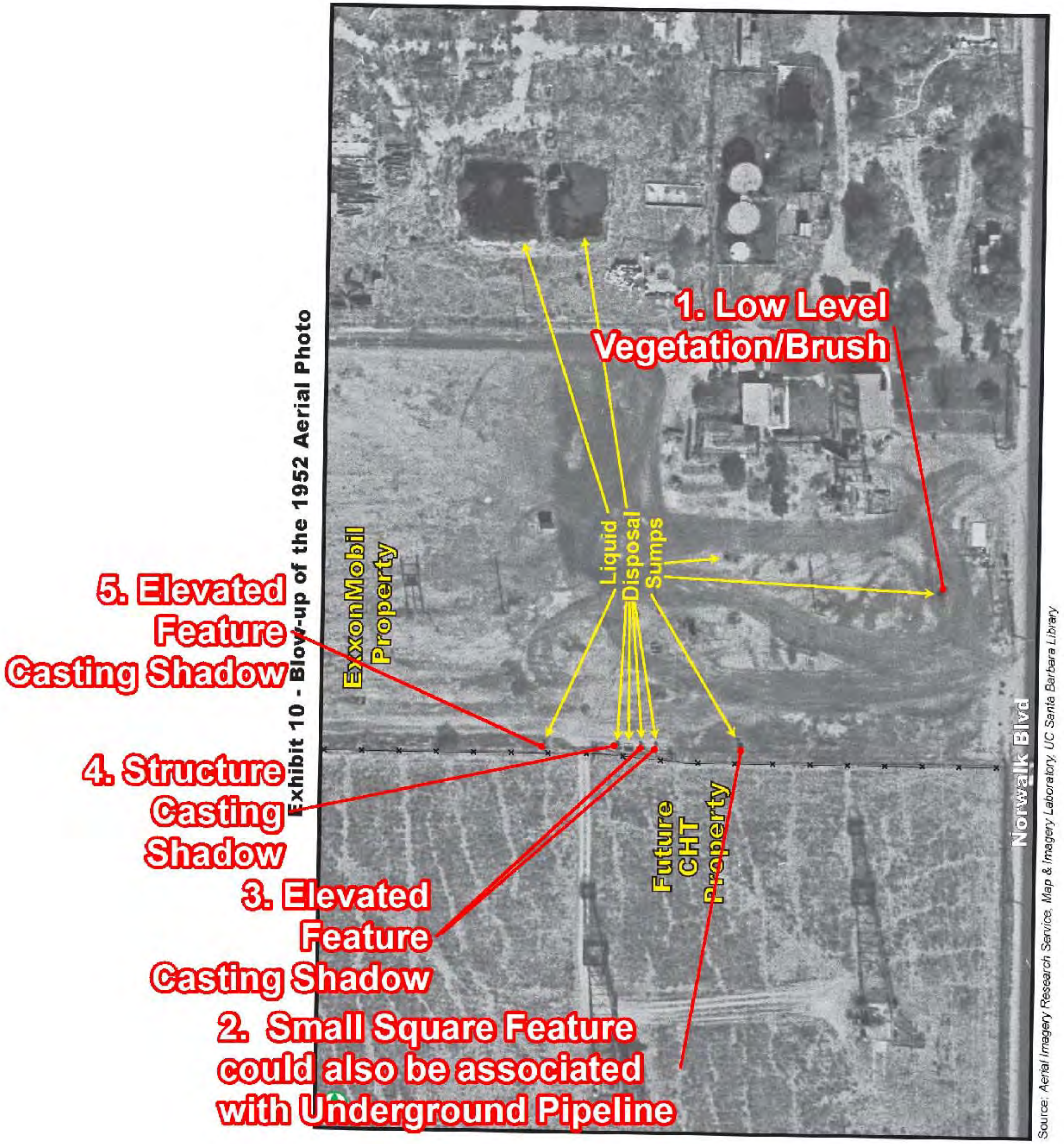
Aero-Data Comments on
Exhibit 9
1952 Aerial Photo of Subject Area

Aero-Data Comments in Red Numbered Text

100 0 100 Feet

AERO-DATA CORP.
ENVIRONMENTAL
REMOTE SENSING CONSULTING SERVICES
AERIAL PHOTO ACQUISITION
INTERPRETATION and MAPPING

Exhibit 10 - Blow-up of the 1952 Aerial Photo



1. Low Level Vegetation/Brush

2. Small Square Feature could also be associated with Underground Pipeline

3. Elevated Feature Casting Shadow

4. Structure Casting Shadow

5. Elevated Feature Casting Shadow

Source: Aerial Imagery Research Service, Map & Imagery Laboratory, UC Santa Barbara Library

Aero-Data Comments on
Exhibit 10
Blow-up of the 1952 Aerial Photo

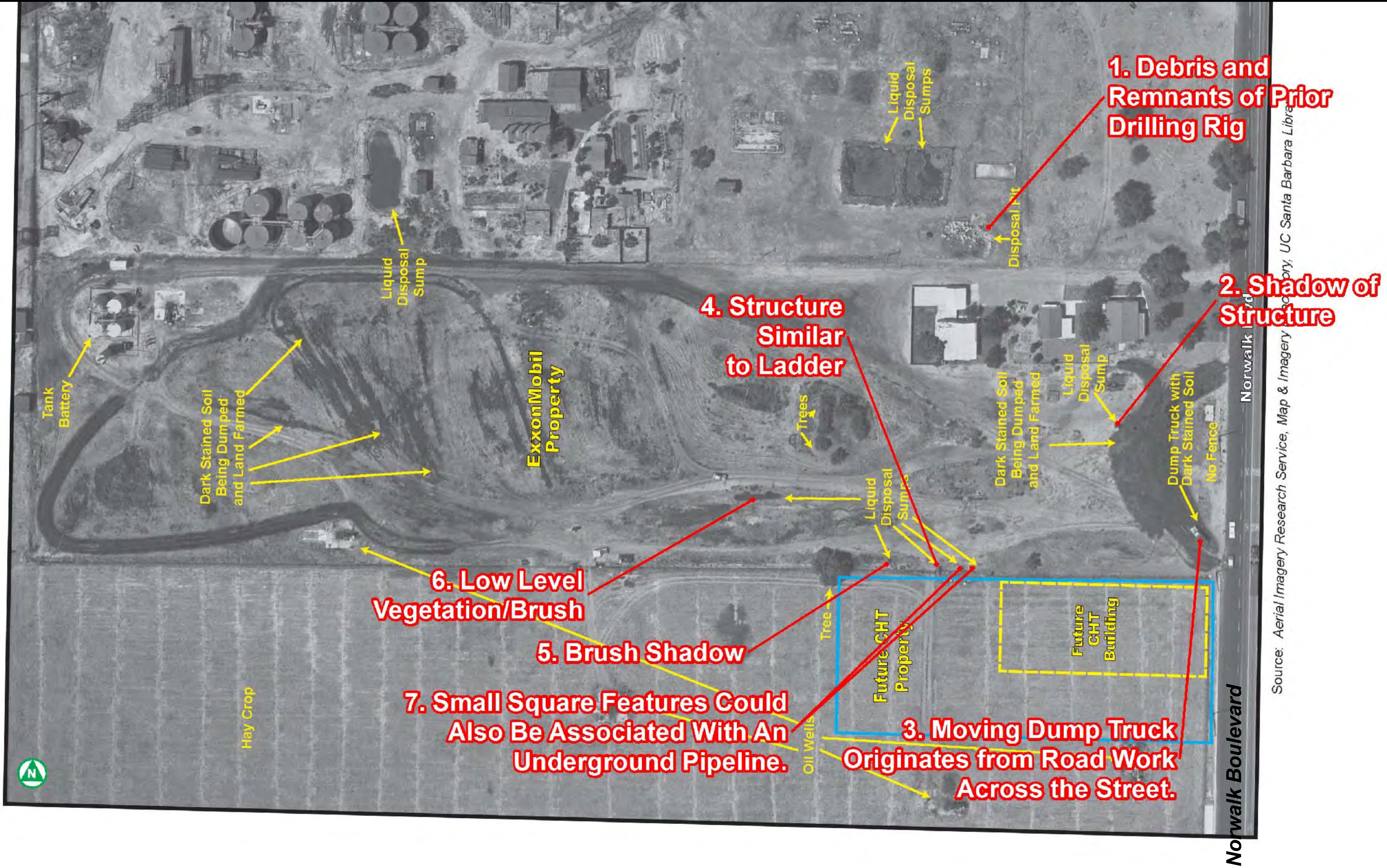
Aero-Data Comments in Red Numbered Text

N W E S

100 0 100 Feet

AERO-DATA CORP.
ENVIRONMENTAL
REMOTE SENSING CONSULTING SERVICES
AERIAL PHOTO ACQUISITION
INTERPRETATION and MAPPING

Exhibit 11 - 1963 Aerial Photo of Subject Area



Source: *Aerial Imagery Research Service, Map & Imagery Laboratory, UC Santa Barbara Libra*

Aero-Data Comments on
Exhibit 11
1963 Aerial Photo of Subject Area

Aero-Data Comments in Red Numbered Text

N W E S

100 0 100 Feet

AERO-DATA CORP.
ENVIRONMENTAL
REMOTE SENSING CONSULTING SERVICES
AERIAL PHOTO ACQUISITION
INTERPRETATION and MAPPING

1. Puddles/Low Areas

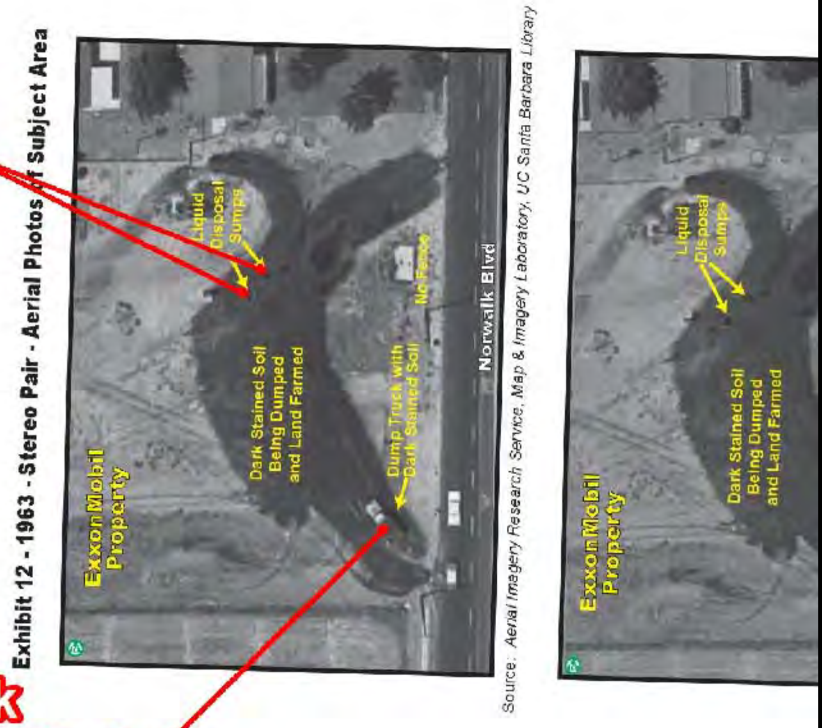


Exhibit 12 - 1963 - Stereo Pair - Aerial Photos of Subject Area

Source: Aerial Imagery Research Service, Map & Imagery Laboratory, UC Santa Barbara Library

2. Moving Dump Truck Originates from Road Work Across the Street.

Norwalk Boulevard

Aero-Data Comments on
Exhibit 12
1963 - Stereo Pair - Aerial Photos of Subject Area

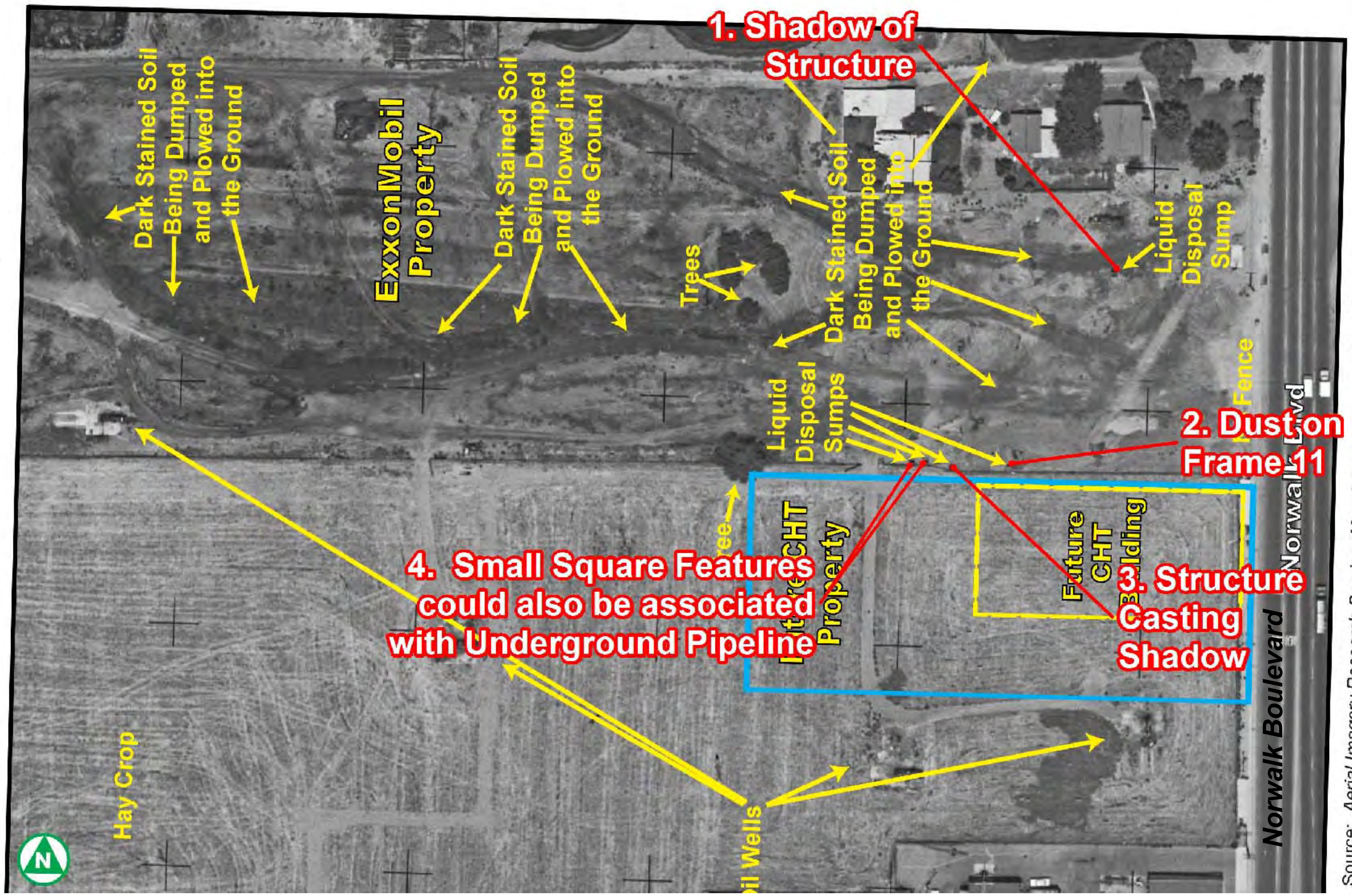
Aero-Data Comments in Red Numbered Text

N W E S

100 0 100 Feet

AERO-DATA CORP.
ENVIRONMENTAL
REMOTE SENSING CONSULTING SERVICES
AERIAL PHOTO ACQUISITION
INTERPRETATION and MAPPING

Exhibit 13 - 1966 Aerial Photo of Subject Area



Source: *Aerial Imagery Research Service, Map & Imagery Laboratory, UC Santa Barbara Library*

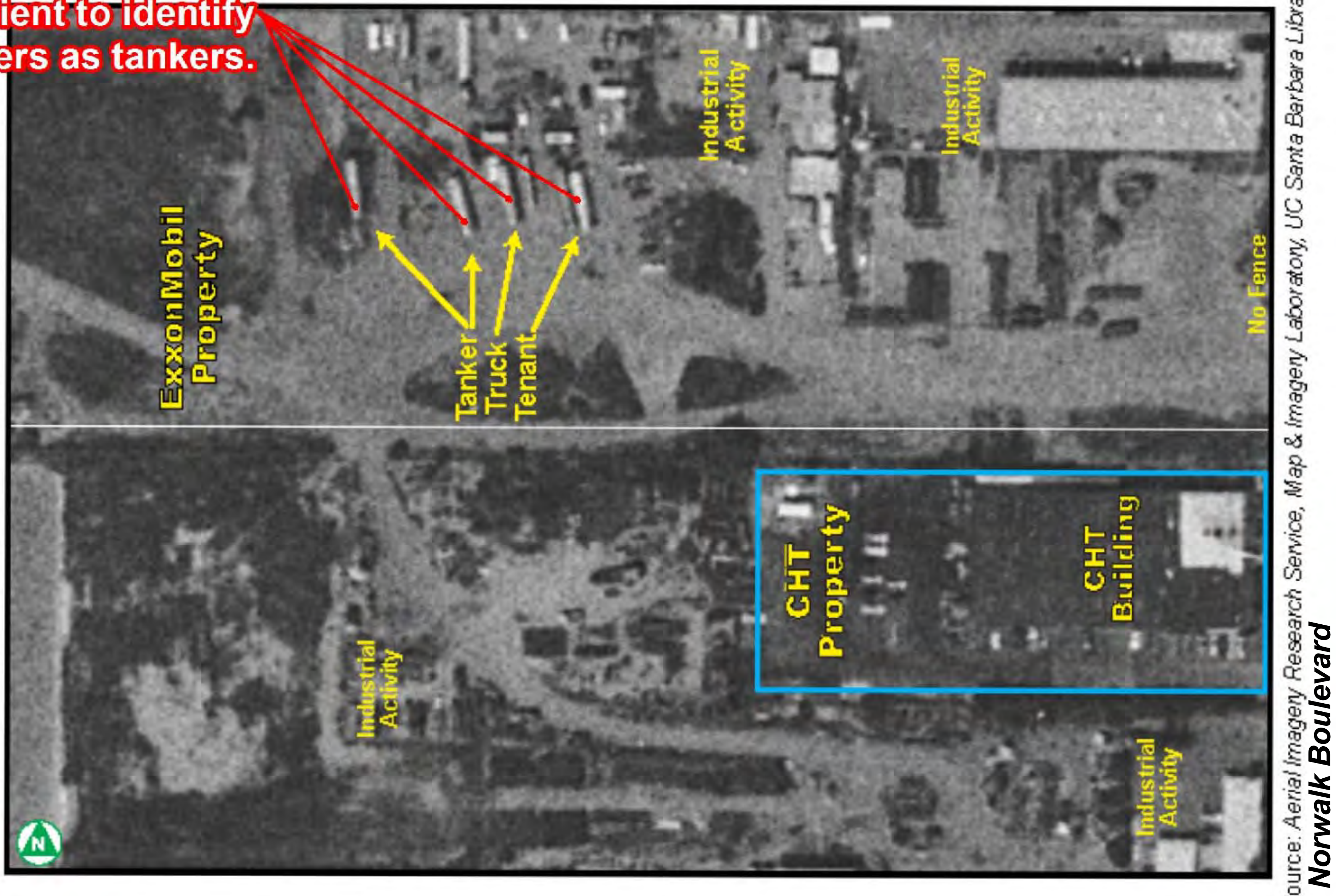
Aero-Data Comments on
Exhibit 13
1966 Aerial Photo of Subject Area

Aero-Data Comments in Red Numbered Text

AERO-DATA CORP.
ENVIRONMENTAL
REMOTE SENSING CONSULTING SERVICES
AERIAL PHOTO ACQUISITION
INTERPRETATION and MAPPING

1. Resolution of imagery insufficient to identify trailers as tankers.

Exhibit 15 - 1983 Aerial Photo of Subject Area



Source: *Aerial Imagery Research Service, Map & Imagery Laboratory, UC Santa Barbara Library*

Aero-Data Comments on
Exhibit 15
1983 Aerial Photo of Subject Area

Aero-Data Comments in Red Numbered Text

100 0 100 Feet

AERO-DATA CORP.
ENVIRONMENTAL
REMOTE SENSING CONSULTING SERVICES
AERIAL PHOTO ACQUISITION
INTERPRETATION and MAPPING

6/24/1963 Dump Truck Activities

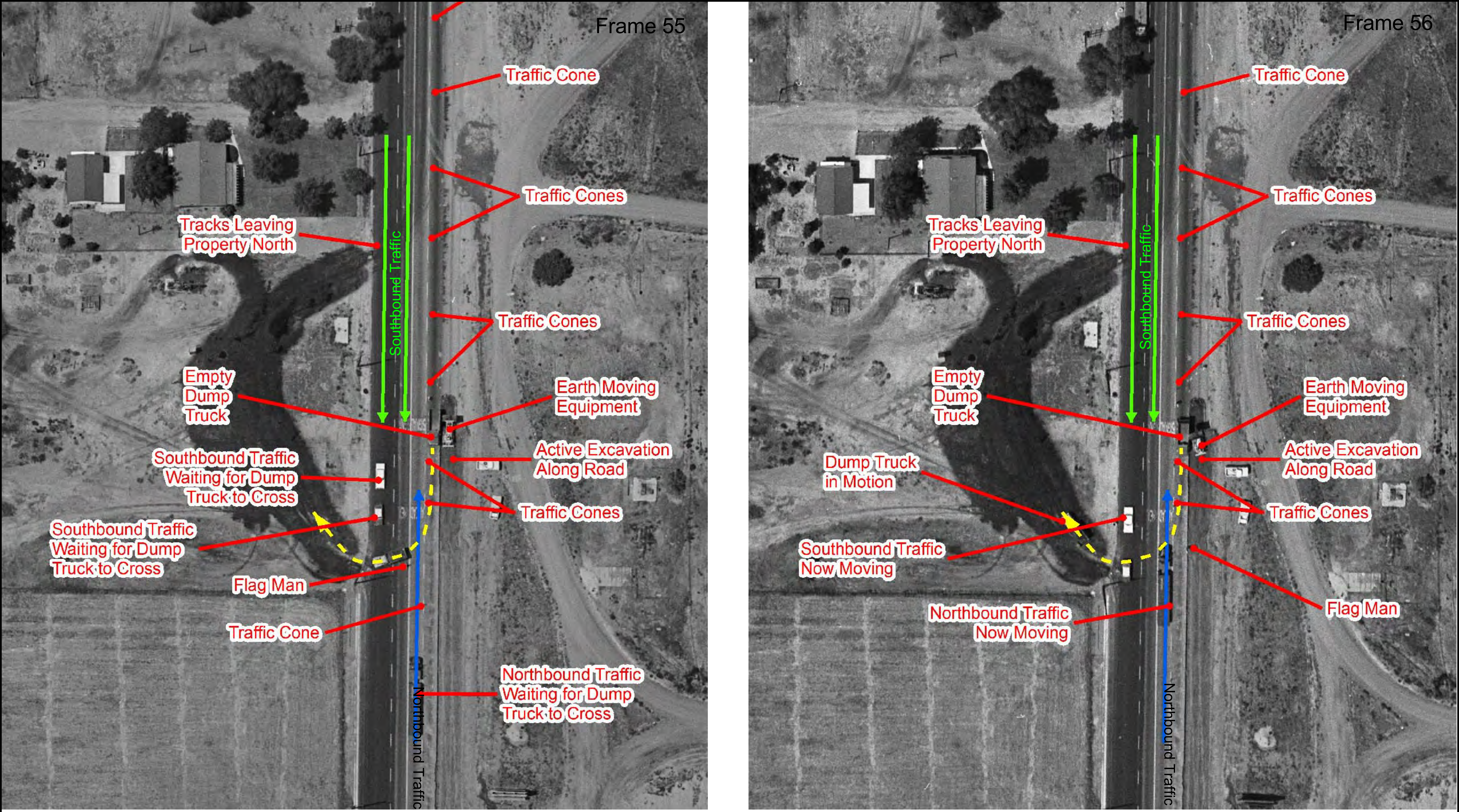


EXHIBIT A
Aero-Data Interpretations on
6/24/1963 Stereo Pair of Subject Area
Showing Path of Dumptruck

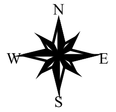
N
W E
S

60 0 60 Feet

AERO-DATA CORP.
ENVIRONMENTAL
REMOTE SENSING CONSULTING SERVICES
AERIAL PHOTO ACQUISITION
INTERPRETATION and MAPPING

Structure on Southwest corner of CHT Property

Exhibit B - 2/17/1975
CHT Property Observations
Photo Source: Continental



AERO-DATA CORP.
ENVIRONMENTAL
REMOTE SENSING CONSULTING SERVICES
AERIAL PHOTO ACQUISITION
INTERPRETATION and MAPPING

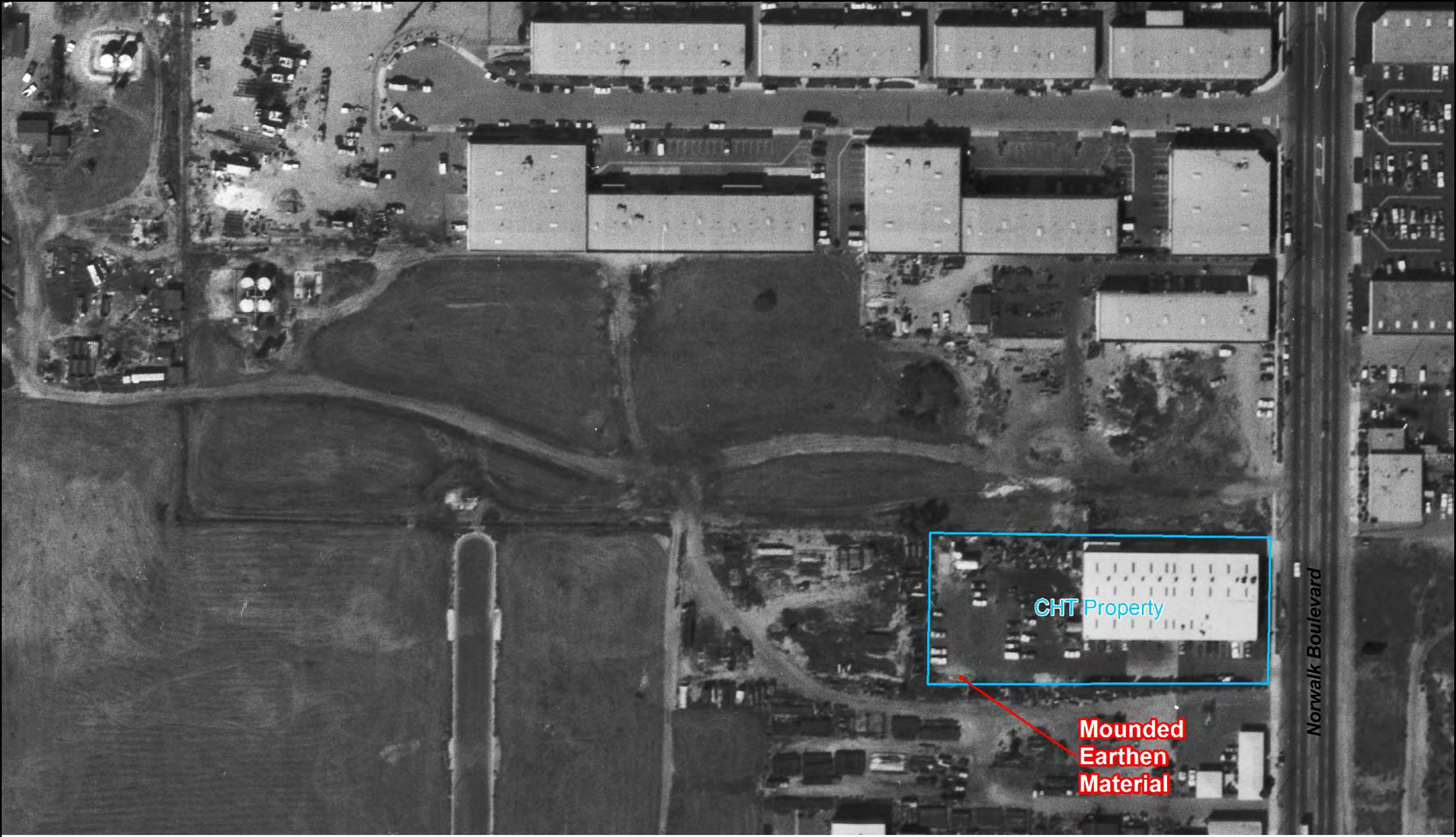


Exhibit C - 1976
CHT Property Observations
Photo Source: UCSB

AERO-DATA CORP.
ENVIRONMENTAL
REMOTE SENSING CONSULTING SERVICES
AERIAL PHOTO ACQUISITION
INTERPRETATION and MAPPING

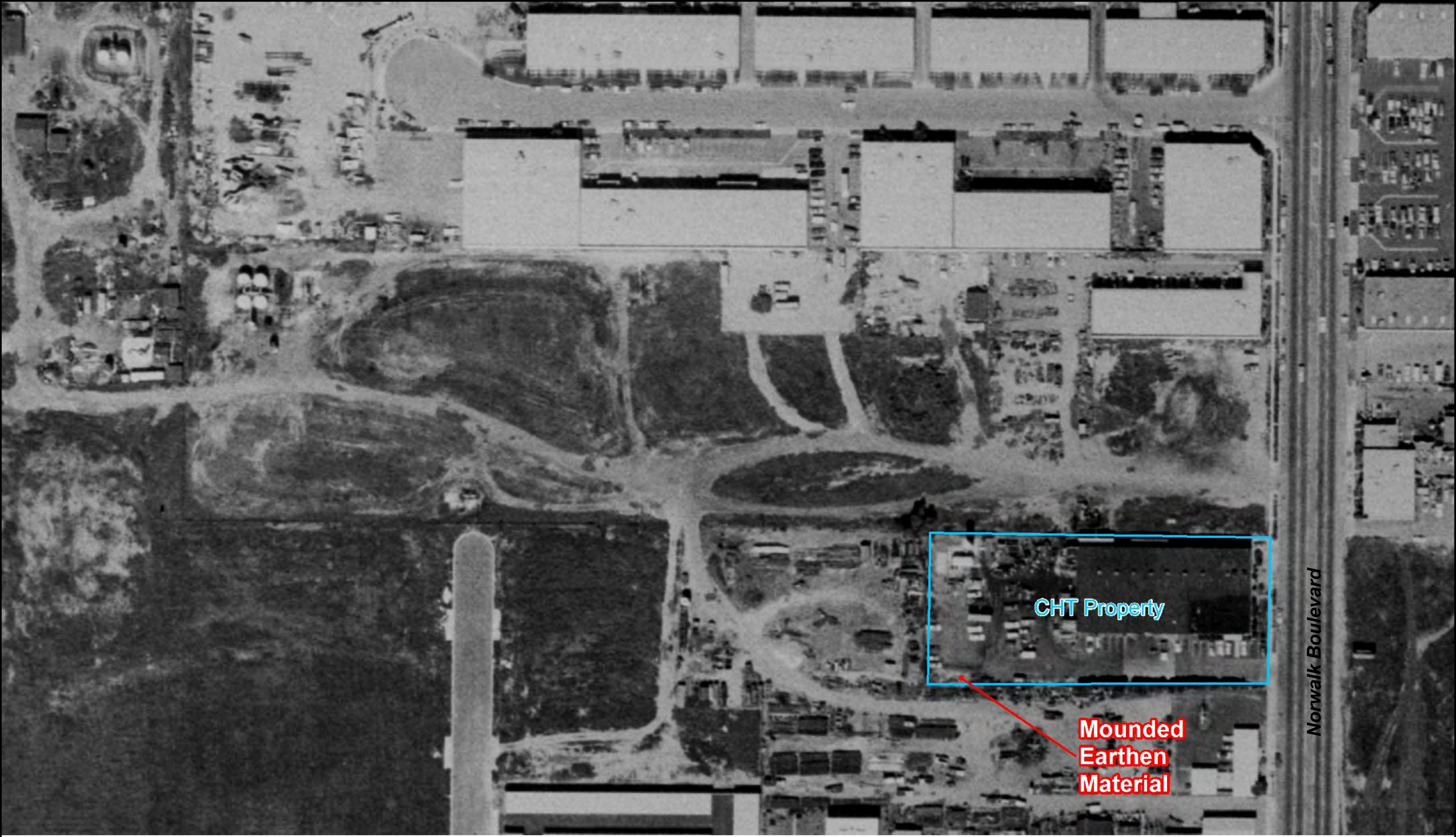


Exhibit D - 3/16/1978
CHT Property Observations

Photo Source: Continental

AERO-DATA CORP.
ENVIRONMENTAL
REMOTE SENSING CONSULTING SERVICES
AERIAL PHOTO ACQUISITION
INTERPRETATION and MAPPING

Exhibit E - 1/9/1987
CHT Property Observations

Photo Source: Continental

AERO-DATA CORP.
ENVIRONMENTAL
REMOTE SENSING CONSULTING SERVICES
AERIAL PHOTO ACQUISITION
INTERPRETATION and MAPPING

Exhibit F - 1/27/1989
CHT Property Observations

Photo Source: Continental

AERO-DATA CORP.
ENVIRONMENTAL
REMOTE SENSING CONSULTING SERVICES
AERIAL PHOTO ACQUISITION
INTERPRETATION and MAPPING

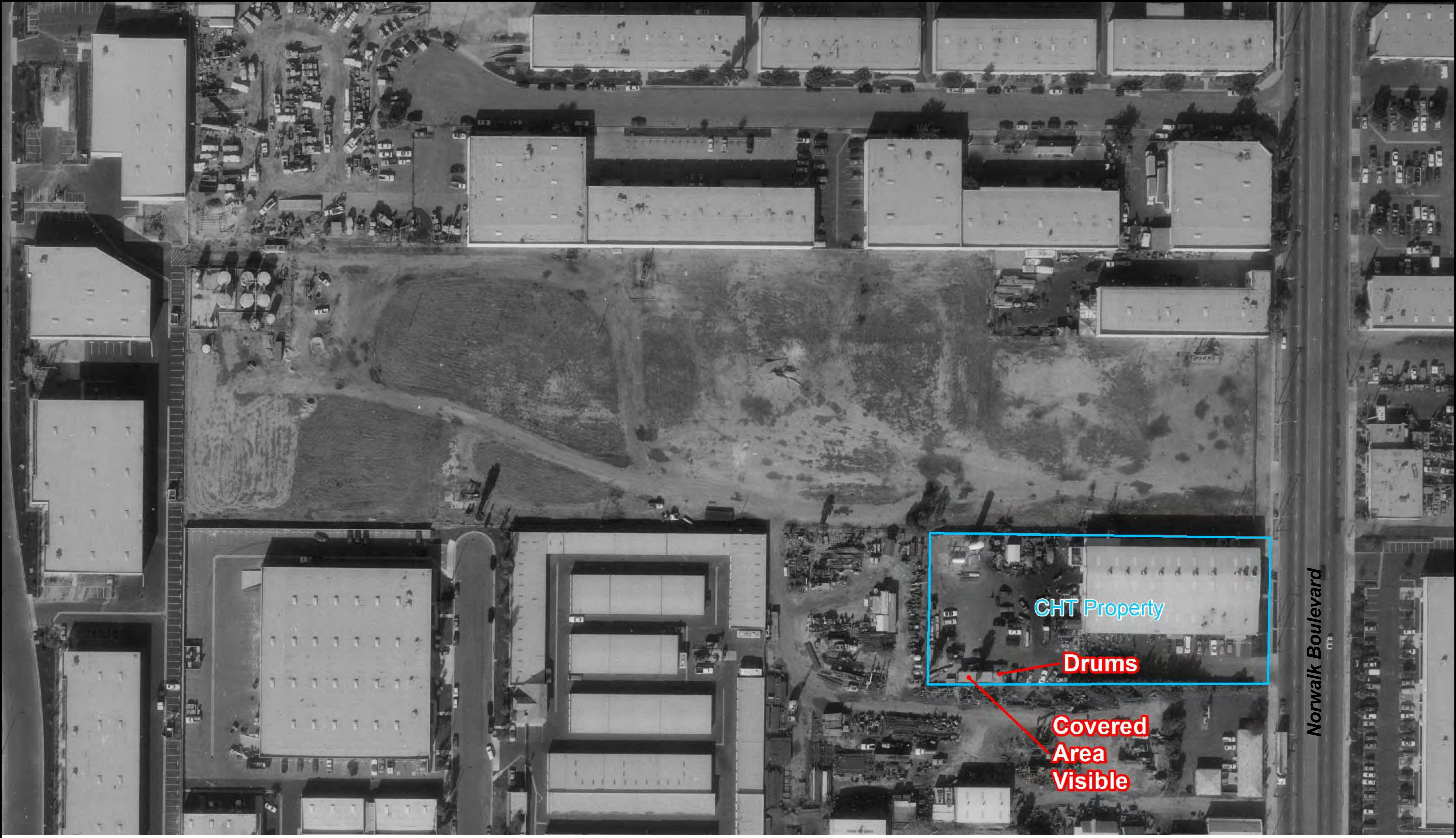


Exhibit G - 1/4/1990
CHT Property Observations
Photo Source: Continental

AERO-DATA CORP.
ENVIRONMENTAL
REMOTE SENSING CONSULTING SERVICES
AERIAL PHOTO ACQUISITION
INTERPRETATION and MAPPING

APPENDIX C

TRUCKING LOGS FROM TRC'S
SITE CLOSURE REPORT AND RISK ASSESSMENT REPORT,
DATED NOVEMBER 28, 2000

JALK FEE TRUCKING RECORD

00-265

TRC FIELD REP: Craig Mitchell

PAGE 1 OF 2

DATE	TIME IN	IMPORT	TRUCK NUMBER	TRAILER NUMBER	SOIL SOURCE	MANIFEST NUMBER	TIME OUT
11-10-00	0700	Y [✓ N]	J&J#1	1UP4156	SP-49/M4/M3	00003	0807
11-10-00	0700	Y [✓ N]	JT#6	1WR1834	SP-49/M4/M3	00002	0806
11-10-00	0700	Y [✓ N]	J&I#3	1WB2189	M3/SP49	00004	0809
11-10-00	0700	Y [✓ N]	JFR988	1WB 2157	SP49/M3	00005	0811
11-10-00	0800	Y [✓ N]	JT#LA003	1UN 4505	SP-49/M3	00006	0822
11-10-00	0920	Y [✓ N]	JT#6	1WR 1834	SP-49/ M3	00007	0932
11-10-00	0920	Y [✓ N]	JFR#988	1WB2189	SP-49/M3	00008	0938
11-10-00	0934	Y [✓ N]	J&I#3	1WB2189	SP-49/M3	00009	0949
11-10-00	0941	Y [✓ N]	J&I#1	1UP4156	SP-49/M3	00010	1001
11-10-00	0949	Y [✓ N]	JT#LA003	1UN 4505	SP-49 /M3/S7	00011	1013
11-10-00	1035	Y [✓ N]	J&I#88	1UN9424	SP-49/S5/S7/S14	00012	1041
11-10-00	1054	Y [✓ N]	JT#6	1WR 1834	SP49/S5/S7/S14	00013	1106
11-10-00	1056	Y [✓ N]	JFR988	1WB2157	SP49/S5/S7/S14	00014	1117
11-10-00	1103	Y [✓ N]	J&I#3	1WB2189	SP49 /M1	00015	1134
11-10-00	1117	Y [✓ N]	J&J#1	1UP 4156	SP49/M1	00016	1143
11-10-00	1135	Y [✓ N]	JT#LA003	1UN 4505	SP49/M1	00017	1152
11-10-00	1157	Y [✓ N]	J&I#88	1UN 9424	SP49/M7	00018	1206
11-10-00	1220	Y [✓ N]	JT#6	1WR 1834	SP49/M7	00019	1229

JALK FEE TRUCKING RECORD

00-265

TRC FIELD REP: CRAIG MITCHELL

PAGE 2 OF 2

DATE	TIME IN	IMPORT	TRUCK NUMBER	TRAILER NUMBER	SOIL SOURCE	MANIFEST NUMBER	TIME OUT
11-10-00	1222	Y [✓ N]	JFR#988	1WB2157	SP49 /M7	00020	1238
11-10-00	1230	Y [✓ N]	J+I#3	1WB2189	SP49 /M7/S15	00021	1303
11-10-00	1241	Y [✓ N]	J+I#1	1UP4156	SP49/S15/S11/M8	00022	1315
11-10-00	1313	Y [✓ N]	JT#LA003	1UN4505	SP49/M8	00023	1339
11-10-00	1335	Y [✓ N]	J+I#88	1UN9424	SP49 /M8	00024	1349
11-10-00	1350	Y [✓ N]	JT#6	1WR1836	SP49 /M8	00025	1402
11-10-00	1354	Y [✓ N]	JFR#988	1WB2157	SP49 /M8/S12/SA	00026	1423
11-10-00	1402	Y [✓ N]	J+I#3	1WB2189	SP49/S12/S19	00027	1455
11-10-00	1422	Y [✓ N]	J+I#1	1UP4156	SP49/S12/S19	00028	1455
		Y N					
		Y N					
		Y N					
		Y N					
		Y N					
		Y N					
		Y N					
		Y N					
		Y N					

JALK FEE TRUCKING RECORD

TRC FIELD REP: CRAIG MITCHELL

PAGE 1 OF

DATE	TIME IN	IMPORT	TRUCK NUMBER	TRAILER NUMBER	SOIL SOURCE	MANIFEST NUMBER	TIME OUT
11-13-00	0630	Y [✓ N]	R+R #60	1VZ 5756	SP-49/S12/S19	00029	0715
11-13-00	0630	Y [✓ N]	OR #411	1VR9067	SP-49/S12/S19	00030	0731
11-13-00	0630	Y [✓ N]	MUNOZ #40	1UF2200	SP-49/S12/S19	00031	0744
11-13-00	0640	Y [✓ N]	AFL #145802	1UZ 6307	SP-49/S12/S49	00032	0755
11-13-00	0903	Y [✓ N]	R+R #60	1VZ 5756	SP-49/S12/S49	00033	0919
11-13-00	0911	Y [✓ N]	OR #411	1VR 9067	SP-49/M9	00034	0933
11-13-00	0927	Y [✓ N]	AFL #145802	1UZ 6307	SP-49/M9	00035	0947
11-13-00	0947	[✓ Y] N	MUNOZ #40	1UF 2200	SP-49/M9	00036	0959
11-13-00	1045	[✓ Y] N	R+R #60	1VZ 5756	SP-49 /M9	00037	1111
11-13-00	1030	[✓ Y] N	OR #411	1VR 9067	SP-49/M9	00038	1145
11-13-00	1153	[✓ Y] N	AFL #145802	1UZ 6307	SP-49/M9	00039	1200
11-13-00	1158	[✓ Y] N	MUNOZ #40	1UF 2200	SP-49/M9	00040	1207
11-13-00	1305	[✓ Y] N	R+R #60	1VZ 5756	SP-49/M9	00041	1320
11-13-00	1319	[✓ Y] N	OR #411	1VR 9067	SP49 /M9	00042	1330
11-13-00	1330	[✓ Y] N	AFL #145802	1UZ 6307	SP-49 /M9	00043	1340
11-13-00	1340	[✓ Y] N	MUNOZ #40	1UF2200	SP-49/M9	00044	1400
		Y N					
		Y N					

JALK FEE TRUCKING RECORD

00-265

TRC FIELD REP: C. Mitchell

PAGE 1 OF ____

DATE	TIME IN	IMPORT	TRUCK NUMBER	TRAILER NUMBER	SOIL SOURCE	MANIFEST NUMBER	TIME OUT
11-14-00	0642	Y [✓ N]	LAVWA #14	1WE 7742	SP-49/M9	00045	0715
11-14-00	0655	Y [✓ N]	AT#31	1VG 3580	SP-49/M9	00046	0721
11-14-00	0655	Y [✓ N]	GEM#47	1VG 7735	SP-49/M-9	00047	0734
11-14-00	0853	[✓ Y] N	LEIVA#14	1WE7742	SP-49/M-9	00048	0915
11-14-00	0859	[✓ Y] N	AT#31	1VG3580	SP-49/M-9	00049	0926
11-14-00	0913	[✓ Y] N	GEM#47	1VG 775	SP49/M-9	00050	0952
11-14-00	1012	Y [✓ N]	LEIVA#14	1WE 7742	SP-49/M9	00051	1015
11-14-00	1030	Y [✓ N]	AT#31	1VG 3580	SP-49/M9	00052	1040
11-14-00	1100	Y [✓ N]	GEM#47	1VG7735	SP-49/M-9	00053	1113
11-14-00	1130	Y [✓ N]	LEIVA#14	1WE7742	SP-49/M-9	00054	1153
11-14-00	1150	Y [✓ N]	AT#31	1VG 3580	SP49/M9	00055	1205
11-14-00	1215	Y [✓ N]	GEM#47	1VG 7735	SP-49/M-9	00056	1225
11-14-00	1250	Y [✓ N]	LEIVA#14	1WE7742	SP-49/M-9	00057	1300
11-14-00	1300	Y [✓ N]	AT#31	1VG 3580	SP-49/M-9	00058	1320
11-14-00	1326	Y [✓ N]	GEM#47	1VG 7735	SP-49/M-9	00059	1350
11-14-00	1406	Y [✓ N]	LEIVA#14	1WE 7742	SP-49/M-9	00060	1420
11-14-00	1500	Y [✓ N]	GEM#47	1VG7735	SP-49/M-9	00061	
		Y N					

12

10%

JALK FEE TRUCKING RECORD

TRC FIELD REP: C. MITCHell

PAGE 1 OF ____

DATE	TIME IN	IMPORT	TRUCK NUMBER	TRAILER NUMBER	SOIL SOURCE	MANIFEST NUMBER	TIME OUT
11-15-00	0630	Y [✓ N]	JI#3	1WB2189	SP-49/M9	00063	0729
11-15-00	0605	Y [✓ N]	JT#6	1WR1834	SP-49/M9	00062	0719
11-15-00	0901	Y [✓ N]	JT#6	1WR1834	SP-49/M9	00064	0912
11-15-00	0906	Y [✓ N]	JI#3	1WB2189	SP-49/M-9	00065	0922
11-15-00	1018	Y [✓ N]	JT#6	1WR1834	SP-49/M-9	00066	1030
11-15-00	1029	Y [✓ N]	JI#3	1WB2189	SP-49/M-9	00067	1046
11-15-00	1200	Y [✓ N]	JI#3	1WB2189	SP-49/M-9	00068	1216
		Y N					
		Y N					
		Y N					
		Y N					
		Y N					
		Y N					
		Y N					
		Y N					
		Y N					
		Y N					
		Y N					

APPENDIX D

IMPORT AND COMPACTION RECORDS

ART Outbound Soil Log

Date 11-13-00

Page # 1

	TRUCK ID	COMPANY	LICENSE #	TIME IN	TIME OUT	JOB #	TONS	DISPOSITION
	400	MUNOS	9C09607	9:17	9:20	20001698	22	10807 Norwalk & Santa Fe Spring
2	60	R&R	9B36608	10:08	10:10	〃	〃	〃
3	411	R&R	9B32771	11:01	11:03	〃	〃	〃
4	R-700	R&R	9B66037	11:18	11:21	〃	〃	〃
5	400	MUNOS	9C09607	11:30	11:33	〃	〃	〃
6	60	R&R	9B36608	12:22	12:24	20001698	22	〃
7	411	R&R	9B32771	12:42	12:45	〃	〃	〃
8	700	R&R	9B66037	12:52	12:55	〃	〃	〃
9	400	MUNOS	9C09607	1:04	13:07	〃	〃	〃
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37								
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39								
40								

Name: Ricardo G.

198 tons

ART Outbound Soil Log

Date 11-14-00

Page # 1

	TRUCK ID	COMPANY	LICENSE #	TIME IN	TIME OUT	JOB #	TONS	DISPOSITI
1	14	LEIVA	9B68272	8:14	8:17	20001776	22	14607 Norwalk Santa Fe Spr
2	31	AMEZCUA	9B60404	8:24	8:27	20001228	22	"
3	G-47	GEM	9B26572	8:39	8:42	20001228	22	"
4								
5								
6								
7								
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40								

44 TONS

Name: Ricardo O.

APPENDIX D

KEANTAN LABORATORIES REPORT FROM TRC'S *SITE CLOSURE REPPORT AND RISK ASSESSMENT REPORT*, DATED NOVEMBER 28, 2000

KEANTAN LABORATORIES

www.keantanlabs.com
email: keantanlab@aol.com

November 3, 2000

TRC Environmental Solutions, Inc.
21 Technology Drive
Irvine, CA 92718

Attention: Mr. Jeff Hensel

Subject: Report/Laboratory Test Results
Project Name: Jalk Fee
Project No.: 00-0265
KTL Project No.: 00-056-003

Dear Mr. Hensel:

Enclosed are results of the laboratory testing program conducted on samples from the above referenced project. The testing performed for this program was conducted in general accordance with testing procedures as follows:

TYPE OF TEST	TEST PROCEDURE
Modified Proctor	ASTM D 1557

Attached herewith are Modified Compaction Test Results(2).

We appreciate the opportunity to provide testing services to TRC Environmental Solutions, Inc. If you have any questions regarding the test results, please contact us.

Very truly yours,
Keantan Laboratories

Kean Tan, PE
Principal

Encls.

720 North Valley Street, Suite B, Anaheim, CA 92801 • Tel.: (714) 535-7616 • Fax: (714) 535-7568

KEANTAN LABORATORIES

www.keantanlabs.com
email: keantanlab@aol.com

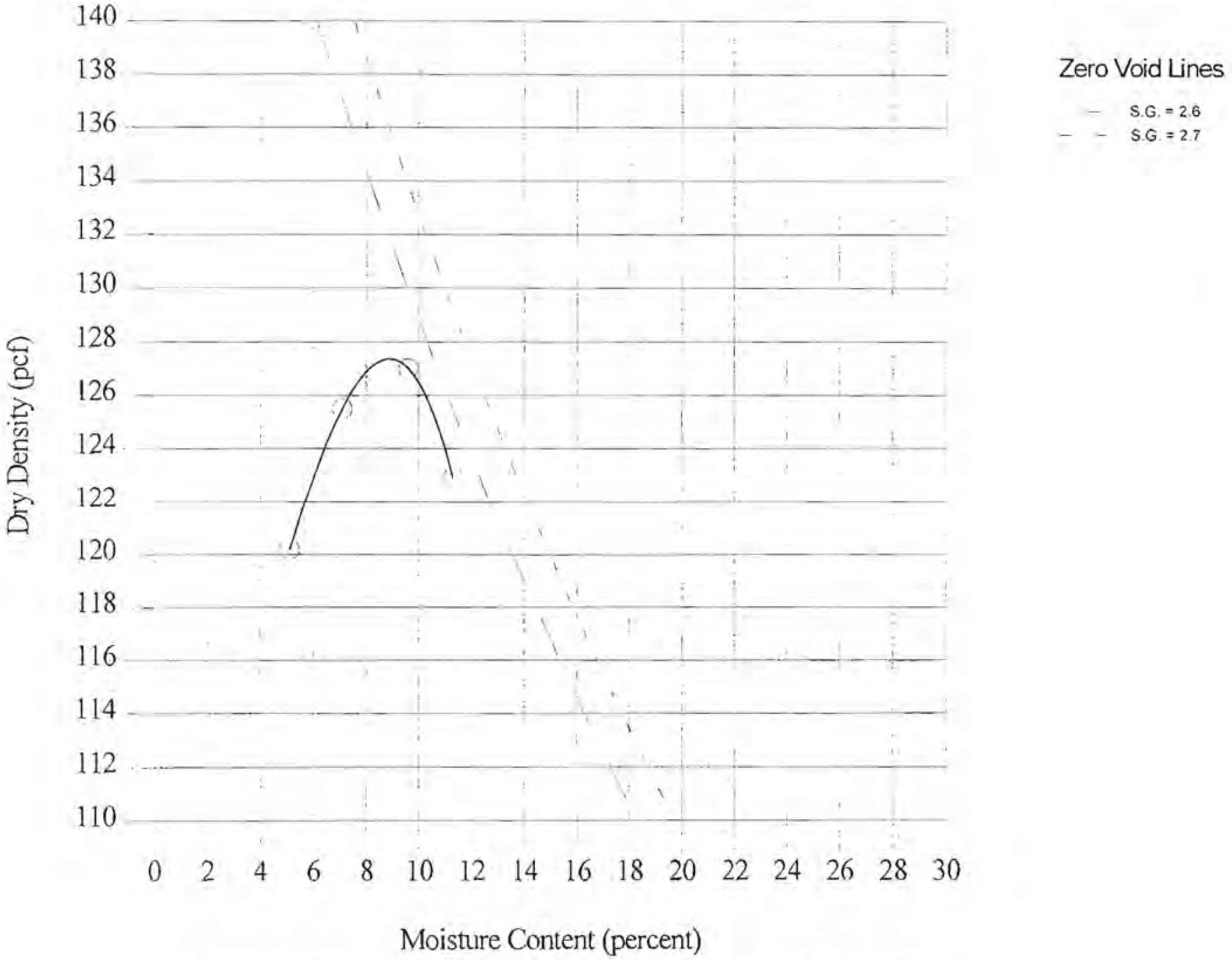
Modified Compaction Test Results
ASTM D 1557

PROJECT NAME: JALK FEE
PROJECT NO.: 00-265
DATE: Nov. 2000
BORING NO.: N/A
SAMPLE NO.: M7/M8

KTL NO.: 00-056-003
CLIENT: TRC ENV. SOLNS.
DEPTH (ft): N/A
USCS CLASS.: SC

METHOD: A
DROP: 18 INCHES
NUMBER OF LAYERS: 5

RAM WEIGHT: 10 LBS
RAM TYPE: MANUAL
BLOWS/LAYER: 25



Optimum Moisture Content, %	Maximum Dry Density, pcf
9	127

FIGURE NO.

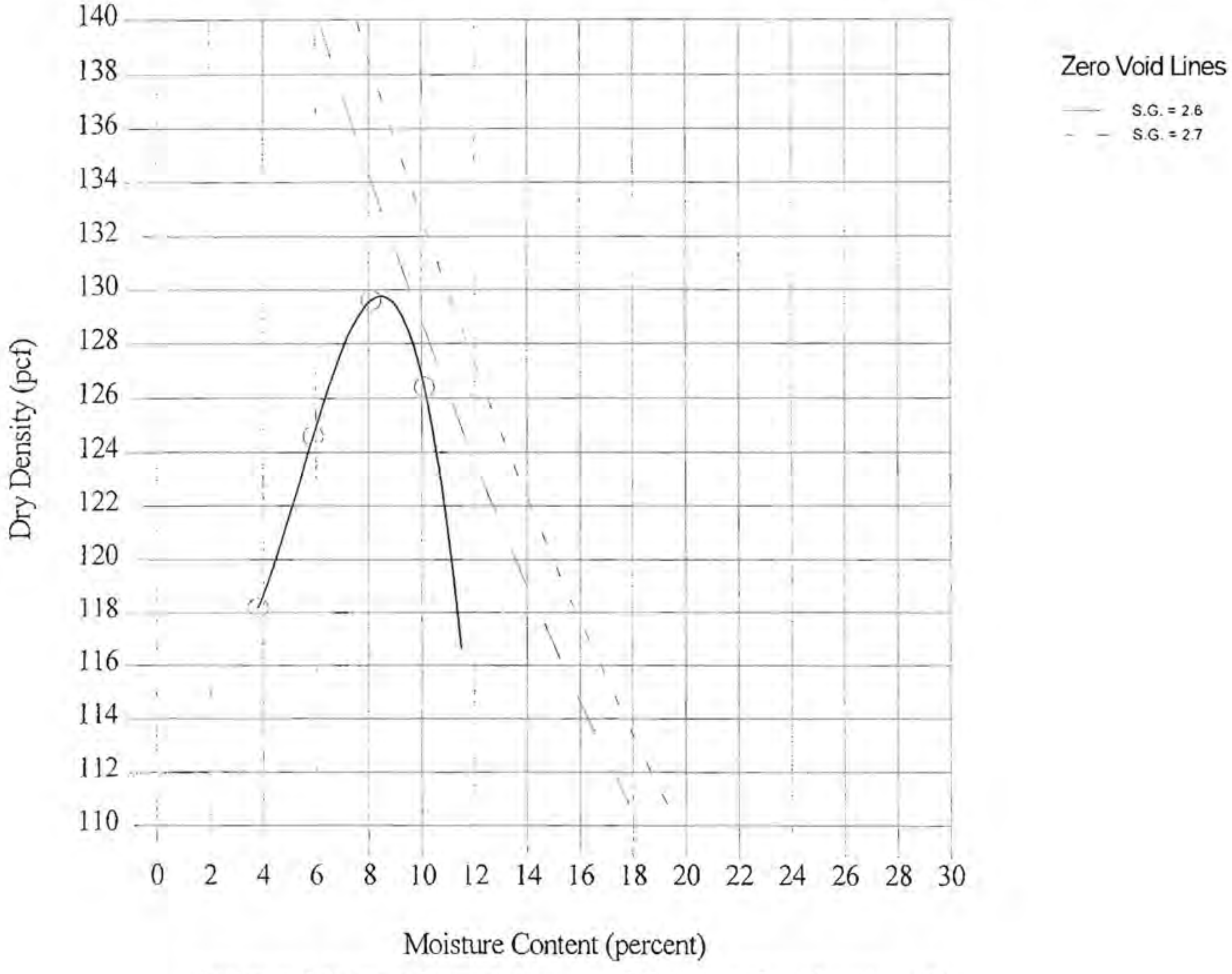
Modified Compaction Test Results
ASTM D 1557

PROJECT NAME: JALK FEE
PROJECT NO.: 00-265
DATE: Nov. 2000
BORING NO.: N/A
SAMPLE NO.: M-3

KTL NO.: 00-056-003
CLIENT: TRC ENV. SOLNS.
DEPTH (ft): N/A
USCS CLASS.: SC

METHOD: A
DROP: 18 INCHES
NUMBER OF LAYERS: 5

RAM WEIGHT: 10 LBS
RAM TYPE: MANUAL
BLOWS/LAYER: 25



Optimum Moisture Content, %	Maximum Dry Density, pcf
8	130

FIGURE NO.

TRC Environmental Solutions Inc.

FIELD DETERMINATION OF DENSITY AND MOISTURE CONTENT BY NUCLEAR METHOD

PROJECT NAME	SALK FEE	TESTED BY	CM	GAUGE NO.	M89058848	STD. DENSITY COUNT	16089
PROJECT NO.	00-265	DATE	11-17-00	TEST STANDARD	ASTM D3017 / D2922	Xi RATIO	.92
PROJECT LOCATION	SANTA FE SPRINGS	CHECKED BY		REQUIRED % COMPACTION	90%	STD. MOISTURE COUNT	11067
TEST MATERIAL	GEN BACKFILL IMPORT#2	DATE				Xi RATIO	1.04

TEST NO.	TEST LOCATION	LIFT NO.	PROBE DEPTH (In.)	WET DENSITY (pcf)	WATER CONTENT (%)	DRY DENSITY (pcf)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	COMMENT
17	M-9	17	8	134.2	6.37	126.1	7.0	131.0	96.29	
18	M-9	18	8	131.3	7.30	122.4	7.0	131.0	93.40	
19	M-9	19	8	127.6	6.77	119.5	7.0	131.0	91.25	
20	M-9	20	8	132.1	5.64	125.1	7.0	131.0	95.49	

TRC Environmental Solutions Inc.

FIELD DETERMINATION OF DENSITY AND MOISTURE CONTENT BY NUCLEAR METHOD

PROJECT NAME	JACK FEE	TESTED BY	CM.	GAUGE NO.	M89058848	STD. DENSITY COUNT	16177
PROJECT NO.	00-265	DATE	11-16-00	TEST STANDARD	ASTM D3017 / D2922	Xi RATIO	.93
PROJECT LOCATION	SANTA FE SPRINGS	CHECKED BY		REQUIRED % COMPACTION	90%	STD. MOISTURE COUNT	11128
TEST MATERIAL	6QI BACKFill IMPORT#2	DATE				Xi RATIO	1.03

TEST NO.	TEST LOCATION	LIFT NO.	PROBE DEPTH (in.)	WET DENSITY (pcf)	WATER CONTENT (%)	DRY DENSITY (pcf)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	COMMENT
11	M-3	11	8	126.8	5.14	120.6	7.5	128.5	93.87	
12	M-3	12	8	136.8	8.31	126.3	7.5	128.5	98.29	
13	M-3	13	8	124.3	6.99	116.2	7.5	128.5	90.41	
14	M-3	14	8	134.7	5.68	127.5	7.0	131.0	97.33	
1	M8	1	8	129.7	9.39	118.6	7.5	128.5	92.27	IMPORT#2
2	M-8	2	8	128.0	8.33	118.1	10.0	125.0	94.51	IMPORT#1
3	M-8	3	8	125.0	8.97	114.7	10.0	125.0	91.75	
4	M-8	4	8	126.6	9.97	115.1	10.0	125.0	92.08	
5	M-8	5	8	129.3	9.97	117.6	8.0	130.0	90.45	
15	M9	15	8	131.4	9.06	120.5	8.0	130.0	92.68	
16	M-9	16	8	138.0	7.87	128.0	7.0	131.0	97.68	

TRC Environmental Solutions Inc.

FIELD DETERMINATION OF DENSITY AND MOISTURE CONTENT BY NUCLEAR METHOD

PROJECT NAME	JACK FEE	TESTED BY	CM	GAUGE NO.	M89058848	STD. DENSITY COUNT	16226
PROJECT NO.	00-265	DATE	11-15-00	TEST STANDARD	ASTM D3017 / D2922	Xi RATIO	1.02
PROJECT LOCATION	SANTA FE SPRINGS	CHECKED BY		REQUIRED % COMPACTION	90%	STD. MOISTURE COUNT	11125
TEST MATERIAL	GEN BACKFILL IMPORT #1	DATE				Xi RATIO	1.05

TEST NO.	TEST LOCATION	LIFT NO.	PROBE DEPTH (in.)	WET DENSITY (pcf)	WATER CONTENT (%)	DRY DENSITY (pcf)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	COMMENT
1	M-3	1	8	135.6	9.62	123.7	10.0	125.0	98.99	IMPORT #1
2	M-3	2	8	129.7	9.54	118.4	10.0	125.0	94.75	
3	M-3	3	8	124.9	10.4	113.1	10.0	125.0	90.51	
4	M-3	4	8	129.5	10.06	117.7	10.0	125.0	94.15	
5	M-3	5	8	128.3	11.73	114.8	10.0	125.0	91.85	
6	M-3	6	8	135.2	9.39	123.6	10.0	125.0	98.85	
7	M-3	7	8	127.8	4.52	122.3	7.5	128.5	95.16	NEW IMPORT #2
8	M-3	8	8	133.8	5.64	126.7	7.5	128.5	98.58	
9	M-3	9	8	130.3	6.24	122.6	7.5	128.5	95.41	
10	M-3	10	8	130.7	5.69	123.6	7.5	128.5	96.21	

TRC Environmental Solutions Inc.

FIELD DETERMINATION OF DENSITY AND MOISTURE CONTENT BY NUCLEAR METHOD

PROJECT NAME	JACK FEE	TESTED BY	CM	GAUGE NO.	M89058848	STD. DENSITY COUNT	16226
PROJECT NO.	00-265	DATE	11-15-00	TEST STANDARD	ASTM D3017 / D2922	Xi RATIO	1.02
PROJECT LOCATION	SANTA FE SPRINGS, CA	CHECKED BY		REQUIRED % COMPACTION	90%	STD. MOISTURE COUNT	11125
TEST MATERIAL	GEN BACKFILL	DATE				Xi RATIO	1.05

TEST NO.	TEST LOCATION	LIFT NO.	PROBE DEPTH (in.)	WET DENSITY (pcf)	WATER CONTENT (%)	DRY DENSITY (pcf)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	COMMENT
14	M-9	14	8	127.3	9.84	115.9	8.0	127 [illegible].0	91.26	

TRC Environmental Solutions Inc.

FIELD DETERMINATION OF DENSITY AND MOISTURE CONTENT BY NUCLEAR METHOD

PROJECT NAME	JACK FEE	TESTED BY	CM	GAUGE NO.	M89058848	STD. DENSITY COUNT	16148
PROJECT NO.	00-265	DATE	11-14-00	TEST STANDARD	ASTM D3017 / D2922	XI RATIO	.97
PROJECT LOCATION	SANTA FE SPRINGS	CHECKED BY		REQUIRED % COMPACTION	90%	STD. MOISTURE COUNT	11119
TEST MATERIAL	GEN BACKFILL	DATE				XI RATIO	1.03

TEST NO.	TEST LOCATION	LIFT NO.	PROBE DEPTH (in.)	WET DENSITY (pcf)	WATER CONTENT (%)	DRY DENSITY (pcf)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	COMMENT
7	M-9	7	8	131.4	9.09	120.5	8.0	130.0	92.66	
8	M-9	8	8	134.2	9.93	122.1	8.0	130.0	93.90	
9	M-9	9	8	132.9	9.82	121.0	8.0	130.0	93.08	
10	M-9	10	8	133.8	9.31	122.4	8.0	130.0	94.17	
11	M-9	11	8	134.4	10.67	121.5	8.0	130.0	93.43	
12	M-9	12	8	129.2	9.82	117.6	8.0	130.0	90.49	
13	M-9	13	8	131.1	9.47	119.7	8.0	130.0	92.10	

TRC Environmental Solutions Inc.

FIELD DETERMINATION OF DENSITY AND MOISTURE CONTENT BY NUCLEAR METHOD

PROJECT NAME	JACK FEE	TESTED BY	CM	GAUGE NO.	M89058848	STD. DENSITY COUNT	16121
PROJECT NO.	00-265	DATE	11-13-00	TEST STANDARD	ASTM D3017 / D2922	Xi RATIO	.97
PROJECT LOCATION	SANTA FE SPRINGS	CHECKED BY		REQUIRED % COMPACTION	90%	STD. MOISTURE COUNT	11073
TEST MATERIAL	GEN BACKFILL	DATE				Xi RATIO	1.02

TEST NO.	TEST LOCATION	LIFT NO.	PROBE DEPTH (In.)	WET DENSITY (pcf)	WATER CONTENT (%)	DRY DENSITY (pcf)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	COMMENT
1	M-2	1	8	134.6	10.16	122.1	8.[illegible]	130.0	93.96	
2	M-2	2	8	134.3	10.16	121.9	8.0	130.[illegible]	93.80	
3	M-2	3	8	126.8	9.87	115.4	9.0	127.0	90.90	
1	M-9	1	8	126.9	7.46	118.1	9.0	127.0	92.99	
2	M-9	2	8	128.3	8.74	118.0	9.0	127.0	92.88	
3	M-9	3	8	129.6	8.16	119.9	9.0	127.0	94.39	
4	M-9	4	8	131.1	9.06	120.2	8.0	130.0	92.45	
5	M-9	5	8	129.1	7.57	120.1	8.0	130.0	92.55	
6	M-9	6	8	131.0	7.65	121.7	8.0	130.0	93.63	

TRC Environmental Solutions Inc.

FIELD DETERMINATION OF DENSITY AND MOISTURE CONTENT BY NUCLEAR METHOD

PROJECT NAME	JACK FEE	TESTED BY	C.M.	GAUGE NO.	M89058848	STD. DENSITY COUNT	16211
PROJECT NO.	00-265	DATE	11-10-00	TEST STANDARD	ASTM D3017 / D2922	Xi RATIO	1.06
PROJECT LOCATION	SANTA FE SPRINGS	CHECKED BY		REQUIRED % COMPACTION	90%	STD. MOISTURE COUNT	10908
TEST MATERIAL	GEN. BACKFILL	DATE				Xi RATIO	.99

TEST NO.	TEST LOCATION	LIFT NO.	PROBE DEPTH (In.)	WET DENSITY (pcf)	WATER CONTENT (%)	DRY DENSITY (pcf)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	COMMENT
3	M-1	3	8	133.4	9.79	121.5	8.0	130.0	93.5	
4	M-1	4	8	130.9	9.47	119.6	8.0	130.0	92.0	
5	M-1	5	8	130.7	9.69	119.2	8.0	130.0	91.7	
6	M-1	6	8	136.6	11.06	123.0	8.0	130.0	94.60	
7	M-1	7	8	131.9	9.34	120.6	8.0	130.0	92.78	
8	M-1	8	8	135.2	11.22	121.6	8.0	130.0	93.52	
9	M-1	9	8.	132.2	10.65	119.4	8.0	130.0	91.89	

TRC Environmental Solutions Inc.

FIELD DETERMINATION OF DENSITY AND MOISTURE CONTENT BY NUCLEAR METHOD

PROJECT NAME	JALK FEE	TESTED BY	H. Andrade	GAUGE NO.	M89058848	STD. DENSITY COUNT	16197
PROJECT NO.	00-265	DATE	11/9/00	TEST STANDARD	ASTM D3017 / D2922	XI RATIO	0.89
PROJECT LOCATION	Santa Fe Springs CA	CHECKED BY		REQUIRED % COMPACTION	90	STD. MOISTURE COUNT	10782
TEST MATERIAL	Onsite	DATE				XI RATIO	0.95

TEST NO.	TEST LOCATION	LIFT NO.	PROBE DEPTH (in.)	WET DENSITY (pcf)	WATER CONTENT (%)	DRY DENSITY (pcf)	OPTIMUM, MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	COMMENT
13	SB49 Trench (west end)	1	8	134.5	8.55	123.9	8	130	95.33	Pass (7' Below grade)
~~2~~14		2		128.3	7.85	118.9			91.50	Pass (6.5')
15		3		133.4	6.95	124.7			95.56	Pass (5.5')
~~4~~16		4		132.8	7.79	123.2			94.75	Pass (4.5')
~~5~~17		5		134.3	8.01	124.4			95.67	Pass (4')
~~6~~18	↓	6	↓	134.6	7.92	124.7	↓	↓	95.93	Pass (3' ↓)
1	m-7	1	8	130.0	8.87	119.5	8	130	91.89	Pass (9' Below grade)
2		2		129.8	8.40	119.7			92.11	Pass (8')
3		3		130.6	7.81	121.1			93.16	Pass (6.5)
4		4		130.9	8.67	120.6			92.75	Pass (5.5)
5		5		131.9	7.90	122.3			94.06	Pass (4.5)
6		6		130.6	6.24	122.9			94.56	Pass (3.5)
7	↓	7	↓	131.7	6.67	123.4	↓	↓	94.94	Pass (2.5 ↓)
1	m-1	1	8	132.1	11.95	118.0	8	130	90.76	Pass (9' Below grade)
2		2		132.6	11.33	119.1			91.59	Pass (8')

TRC Environmental Solutions Inc.

FIELD DETERMINATION OF DENSITY AND MOISTURE CONTENT BY NUCLEAR METHOD

PROJECT NAME	JALK FEE	TESTED BY	A. Andrusker	GAUGE NO.	M89058848	STD. DENSITY COUNT	16123
PROJECT NO.	00-265	DATE	11/8/00	TEST STANDARD	ASTM D3017 / D2922	Xi RATIO	0.87
PROJECT LOCATION	Santa Fe Springs, CA	CHECKED BY		REQUIRED % COMPACTION	90	STD. MOISTURE COUNT	10993
TEST MATERIAL	Onsite	DATE				Xi RATIO	1.01

TEST NO.	TEST LOCATION	LIFT NO.	PROBE DEPTH (in.)	WET DENSITY (pcf)	WATER CONTENT (%)	DRY DENSITY (pcf)	OPTIMUM MOISTURE (%)	MAXIMUM DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	COMMENT
1	SB-49 Trench (east end)	1	8	119.6	8.96	105.8	9	127	86.45	Failed (7' Below grade
1B		1		133.3	11.0	120.1			94.56	Pass (7' Below grade)
2		1		125.3	9.01	114.9			90.48	Pass (9')
3		2		133.8	9.17	122.5			96.48	Pass (6)
4		2		125.8	9.53	114.9			90.44	Pass (8)
5		3		126.9	8.59	116.9			92.05	Pass (5)
6		4		128.4	8.96	117.9			92.80	Pass (4)
7		4		125.2	9.10	114.8	↓	↓	90.35	Pass (6.5)
8		5		132.6	7.8	123.0	8	130	94.65	Pass (3)
9~~BB~~		5		120.8	9.63	110.2			84.79	Fail (5)
9B		5		131.2	8.06	121.5			93.43	Pass (5)
10		6		134.3	8.85	123.3			94.89	Pass (2.5)
11		6		125.5	7.38	116.9			89.94	Pass (4)
12	↓	7		132.5	10.04	120.4	↓	↓	92.64	Pass (3 ↓)

APPENDIX E

FIGURE 4 FROM WATERSTONE ENVIRONMENTAL INC.'S *RESPONSE TO CARDNO'S REPORT OF ADDITIONAL EVIDENCE IN SUPPORT TO NAME CONTINENTAL HEAT TREATING AS DISCHARGER FOR THE EXXONMOBIL JALK FEE PROPERTY DATED FEBRUARY 9, 2017,*

DATED APRIL 27, 2017

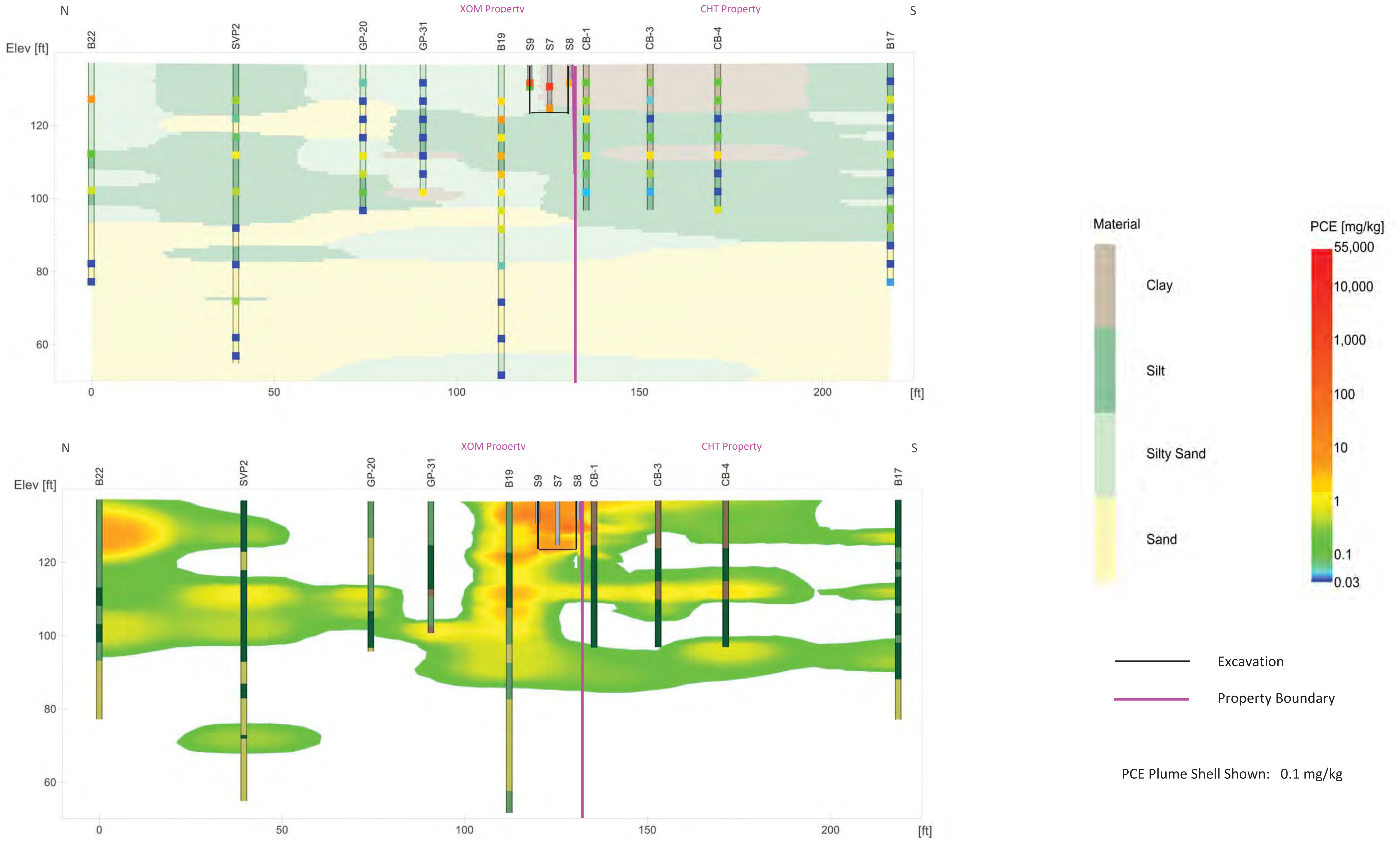


Figure 4

3D Model – Transect A
Lithology and PCE in Soil

Continental Heat Treating
Santa Fe Springs, CA 90670

WATERSTONE ENVIRONMENTAL, INC.
2936 EAST CORONADO STREET
ANAHEIM, CALIFORNIA 92806

Drafted by: LPJ	Project No.: 15-136
Approved by:	Date: 12/12/16

EXHIBIT 6

Marla D. Madden
ExxonMobil Environmental Services Company
Lead Project Manager

8941 Atlanta Avenue, #384
Huntington Beach, California 92646
714 964 4935 Telephone
832 544 3413 Cellular
marla.d.madden@exxonmobil.com

ExxonMobil

December 5, 2017

Mr. Sam Unger
California Regional Water Quality Control Board
Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, California 90013

SUBJECT **Request for Response to Reports Providing Conclusive Evidence that CHT is Sole Discharger of PCE**
Former ExxonMobil Jalk Fee Property
10607 Norwalk Boulevard
Santa Fe Springs, California
CRWQCB-LAR Case No. 0203; Site I.D. No. 1848000

Mr. Unger:

ExxonMobil Environmental Services Company (EMES) appreciated the opportunity to meet with representatives of the California Regional Water Quality Control Board – Los Angeles Region (CRWQCB-LAR) on November 15, 2017. In this meeting EMES presented conclusive evidence that Continental Heat Treating (CHT) is the sole source of the chlorinated solvents in soil on the Jalk Fee site, and rebutted the allegations and inaccurate assertions made in Waterstone Environmental, Inc.'s (Waterstone) *April 27, 2017 Response to Cardno's Report of Additional Evidence in Support of Request to Name Continental Heat Treating as Discharger for the ExxonMobil Jalk Fee Property* (Report), dated February 9, 2017. A copy of the presentation reviewed during the meeting is attached.

As discussed during the meeting, rather than refute evidence provided in previous EMES technical reports*, the Waterstone Report provides further evidence that CHT was the discharger of chlorinated solvents into soil on the Jalk Fee Property, including:

(1) A CHT pre-1995 process flow diagram that shows that CHT generated large quantities of wastes that contained both used quench oil sludges and PCE.

(2) Chromatograms of quench oils that were used by CHT on site closely match the reference quench oils used in the NewFields forensic study and the quench oils found in soil at the boundary between CHT and Jalk Fee (just north of CHT's equipment storage/repair area), where PCE was also found in soil.

(3) PAH data that confirmed a close match between the aromatic content of CHT quench oils and the aromatic content of quench oils found in soil samples on the Jalk Fee property.

** Cardno reports submitted on March 25, 2015 and February 9, 2017*

Further, nothing has been provided by the State, CHT, or its agents which refute these basic facts:

(1) Between 1969 and 1995, CHT used, stored, and disposed of large quantities of PCE and quench oils wastes. The manifests only account for a small percentage of waste generated.

(2) CHT had a poor housekeeping record, including releases of oil to the ground, as documented by public agency Notices of Violations (NOVs).

(3) PCE was not used in Jalk Fee oil field operations or in other oil field operations. Based on a review of oil field sites in California on GeoTracker and discussions with Santa Barbara County and CRWQCB Central Valley Region case managers, no oil field sites with releases of chlorinated solvents could be identified.

(4) There is no evidence supporting CHT's claim that dumping of chlorinated solvents occurred directly onto the Jalk Fee property. CHT's claims of such dumping were based on its review of aerial photos, which were convincingly refuted by an expert aerial photo analysis.

(5) Quench oils and PCE are heavily used in the heat treating process, but neither is used nor produced in oil field operations. **Therefore, the discovery and identification, by an expert firm in forensics analysis (NewFields) of quench oils on Jalk Fee property, co-located with PCE, is definitive evidence of a discharge from CHT onto the Jalk Fee property.**

(6) Investigations conducted on behalf of ExxonMobil across the Jalk Fee site (450 soil samples) from 1990 to present determined that the vast amount of PCE is present along the Jalk Fee/CHT property boundary, with high concentration in surface soil (top 10 feet), ranging from hundreds to tens of thousands of parts per million (ppm), which is indicative of a surface release from CHT.

(7) The soil gas distribution also confirms the source along the CHT/Jalk Fee property boundary and refutes any postulated secondary source in the central or northern part of the site.

(8) As consistently put forward in Cardno's conceptual site model, the distribution of PCE and quench oils along the CHT/Jalk Fee property boundary is explained by the CHT property being paved and the Jalk Fee property being unpaved, with releases from CHT being deposited on the Jalk Fee property.

Finally, for the CRWQCB-LAR to focus on the 5 to 6 milligrams per kilogram of PCE isolated in a thin soil layer at 10 feet below ground surface around soil boring B22, in effect suggesting the presence of a secondary source, despite the thousands to tens of thousands of milligrams per kilogram of PCE found in the soil column along the property boundary with CHT, ignores the compelling evidence presented above and in Cardno's reports. As previously noted, soil and soil gas sampling across the site clearly identifies the only overwhelming source of PCE is along the CHT/Jalk Fee property boundary.

As an outcome of the meeting, it is EMES's understanding that the CRWQCB-LAR is committed, in an expeditious manner, to review and respond to Cardno's previously submitted *Additional Evidence in Support of Request to Name Continental Heat Treating as Discharger*, dated February 9, *2017,* and *Response to Continental Heat Treating's Allegations* dated August 25, 2017 (Reports).

EMES respectfully requests that the CRWQCB-LAR provide a date by which it will review and issue a response to the above-referenced Reports.

Please call the undersigned at (832) 544-3413 with any questions regarding this letter.

Sincerely,

Marla D Madden

Marla D. Madden
Lead Project Manager

Attachment: Meeting Presentation, November 15, 2017

cc: Ms. Paula Rasmussen, CRWQCB-LAR
Mr. Art Heath, CRWQCB-LAR
Ms. Su Han, CRWQCB-LAR
Mr. Luis Changkuon, CRWQCB-LAR
Mr. David Young, CRWQCB-LAR
Mr. David Coupe, CRWQCB-LAR
Ms. Elizabeth Weaver, Norton Rose Fulbright US LLP
Mr. Trent Key, EMES
Mr. Len Racioppi, EMES
Mr. James Anderson, Cardno

ExxonMobil

November 15, 2017

Rebuttal to CHT Allegations and Inaccuracies

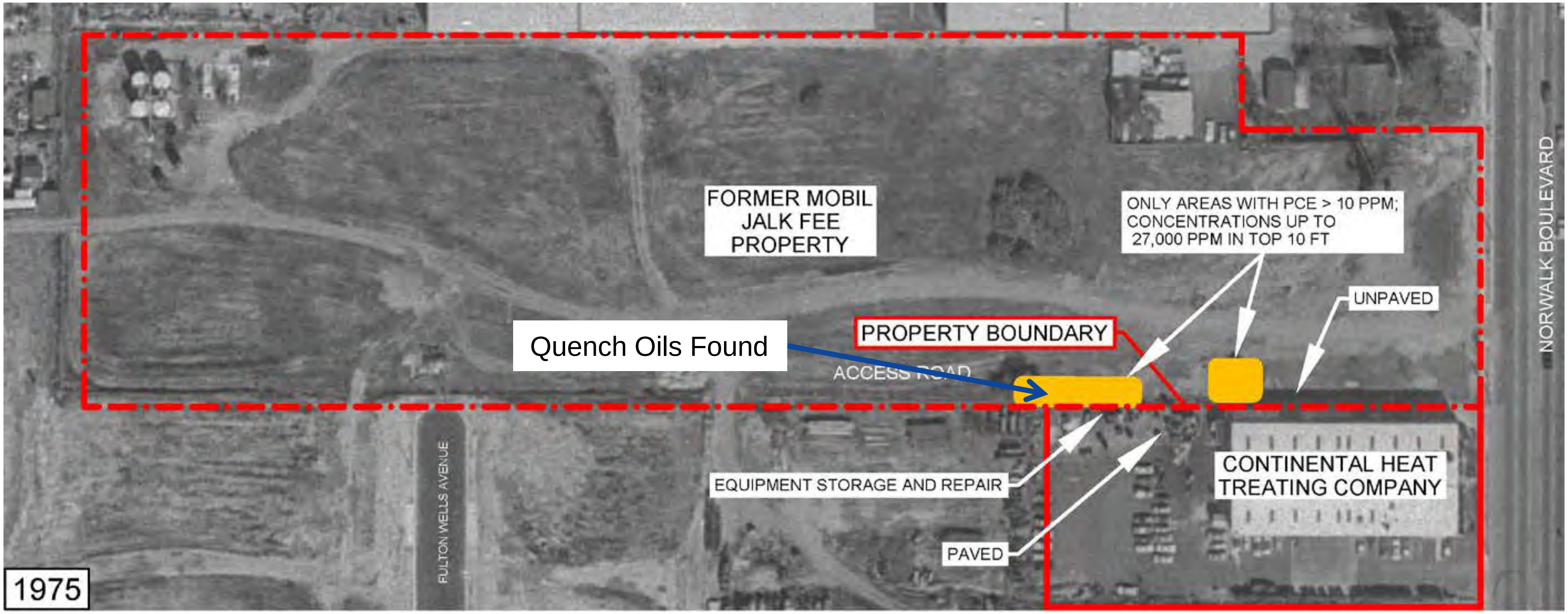
Jalk Fee

Energy lives here™

Overview

- Rebuttal of Waterstone Report / CHT Inaccuracies (EM)
  - New to ExxonMobil
  - Forensics of Quench oil in Soil
  - Aerial Photo Review / No Evidence of Uncontrolled Dumping
- Feedback on Technical Reports (Water Board)
- Next Steps

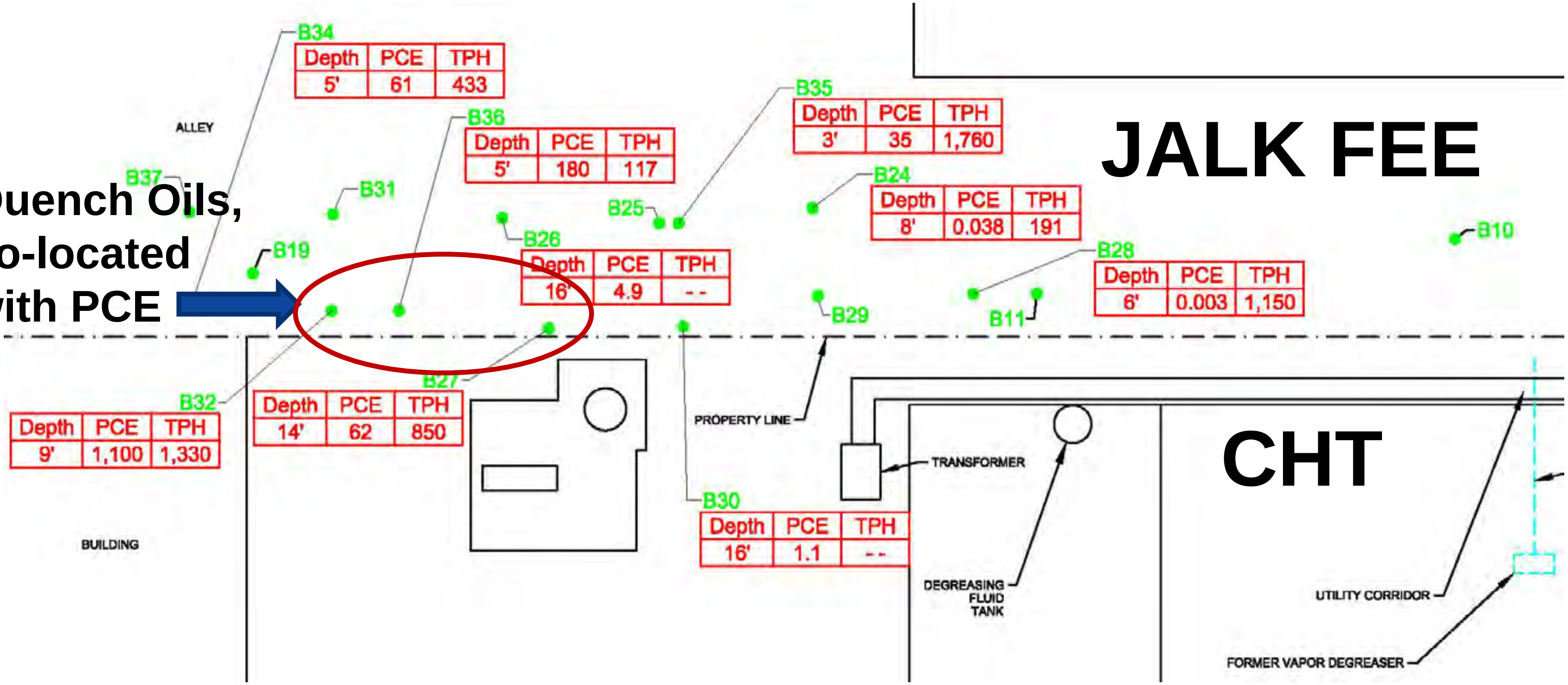
PCE and Quench Oils Co-located in Soil Confirms CHT is Source



- Areas on Jalk Fee site with PCE concentrations >10 ppm in soils are along site boundary with CHT, co-located with quench oils
- PCE and Quench Oils used in large quantities by CHT and found in mixed CHT waste
- PCE and Quench Oil not used in oil field operations
- Co-location of PCE and quench oils confirms CHT is the source

Forensic Assessment Found Used Quench Oil in Soil

- NewFields Environmental Forensics Practice, LLC was retained by ExxonMobil
  - Leader in environmental forensics. Published hundreds of peer-reviewed journal articles, book chapters, and technical reports
  - Concluded: used quench oil sludge and varying types/mixture of mineral oil sludges co-located with PCE on Jalk Fee property north of CHT equipment storage and repair



Quench Oils, co-located with PCE

B34

Depth	PCE	TPH
5'	61	433

B36

Depth	PCE	TPH
5'	180	117

B35

Depth	PCE	TPH
3'	35	1,760

B24

Depth	PCE	TPH
8'	0.038	191

B26

Depth	PCE	TPH
16'	4.9	- -

B28

Depth	PCE	TPH
6'	0.003	1,150

B32

Depth	PCE	TPH
9'	1,100	1,330

B27

Depth	PCE	TPH
14'	62	850

B30

Depth	PCE	TPH
16'	1.1	- -

All units mg/kg

Waterstone Report Confirms NewFields' Findings

- CHT's consultant (Waterstone Environmental, Inc.[†]) attempted to challenge some of the findings of the NewFields report*
    - *CHT did not generate waste that would contain both PCE and quench oil*
    - *Waterstone chromatograms of CHT quench oils did not match used quench oil reference materials in NewFields' study or soil sample chromatograms said to contain quench oils*
    - *CHT quench oils had much lower PAH content than soil samples said to contain quench oils*

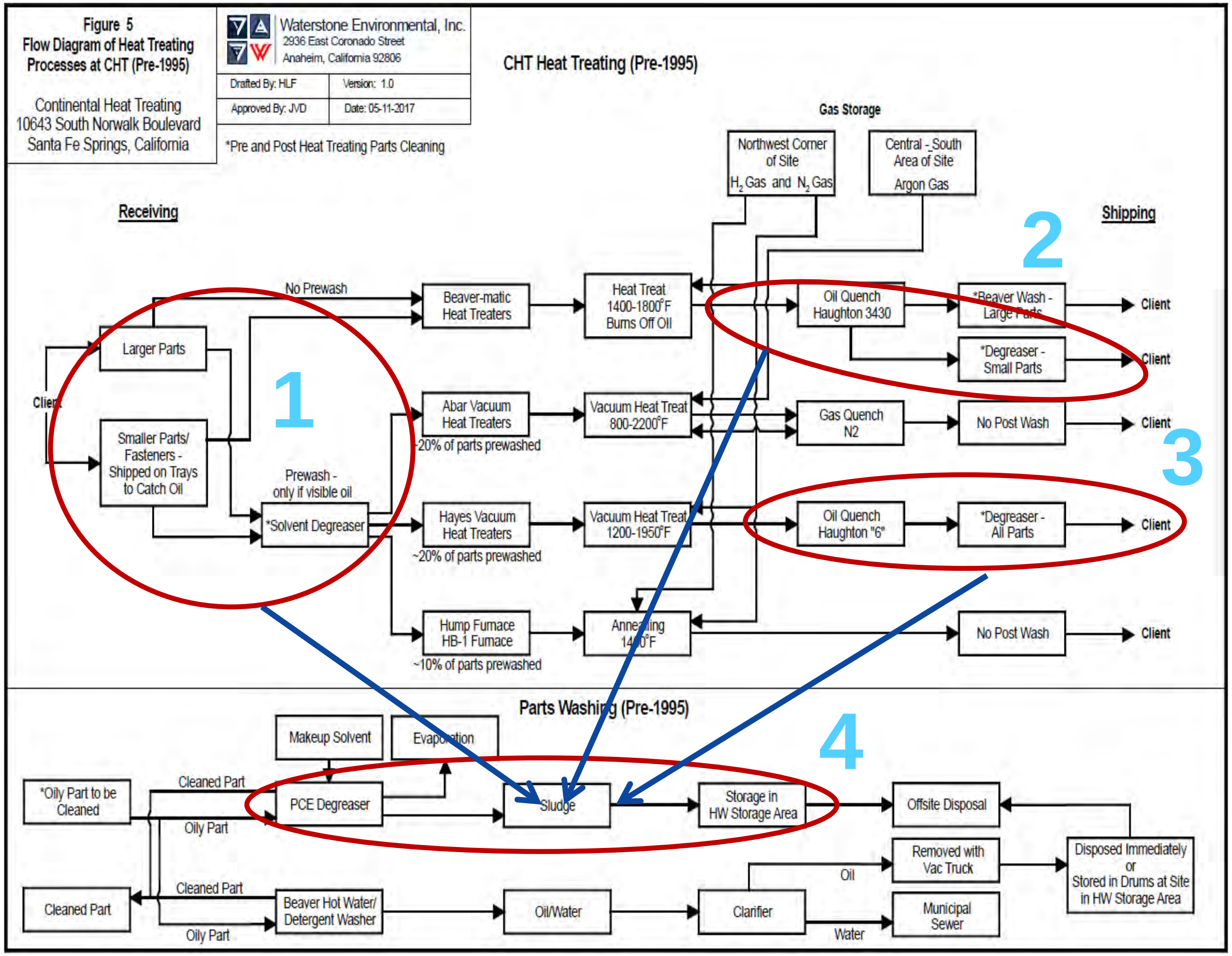
- Waterstone's Report provided
    - Pre-1995 process flow diagram
    - Gas chromatograms of quench oils used by CHT
    - PAH data

All confirmed the findings of the NewFields report

[†] = Waterstone

* = Response to Cardno's Report of Additional Evidence in Support of Request to Name Continental Heat Treating as Discharger for the ExxonMobil Jalk Fee Property dated February 9, 2017

CHT Process Diagram Establishes that CHT Waste Contained both Quench Oil and PCE and / or Sludge



1: oily parts are sent to solvent degreaser = PCE / mineral oil waste

2: post quench oil parts sent to solvent degreaser = PCE / quench oil waste

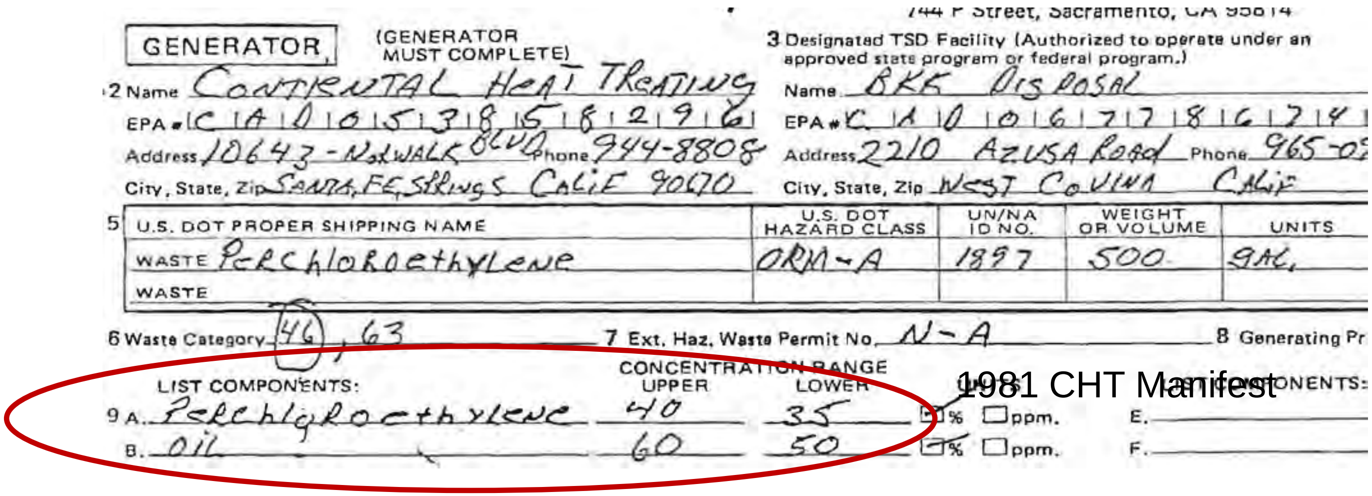
3: post quench oil parts sent to solvent degreaser = PCE / quench oil waste

4: oily parts washing highlights use of PCE degreaser and sludge accumulation = PCE / oil waste & sludge

Pre-1995 process diagram (Figure 5, Waterstone April 27, 2017) confirms that CHT generated a variety of wastes that contain varying mixtures of PCE, quench oil sludges and mineral oil sludges

CHT Waste Contained both Quench Oils and PCE

- CHT used, stored, and disposed/released used quench oil
  - Stored 500 gallons of quench oil in tank (CHT LA County Fire Department Haz Material Contingency Plan)
  - Disposed of 300 gallons of waste quench oil in drums (Id.)
- **<u>Contrary to Waterstone/CHT assertions PCE and quench oil were found together in wastes</u>**
- **<u>Wastes generated by CHT completely consistent with wastes found on Jalk Fee property</u>**



744 P Street, Sacramento, CA 95814

GENERATOR (GENERATOR MUST COMPLETE)

2 Name CONTINENTAL HEAT TREATING
EPA # C A D 0 5 3 8 5 8 2 9 6
Address 10643 - NORWALK BLVD Phone 944-8808
City, State, Zip SANTA FE SPRINGS CALIF 90670

3 Designated TSD Facility (Authorized to operate under an approved state program or federal program.)
Name BKK DISPOSAL
EPA # C A D 0 6 7 7 8 6 7 4
Address 2210 AZUSA ROAD Phone 965-0
City, State, Zip WEST COVINA CALIF

5 U.S. DOT PROPER SHIPPING NAME	U.S. DOT HAZARD CLASS	UN/NA ID NO.	WEIGHT OR VOLUME	UNITS
WASTE PERCHLOROETHYLENE	ORM-A	1897	500	GAL.
WASTE				

6 Waste Category (46), 63
7 Ext. Haz. Waste Permit No. N-A
8 Generating Pr

LIST COMPONENTS:	CONCENTRATION RANGE UPPER	LOWER		
9 A. Perchloroethylene	40	35	☑ %	☐ ppm.
B. Oil	60	50	☑ %	☐ ppm.

COMPONENTS:
E.
F.

1981 CHT Manifest

CHT Manifests only Account for Small Percentage of Generated PCE Waste

- No disposal records between 1969 – ‘80
- However, in 1982 South Coast Air Quality Management District application, CHT states-
  - + 575 gallon PCE AST had “26 refills per yr”, **indicating CHT used up to 14,950 gallons of PCE per year**
- Generally <1000 gallons per year manifested between 1981 and 1989
- Manifests only account for small percentage of PCE waste generated
- **Large amount of waste unaccounted for**

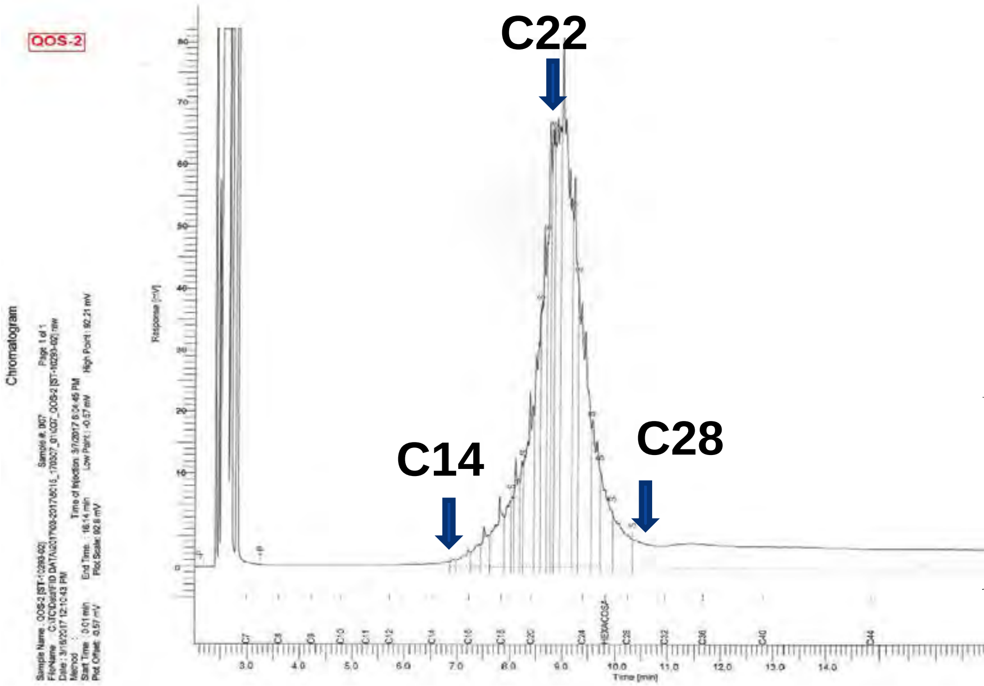
Disposal Year	# of Manifests	Quantity (gallons)
1981	1	500
1982	3	1350
1983	1	600
1984	3	755
1985	1	440
1986	0	0
1987	1	550
1988	2	905
1989	3	750
1990	3	1390
1991	5	2106
1992	5	1724
1993	9	2822
1994	8	2539
1995	10	3212
1996	1	108
	56	19751

*Some manifests include both PCE and oil

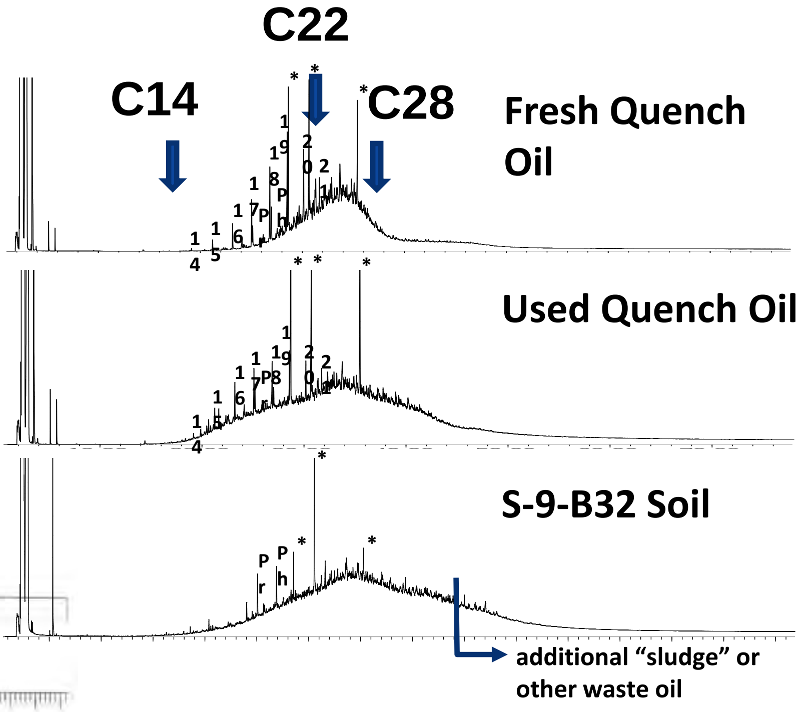
CHT Quench Oils Match NewFields' Findings

- Comparison of NewFields study quench oils, oil in soil sample, and CHT quench oil from Waterstone Report
  - Excellent match (visual difference artifact of GC run conditions)
  - Quench oil sludges in Jalk Fee soil samples along property boundary

CHT Quench Oil
(from Waterstone April 27, 2017)



NewFields Report (Feb. 9, 2017)



Quench Oils on Jalk Fee Property

- Quench oil matches oil in Jalk Fee soil samples co-located with PCE:
  - + Reaches maximum peak at ~C22 typical of quench oils
  - + Unresolved complex mixture
  - + Oxidation of used quench oil leads to broader boiling range

- **Definitive evidence that CHT wastes migrated onto Jalk Fee Property**

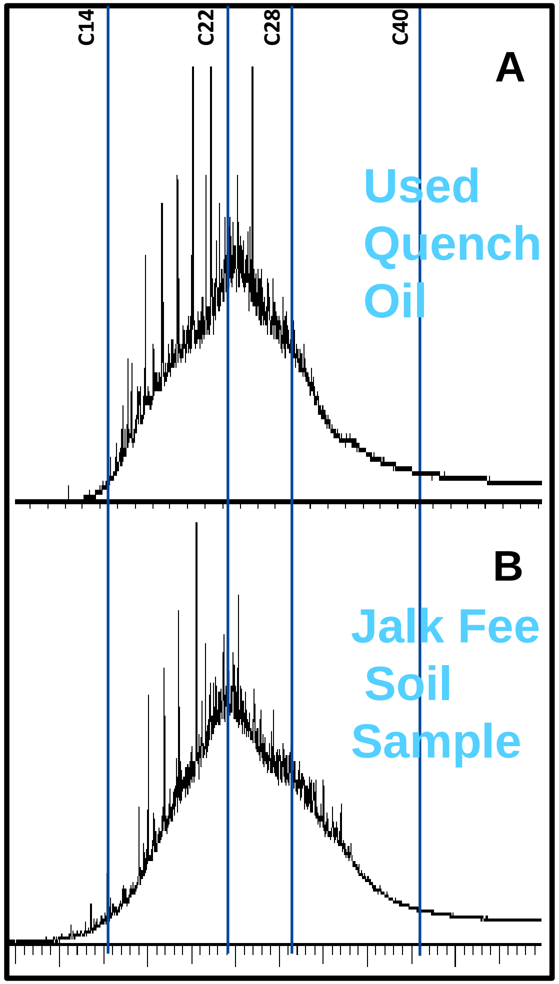


Figure 2:

Comparably scaled GC/FID chromatograms of (A) used quench oil analyzed by NewFields and (B) Jalk Fee soil sample S-9-B32 analyzed by NewFields shown at the same scale as the CHT chromatograms.

Waterstone Report Incorrectly Concludes:

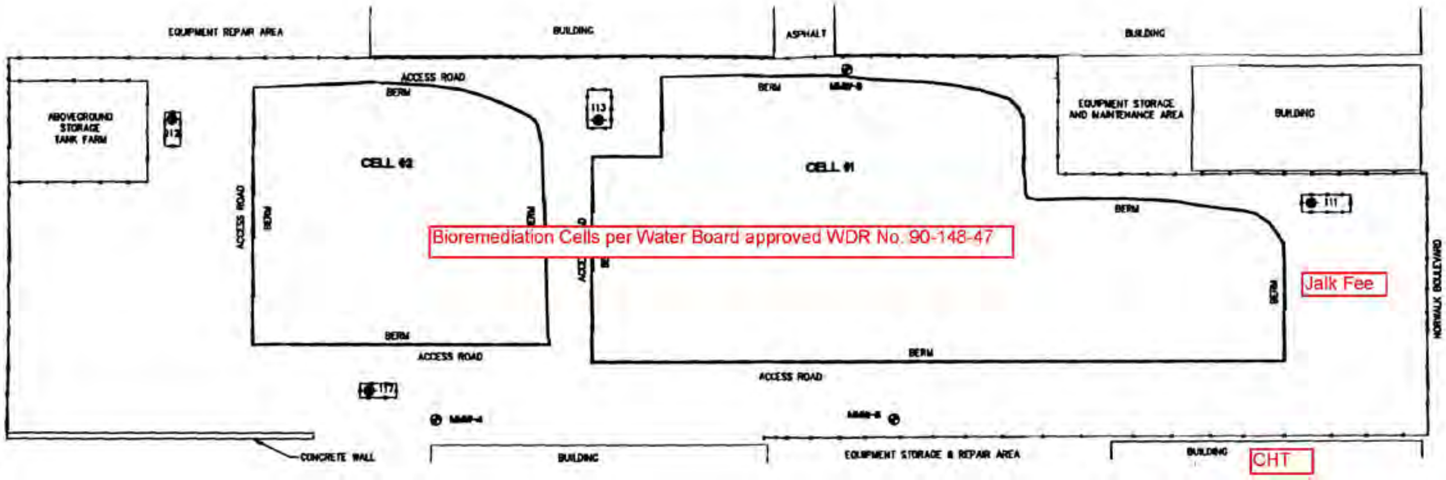
CHT's quench oil samples had lower aromatic concentration vs contamination on Jalk Fee

- Waterstone totals based on quantifying typical 17 PAHs
- NewFields soil samples forensic analysis more comprehensive - 50 PAHs (typical of forensic studies)
- If sample analysis compared for typical (same) 17 PAHs **totals almost identical**
- For example (Waterstone quench oil (QOS-4) vs Jalk Fee soil sample S-9-B32)
  - Waterstone Quench Oil: 72 mg/kg PAHs
  - Newfields S-9-B32: 80 mg/kg PAHs

- By contrast 3 soil samples containing crude had much higher total PAH concentration ranges - i.e. 350 to 2,500 mg/kg based on 17 PAHs

Waterstone Misinterprets Aerial Photos

- Dark stained soils & trucks observed in aerials
  - Associated with movement, roadspreading and bioremediation of petroleum-containing soil. . . typical / accepted practice at the time for remediating oil fields
    - + Bioremediation cells in mid-1990s were under Water Board WDR permit
    - + Standard oil field practice
    - + Not evidence of uncontrolled dumping or source of PCE and quench oils
- Sumps
  - Many items interpreted as sumps by CHT in historical aerials were actually buildings, shadows, or dust on the original aerial photo film
    - + Sumps are standard part of oil field operations
    - + Used to hold petroleum-based fluids, and
    - + Not indicators of uncontrolled dumping or PCE source



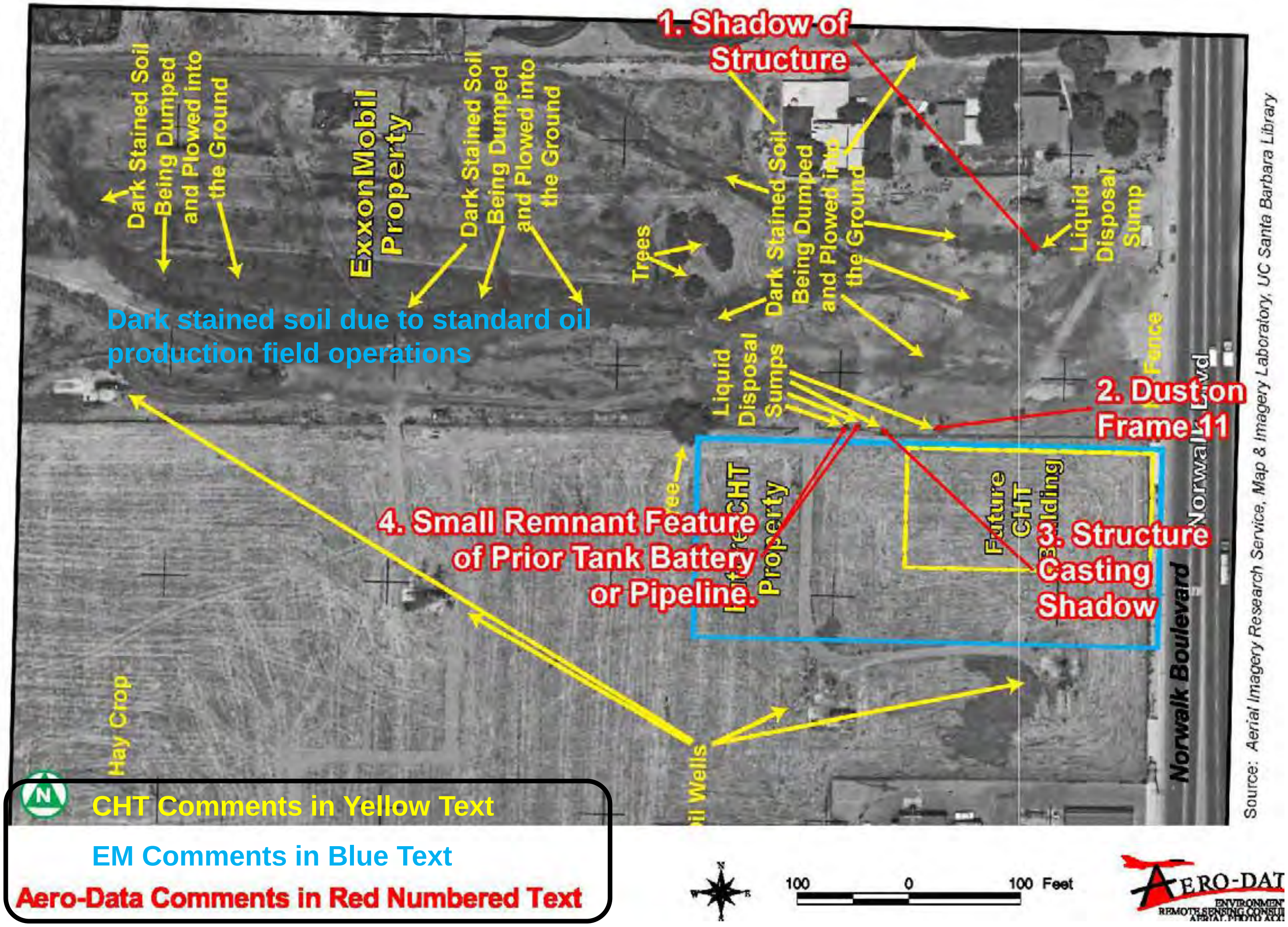
Bioremediation Cells per Water Board approved WDR No. 90-148-47

Jalk Fee

CHT

Correct Interpretation of “Sumps” Misidentified by CHT in Aerial Photo

Exhibit 13 - 1966 Aerial Photo of Subject Area



Dark stained soil due to standard oil production field operations

CHT Comments in Yellow Text

EM Comments in Blue Text

Aero-Data Comments in Red Numbered Text

Source: *Aerial Imagery Research Service, Map & Imagery Laboratory, UC Santa Barbara Library*

ExxonMobil

Conclusions

- CHT used, stored, and disposed of large quantities of PCE & Quench oils
- PCE & Quench oil is not used / produced in oil field operations
  - No evidence of EM dumping
  - No evidence EM allowed / aware of CHT illegal releases
  - Evidence in CHT record shows discharge / waste violations
- Most PCE present along Jalk Fee / CHT property boundary
- **Quench oil co-located with PCE in soil is conclusive indicator that CHT is the source**
- CHT's data (from Waterstone report) supports the analysis
- Water Board should name CHT as the sole responsible party

Water Board Feedback

EXHIBIT 7

CALIFORNIA
Water Boards

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

Los Angeles Regional Water Quality Control Board

July 22, 2016

Ms. Marla Madden
ExxonMobil Environmental Services Co.
18685 Main Street, Suite 101, PMB 601
Huntington Beach, CA 92648

RETURN MAIL
RETURN RECEIPT REQUESTED
CLAIM NO. 7015 0640 0006 6057 5019

SUBJECT: RESPONSE TO "REQUEST TO NAME CONTINENTAL HEAT TREATING AS DISCHARGER", PURSUANT TO CALIFORNIA WATER CODE SECTION 13267 ORDER DATED AUGUST 24, 2010

SITE: FORMER EXXONMOBIL JALK FEE PROPERTY, 10607 NORWALK BOULEVARD, SANTA FE SPRINGS, CA (SCP NO. 0203, SITE ID NO. 1848000)

Dear Ms. Madden:

The Los Angeles Regional Water Quality Control Board (Regional Board) reviewed the March 25, 2015, *Request to Name Continental Heat Treating as Discharger* (Report), prepared and submitted by Cardno ERI on your behalf, for the referenced site. In the Report, ExxonMobil Environmental Services Company (ExxonMobil) requests the Regional Board to rescind the California Water Code (CWC) section 13267 order dated August 24, 2010 (Order) issued to ExxonMobil, based on its conclusions that the Continental Heat Treating (CHT) site is a source of the chlorinated solvents in soil and groundwater at and near the Former ExxonMobil Jalk Fee Property (Site). The Regional Board agrees that the CHT site is a source of chlorinated solvents and issued a CWC section 13267 order dated May 5, 2010 to CHT to investigate and delineate the extent of contamination in soil, soil-gas, and groundwater from releases at the CHT facility. The Regional Board, however, disagrees with ExxonMobil's conclusion that CHT is the sole source of chlorinated solvents because soil, soil vapor, and groundwater data collected at the Site indicates on-site discharges. Below are ExxonMobil's comments (italicized) provided in the Report, followed by the Regional Board's detailed responses:

1. *The evidence presented by EMES is consistent with the same conclusions the CRWQCB-LAR has already reached, as demonstrated by the CRWQCB-LAR's letter dated June 23, 2010 to CHT (Appendix A). The CRWQCB-LAR stated that significant quantities of PCE were stored and used by CHT, that primary sources of PCE contamination (degreaser, storage area, etc.) have been identified at the CHT property, that releases of chlorinated solvents at CHT have impacted the subsurface, that the pipe trench leading from the degreaser to the north end of the building may have created a potential preferential pathway for the migration of PCE, and that no primary sources of PCE contamination have been identified on the Jalk Fee property.*

The CHT site is located to the south and adjacent to the Site (Figure 1, enclosed), and under oversight by the Regional Board, as a separate case. The Regional Board issued CHT a CWC section 13267 order dated May 5, 2010 to investigate soil, soil gas, and groundwater contamination as a result of their own releases. On May 19, 2010, CHT provided comments to the May 5, 2010 order, indicating that the Regional Board cited numerous erroneous allegations.

On June 23, 2010, the Regional Board provided responses to CHT's May 19, 2010 letter and presented the sources of information for the citations made, and stated that no primary source(s) of tetrachloroethene (PCE) contamination have been identified at the Site. However, investigations conducted at the Site in 2011 encountered PCE in soil and groundwater at concentrations up to 6,600 micrograms per kilogram (μg/kg), and 1,800 micrograms per liter (μg/L), respectively. Based on these analytical results, the Regional Board determined that volatile organic compounds (VOCs) detected in soil have threatened groundwater quality, and required ExxonMobil to further investigate soil matrix, soil vapor, and groundwater at the Site.

2. *From the 1920s until its redevelopment in 2003, the Jalk Fee property had a dirt surface and was unpaved, as can be observed in the historical aerial photos, which would allow rainwater and spills/releases from the adjacent paved CHT property to run off onto and infiltrate into the upper vadose zone of the Jalk Fee property (see Plate 1 and Appendix B for the historical aerial photos).*

   ExxonMobil's rationale cannot explain that PCE was detected in a soil sample collected at 10 feet below ground surface (bgs) at a concentration of 5,460 μg/kg in soil boring B22 at the Site. This boring is located approximately 140 feet north of the property boundary with the CHT site. This data indicates an on-site release or discharge at the Site.

3. *ExxonMobil has had internal discussions with its personnel who managed oil field operations at various locations, who confirmed that chlorinated solvents were not standard chemicals used in its oil field production operations. This is reinforced by the CRWQCB-LAR's letter dated June 23, 2010 to CHT, which stated that the "Jalk Fee property was used for oil production operations and no primary sources(s) of PCE contamination have been identified [on the property]" (Appendix A). Additionally, file reviews conducted with the City of Santa Fe Springs and the County of Los Angeles did not identify agency records or NOVs, indicating that chlorinated solvents were stored, used, or released onto the Jalk Fee property (Appendix C).*

   Please see Regional Board's response to Item No. 1 regarding the Regional Board letter dated June 23, 2010 that stated that the "Jalk Fee property was used for oil production operations and no primary sources(s) of PCE contamination have been identified [on the property]".

   Appendix C is incomplete, and does not provide all the documents to support ExxonMobil's file review process.

4. *In 2014, Cardno ERI conducted a review of the State Water Resources Control Board's online GeoTracker information database of various oil field sites across the State of California that had current or closed environmental cases, and was unable to identify any*

oil field site that had chlorinated solvents as a contaminant of concern. Additionally, Cardno ERI spoke with representatives of the County of Santa Barbara Environmental Health Services and the California Regional Water Quality Control Board - Central Valley Region, which are agencies that have extensive oil field operations and clean-up projects in their areas of responsibility, and the representatives from both agencies were not aware of any oil field sites within their jurisdictions that had chlorinated solvent contamination.

Data collected at the Site indicates on-site discharge or release of chlorinated solvents at the Site (See Regional Board's responses to Items No. 1, 2, and 9).

5. *Levine-Fricke's report dated December 6, 1991 claims that a tenant of Mobil who rented the Jalk Fee property may have used chlorinated solvents on the eastern portion of the property (Levine-Fricke, 1991). The report does not cite any source evidence for this statement, and ExxonMobil is unaware of any information that supports this claim. Furthermore, ExxonMobil has conducted extensive reviews of its lease files and has no record that any company or person rented the property during its period of operation or ownership, other than Hathaway.*

   As stated previously, Hathaway was an oil production company, and oil field operators did not use solvents as standard chemicals. Thus, there is no evidence that ExxonMobil, a tenant, or the subsequent property owners and their tenants ever used chlorinated solvents on the property. Therefore, there is no primary source of chlorinated solvents from historical operations on the Jalk Fee property, and the chlorinated solvents in soil must be from an off-site source.

   A figure on the May 13, 1997, "Work Plan for Site Characterization Activities and Proposed Environmental Fate Modeling and Health Risk Assessment", displays an area at the Site identified as "approximate location of former trucking operations area" (Figure 2, enclosed). PCE was detected at a concentration of 5,460 µg/kg in a sandy soil sample collected at 10 feet bgs from soil boring B22. Boring B22 is located within the "approximate location of former trucking operations area" at the Site.

   In addition, the October 2002, "Exemption of Oil and Gas Exploration and Production Wastes from Federal Hazardous Waste Regulations", published by the United States Environmental Protection Agency (USEPA), lists waste generated during oil exploration activities, among them waste solvents.

6. *History of CHT Property*

   The building that is currently present at the CHT property was constructed in 1969, at which time the majority of the property would also have been paved for parking, as is apparent in aerial photographs of the site (Appendix B). Based on information provided by CHT, since commencing operations at the site, the CHT business has cleaned metal parts and processed them with heat. This process requires the cleaning of the metal parts to remove cutting oil and debris, which was performed by placing the metal parts in a solvent-based vapor degreaser. Thus, CHT conducted degreasing operations and used chlorinated solvents from approximately 1969 to 1995, as supported by the following documentation [Appendix D through Appendix N].

Regional Board staff has reviewed the information included in Appendices D through N. In summary, the appendices indicated the following:

- CHT used PCE in its degreasing operations.
- Discharges of PCE from degreasing operations at the CHT site impacted soil at CHT. PCE was detected in soil samples collected at approximately 10 feet below ground surface (bgs) in the immediate vicinity of a degreaser, at a concentration of 7,514 µg/kg.
- CHT stored waste solvents in drums at their site and drums were transported to an off-site facility.

This information does not demonstrate that chlorinated solvent contamination at the Site soley originates from CHT. The Regional Board acknowledges that on-site discharges or releases of chlorinated solvents occurred at the CHT site as a result of their operations. The Regional Board issued a California Water Code section 13267 order dated May 5, 2010 to CHT to investigate the extent of impacted soil, soil gas, and groundwater.

7. *As shown in these building records, CHT performed vapor degreasing at the property from approximately 1969 through 1995, which necessitated the storage of hundreds of gallons of chlorinated solvents at any time on the property and the generation of significant quantities of waste solvent, such as 2,200 gallons per year in the 1989 record. Over this 26-year operational period, the records show that CHT had one degreaser in the eastern portion on the building (Detrex #19); a second degreaser in the central portion of the building (Item #81), which is the location that is the most consistent with depictions in the reports submitted by CHT to the CRWQCB-LAR; a third degreaser along the western end of the building; and possibly a fourth degreaser at an unidentified location along the northern edge of the building.*

   This information supports the presence of on-site source(s) of chlorinated solvents at the CHT facility/site that impacted soil, soil vapor, and groundwater beneath the CHT site. This information does not support the claim that there is no source of PCE contamination identified on the Site.

8. *In addition to the degreasing operations inside the building and the storage of waste PCE in the southwestern area of the property, it also appears that CHT utilized the northwestern portion of the property as an equipment storage and repair area based on review of the historical aerial photos and several reports (Appendices B and 0). Given that storage and repair of equipment occurred in this area of the site, it is likely that the cleaning of parts also occurred here, which is directly adjacent to the area of the Jalk Fee property where the highest PCE concentrations have been observed (Plate 1).*

   In addition to the equipment storage and repair area located in the northwestern portion of CHT's property, a trucking operations area was located at the Site. (See Regional Board response to Item No. 5).

9. *Regulatory oversight and inspections started to become more common in the late 1970s and early 1980s. These regulatory inspections demonstrate CHT's practices resulted in numerous documented releases and spills to the ground throughout at the property. The various inspections, investigation reports and violations are summarized below and documented in*

Appendices G, I, N and P through AC.

Regional Board staff has reviewed the information included in the referenced appendices. In summary, the appendices indicated the following:

- Wastewater was discharged from the cooling tower located on the northeast section of the CHT property to Norwalk Boulevard.
- Soil impacted with oil was encountered at the CHT property.
- Oil was encountered in a clarifier.
- Degreaser fires were reported.
- Soil in the immediate vicinity of the degreaser (inside the CHT building) is impacted with PCE at a concentration of 7,514 µg/kg.

This information does not change the Regional Board's conclusion that on-site sources of chlorinated solvents are located at the Site. The conclusion is based on soil data from B-11 and B-22 obtained from the Site, the "approximate location of former trucking operations area" at the Site, and the 2002 USEPA publication referenced in our response to Item No. 5.

10. *First, the 1968 blueprints ..... Therefore, these trenches would provide a preferential pathway directly from the degreasers to the northern edge of the CHT building and the southern boundary of the Jalk Fee property, allowing the migration of chlorinated solvent vapors (Appendix D). The CRWQCB-LAR reached much the same conclusion in its letter dated June 23, 2010 (Appendix A).*

    Soil, soil vapor, and groundwater data collected at the CHT site indicates the presence of at least one on-site source beneath the existing building.

    Likewise, data collected at the Site indicates the presence of at least two on-site sources, one at the southern side close to the property boundary with CHT, and another one at the central portion of the Site.

11. *Second, extensive assessment has been conducted in the southeastern portion of the Jalk Fee property and the northwestern portion of the CHT property, which has allowed for a thorough understanding of the near surface vadose zone lithology between the two properties. Two cross-sections were generated for the area to the west of the CHT building and surrounding Jalk Fee well MW6, where the maximum PCE concentrations have been detected on the Jalk Fee property (Appendix Z, Figures 5.1.1 and 5.1.2). In addition, plan view figures of the distribution of low (clay/silt) and high permeability soils (sand) at 6, 10 and 16 feet bgs of the CHT and Jalk Fee property boundary area show that a laterally continuous, shallow, low permeability silt/clay layer is present under much of the CHT property (Appendix AA, Figures 5.2.1, 5.2.2 and 5.2.3). This silt/clay layer starts to dip along the northern part of the CHT property and continues to dip northward onto the Jalk Fee property to a depth of 15 to 16 feet bgs. Soil above the silt/clay layer on the northern CHT property and on the Jalk Fee property is generally characterized as sand. It should be remembered that the Jalk Fee property was unpaved and essentially an open field until 2003. Therefore, chlorinated solvents released by CHT along the northern portion of the CHT property or directly released onto the Jalk Fee property would infiltrate downward through the higher*

permeability surface sand until reaching the low permeability unit and then would migrate along the northward dipping contact between the high and low permeability units onto the Jalk Fee property.

ExxonMobil's explanation of the migration of chlorinated solvents from the CHT site to the Site is not adequately supported. For example, in a cross section generated by Regional Board staff, including SVP-1 (southern part of the Site) and MW-2 (northern CHT), a silty layer dips from the southern part of the Site to the northern part of the CHT property. This silty layer would serve as a pathway for contaminants to migrate from the Site to CHT (Figure 3, enclosed).

The Report (Figure 5.1.2, enclosed) assumed that a silty layer on B14, extends laterally for approximately 55 feet towards MW6 (distance between B14 and MW6, both on CHT). Then, the silty layer would continue laterally from MW6 towards B11 (Site). This silty layer would serve as a migration pathway for VOCs to migrate from CHT (B14 and MW6) to the Site (B11). The silty layer that serves as a migration pathway extends vertically on B11 from approximately 24 to 39 feet bgs.

However, ExxonMobil's model cannot explain the vertical distribution of PCE on B11. PCE was detected in soil samples collected at 10 and 15 feet bgs at concentration of 5,360 micrograms per kilogram (µg/kg) and 11,000 µg/kg, respectively. However, in a soil sample collected at 35 feet bgs, PCE was detected at 937µg/kg (Figure 4, enclosed).

12. *Specifically, chlorinated solvents were measured in soil at concentrations from south to north of 2,517 mg/kg at 4 feet bgs at location T9A-1A (a trench excavation sample located 10 feet north of the property boundary), 350.8 mg/kg at 15 feet bgs at location EX2-26 (an excavation verification sample collected 30 feet north from the property line), and 59,800 mg/kg at 15 feet bgs at location GP-6 (a geophone sample located 45 feet north of the property boundary) (Appendix AC). These samples all occurred in sand, and the two samples collected at a depth of 15 feet bgs are located at the contact between the sand and clay/silt units. Specifically, sample EX2-26 is located along a sand-clay/silt basal contact, and the GP-6 sample from 15 feet bgs is located at a sand-clay/silt lateral contact. The relationship between the stratigraphic contacts and the distribution of elevated chlorinated solvent concentrations suggests that the solvent-containing soil in this area is derived from a lateral transport mechanism. This is further supported by the soil samples collected in the vicinity of location GP-6, which are significantly lower in total chlorinated solvent concentrations. Specifically, the two samples collected from location GP-6 at shallower depths (5 and 10 feet bgs) had total chlorinated solvent concentrations of 0.33 mg/kg and 0.021 mg/kg, respectively, and the soil sample collected above sample EX2-26 at 6 feet bgs [sample EX2-26(A)] had a total chlorinated solvent concentration of 0.715 mg/kg (Appendix AC). This distribution pattern indicates that surface releases of chlorinated solvents were not occurring in these areas, as surface releases would have resulted in similar to higher concentrations of chlorinated solvents with residual saturation in the shallower soil sample.*

Not all existing data collected to date supports ExxonMobil's explanation on the lateral migration of chlorinated solvents from the CHT site to the Site. For example, the soil type for boring SB-1, located at approximately 5 feet of T9A-1A was described as silt from ground surface to approximately 25 feet bgs. The soil type for soil boring SB-3, located at approximately 15 feet of GP-6 was described as silt from ground surface to approximately 39 feet bgs. The soil type description of SB-1 and SB-3 does not support ExxonMobil's assumption of the presence of a sand-silt contact at approximately 15 feet bgs, that serves as a pathway for VOCs to migrate from CHT to the Site.

13. *Furthermore, the presence of the elevated shallow detections abutting the CHT-ExxonMobil property line supports that chlorinated solvent release(s) occurred in the vicinity of the property line and transport occurred to the north onto the Jalk Fee property. This transport was likely facilitated by runoff from the CHT property (including roof runoff from the CHT building), which caused the movement of chlorinated solvents away from the property line onto the Jalk Fee property.*

    Soil data indicate that there are silty/clay layers dipping from the Site to the CHT site (see Regional Board responses to Items No. 11 and 12). Therefore, roof runoff from the CHT building would not facilitate all contaminant migration from the CHT site to the Site.

14. *Elevated concentrations of total petroleum hydrocarbons and chlorinated hydrocarbons, however, are generally not co-located across the majority of the Jalk Fee (Appendix AD, Figure 4.6). For example, the TPH concentrations in the northern excavation areas do not contain chlorinated solvents, whereas several of the near surface soil samples collected in the vicinity of the property line contain both elevated TPH and chlorinated solvents. Although the soil samples in the vicinity of the property line contain both chlorinated solvents and TPH, the respective concentrations are generally both low, or with either PCE or TPH significantly higher in concentration than the other constituent. These results reinforce the site conceptual model in which chlorinated solvents from CHT released along the northern portion of the CHT property or directly onto the Jalk Fee property infiltrated downward through the higher permeability surface sand, until reaching the low permeability unit, and then migrated along the northward dipping contact between the high and low permeability units onto the Jalk Fee property.*

    The existing soil and analytical data do not support ExxonMobil's site conceptual model. (See Regional Board responses to Items No. 11 and 12.) For example, PCE was detected at a concentration of 5,460 μg/kg (B22 at 10 feet bgs), and a concentration of 1,120 μg/kg (SVP7 at 5 feet bgs). B22 and SVP7 are located northwest of the excavation area, at approximately 140 and 90 feet north of the property boundary, respectively. These PCE concentrations at shallow depths indicate the presence of on-site release or discharge at the Site and cannot be explained with ExxonMobil's site conceptual model.

15. *Based on the evidence provided, it has been demonstrated that CHT is the source of the chlorinated solvents observed in soil beneath the CHT, Jalk Fee and 10711 Norwalk Blvd properties. Therefore, EMES, on behalf of ExxonMobil, requests that the CRWQCB-LAR identify CHT as the discharger and responsible party for the chlorinated solvents identified on the CHT, Jalk Fee and 10711 Norwalk Boulevard properties; rescind its Order dated August 24, 2010 requiring ExxonMobil to assess and monitor the extent of chlorinated solvents; and formally remove ExxonMobil as the named discharger and responsible party for the chlorinated solvent.*

> The Regional Board acknowledges that CHT is a source of chlorinated solvents found at the CHT site, and contaminant plumes in groundwater found at both properties (CHT, and the Site) may have commingled. However, data collected and submitted to date (including, but not limited to, the contaminant fate and transport, and configuration of the plumes in soil matrix, soil vapor, and groundwater) have not indicated that the sources of chlorinated solvents in soil and groundwater found beneath the Site and suspected beneath the 10711 Norwalk Boulevard property properties, solely originated at or from the CHT site. To the contrary, the data demonstrates that there is an on-site discharge/release of chlorinated solvents that is independent of the chlorinated solvents on the CHT site.

In summary, based on existing soil matrix and soil vapor data collected at the Site and in the immediate vicinity including the northern portion of the CHT property, the Regional Board continues to hold that ExxonMobil has discharged, discharges, or is suspected of having discharged waste that could affect the quality of waters of the state. Therefore, the Regional Board is not rescinding its Order dated August 24, 2010, and the December 21, 2011 amendment to the Order, requiring ExxonMobil Environmental Services to adequately define the vertical and lateral extent of VOCs in soil matrix, soil vapor, and groundwater, originating from or encountered at the Site. Pursuant to the Order, you are required to continue soil matrix, soil gas and groundwater investigations to define the vertical and lateral extent of contamination originating from the Site.

If you have any questions, please contact Mr. Luis Changkuon, Project Manager, at (213) 576-6667 or luis.changkuon@waterboards.ca.gov.

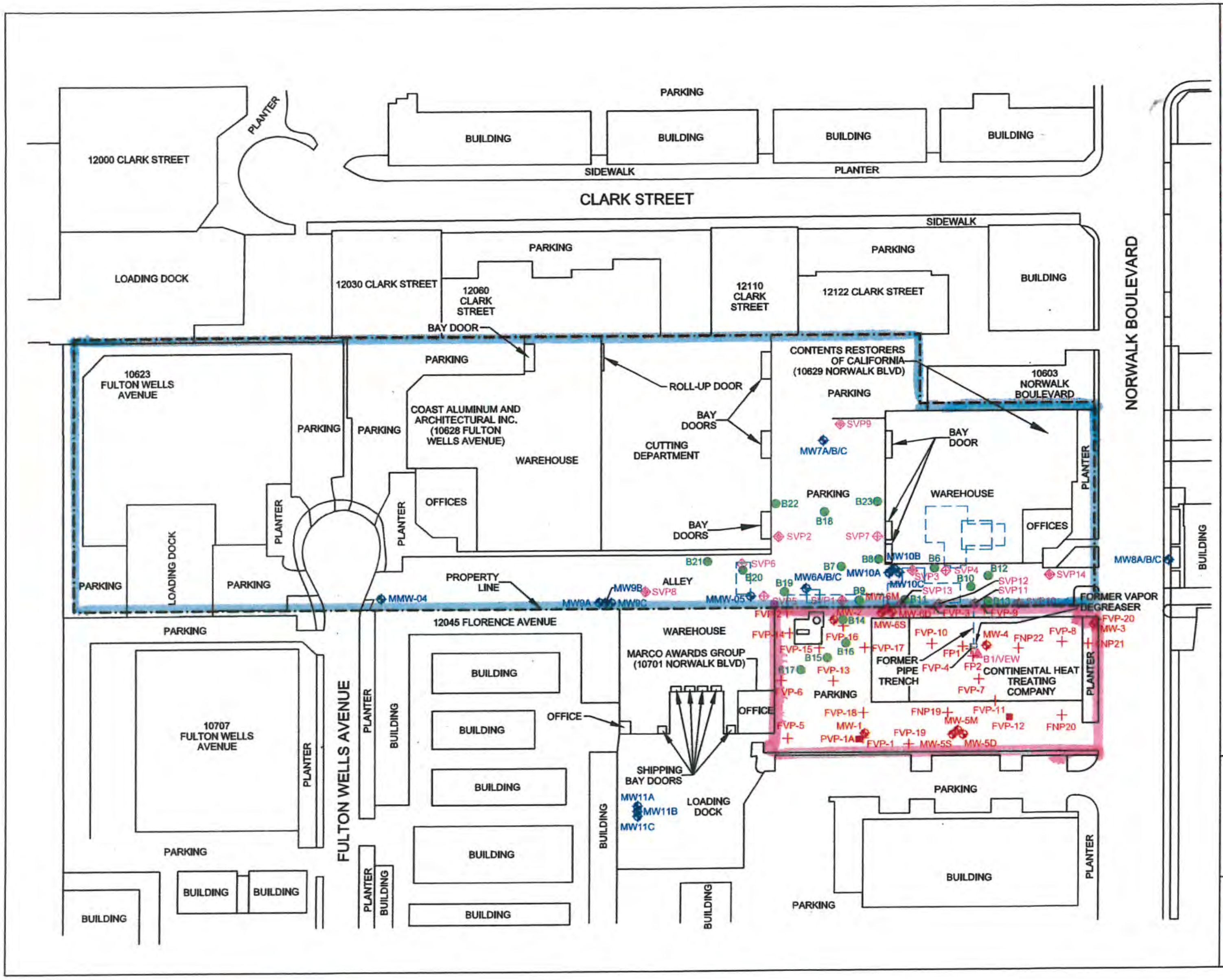
Sincerely,

Samuel Unger

Samuel Unger, P.E.
Executive Officer

Enclosures: Figure 1: Site Map
Figure 2: Map of the Former Jalk Fee site
Figure 3: Cross section SVP1 – MW2
Figure 5.1.2
Figure 4: Soil concentrations on cross section 5.1.2

cc: Mr. James Anderson, Cardno ERI
Mr. John Maple
Ms. Michelle F. Smith
Mr. Thomas Clark, Coast Aluminum and Architectural, Inc.
Mr. William Macnider, CSI Electric Contractors
Mr. James Stull, Continental Heat Treating
Mr. Michael Francis, Demetriou, Del Guercio, Springer & Francis, LLP
Ms. Ashley Arthur/Mr. Howard Schwimmer, Rexford Industrial Realty, LP
Mr. Jeremy Jungreis, Rutan & Tucker, LLP
Mr. Rick Fero, Fero Environmental Engineering, Inc.
Mr. Wayne Praskins, United States Environmental Protection Agency
Mr. Gene Lucero, Omega Chemical Site Potentially Responsible Parties Organized Group



EXPLANATION

⊕	MW11C	Groundwater monitoring well
⊕	MW8A/B/C	Nested groundwater monitoring well
⊕	MW-6S	Continental Heat Treating groundwater monitoring well
+	FVP-20	Continental Heat Treating soil vapor sampling probes
▲	B1/VEW	Soil vapor extraction well
⊕	SVP7	Soil vapor sampling well
◆	SVP14	Deep multi-depth soil vapor well
◇	SVP13	Shallow multi-depth soil vapor well
■	PVP-1A	Continental Heat Treating soil sample location
●	B23	Soil boring

N

SOURCE:
Modified from a map
provided by
GOOGLE EARTH

APPROXIMATE SCALE

0 120 240
FEET

FN11550006

GENERALIZED SITE PLAN

FORMER EXXONMOBIL JALK FEE PROPERTY
10607 Norwalk Boulevard
Santa Fe Springs, California

Cardno ERI
Shaping the Future

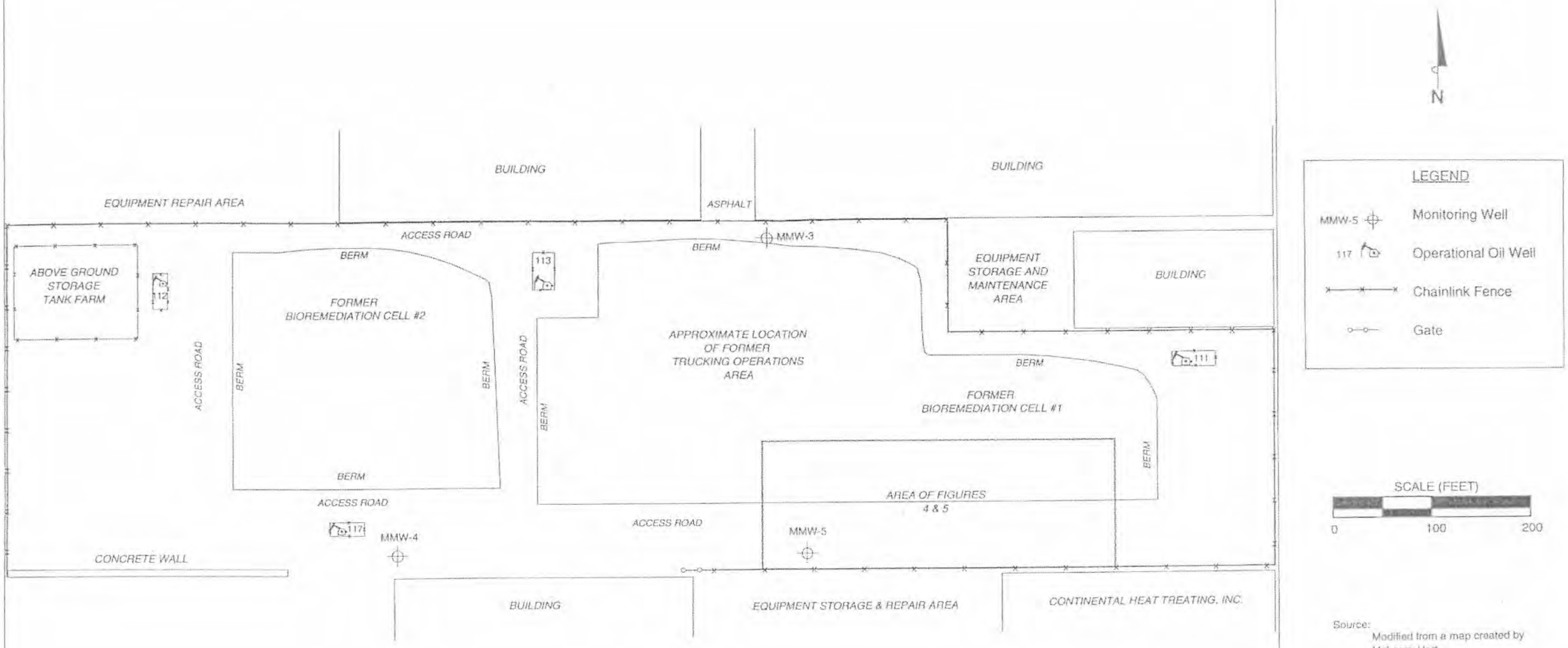
PROJECT NO.
1155

PLATE
1

DATE: 03/24/15

🟦 Jalk Fee site

🟥 Continental Heat Treating site



Source:
Modified from a map created by McLaren-Hart

SITE PLAN

Mobil Jalk Fee Property
10607 Norwalk Boulevard
Santa Fe Springs, California

ALTON GEOSCIENCE
Irvine, California

FIGURE 2

23-0134 SITE 3/18/97 jw

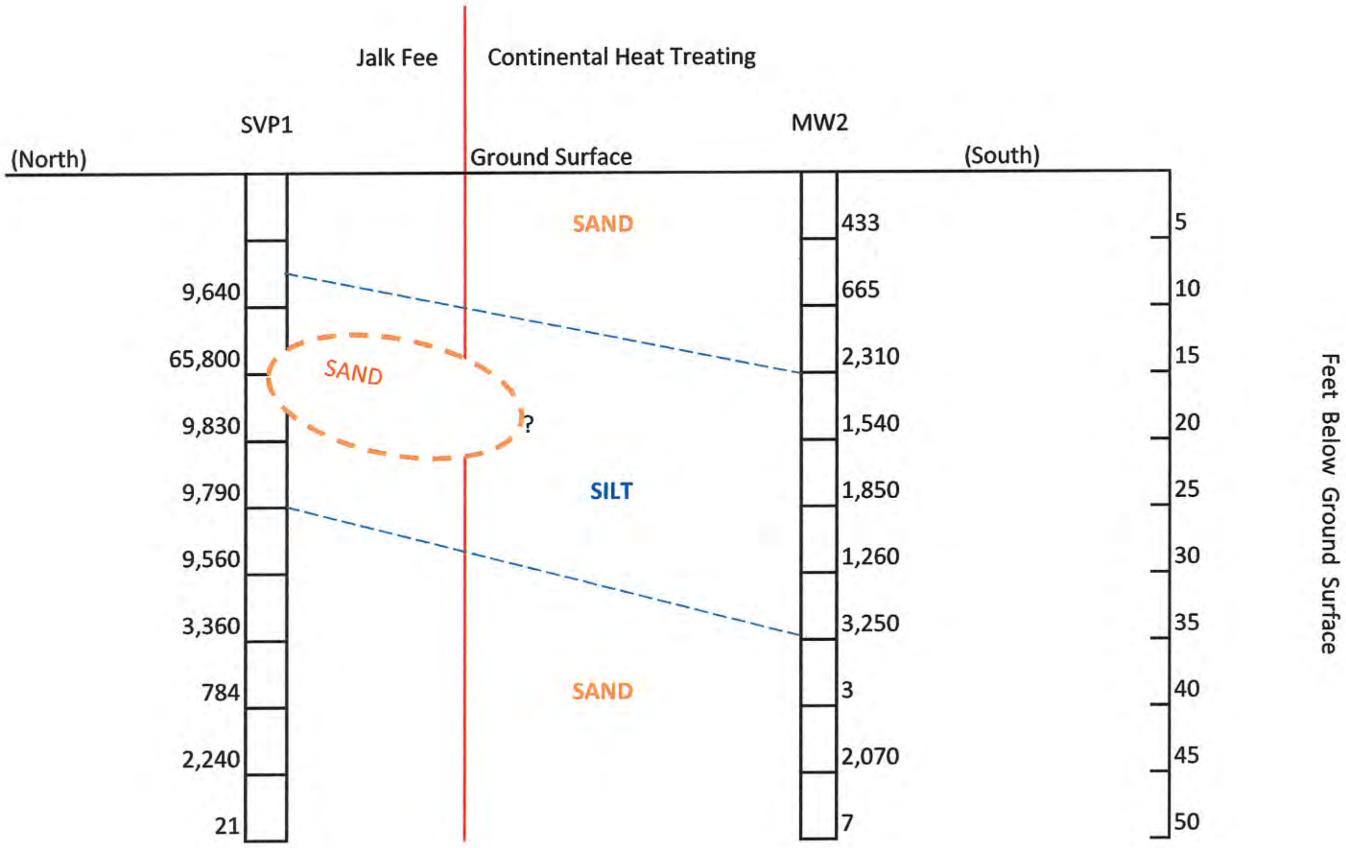
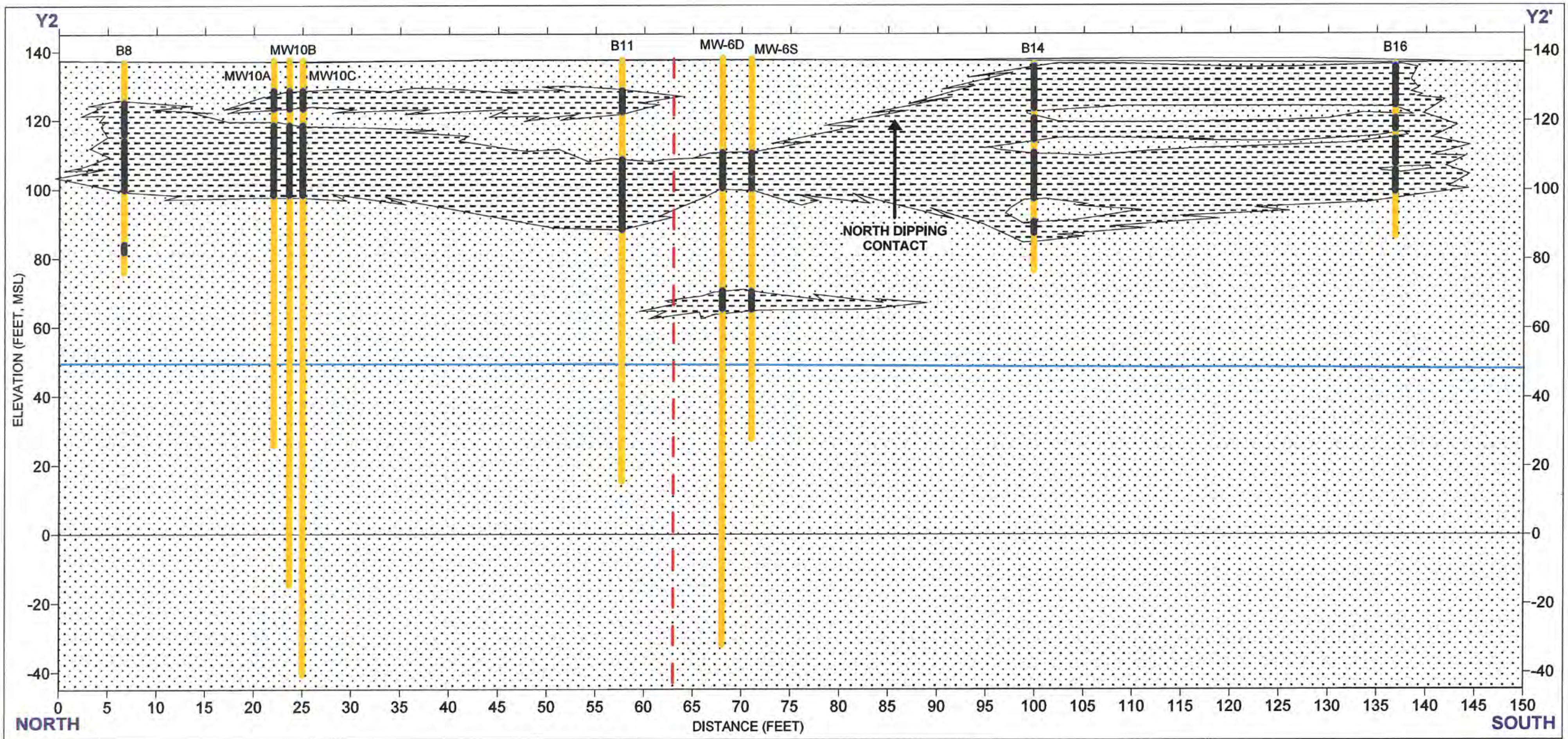


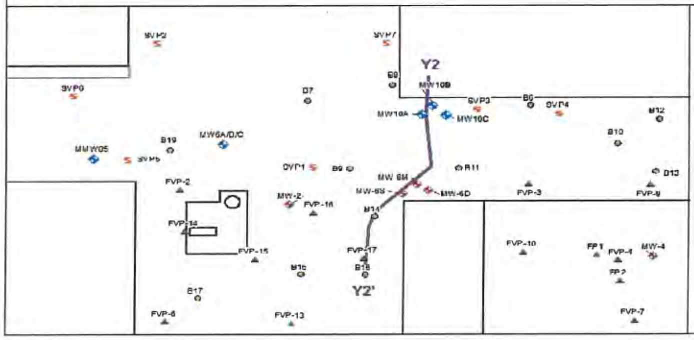
FIGURE 3
Cross Section
SVP1 - MW2
Former Jalk Fee Property
10607 Norwalk Boulevard
Santa Fe Springs, CA

Note: Approximate horizontal distance between SVP1 and MW2 is 30 Feet

LEGEND

9,460	Tetrachloroethe concentration in soil (micrograms per kilogram)
—	Property Boundary
SVP1	Located at Jalk Fee
MW2	Loctaed at Continental Heat Treating
- - -	Inferred contact





Legend

🟨	SAND LAYER
▮	SILT LAYER
—	GROUNDWATER ELEVATION
– –	PROPERTY BOUNDARY
⠿	SAND
▤	SILT

Notes:
1. All locations and dimensions are approximate.
2. Well diameters are not drawn to scale.
3. MSL - Mean Sea Level.
4. Groundwater elevations were take in November 2012.
5. MW-6S and MW-6D share the same location and are separated to show detail.
6. MW10A, MW10B, and MW10C share the same location and are separated to show detail.

NewFields
600 Jefferson St., Suite 1040
Houston, Texas 77002
(713) 357-5244

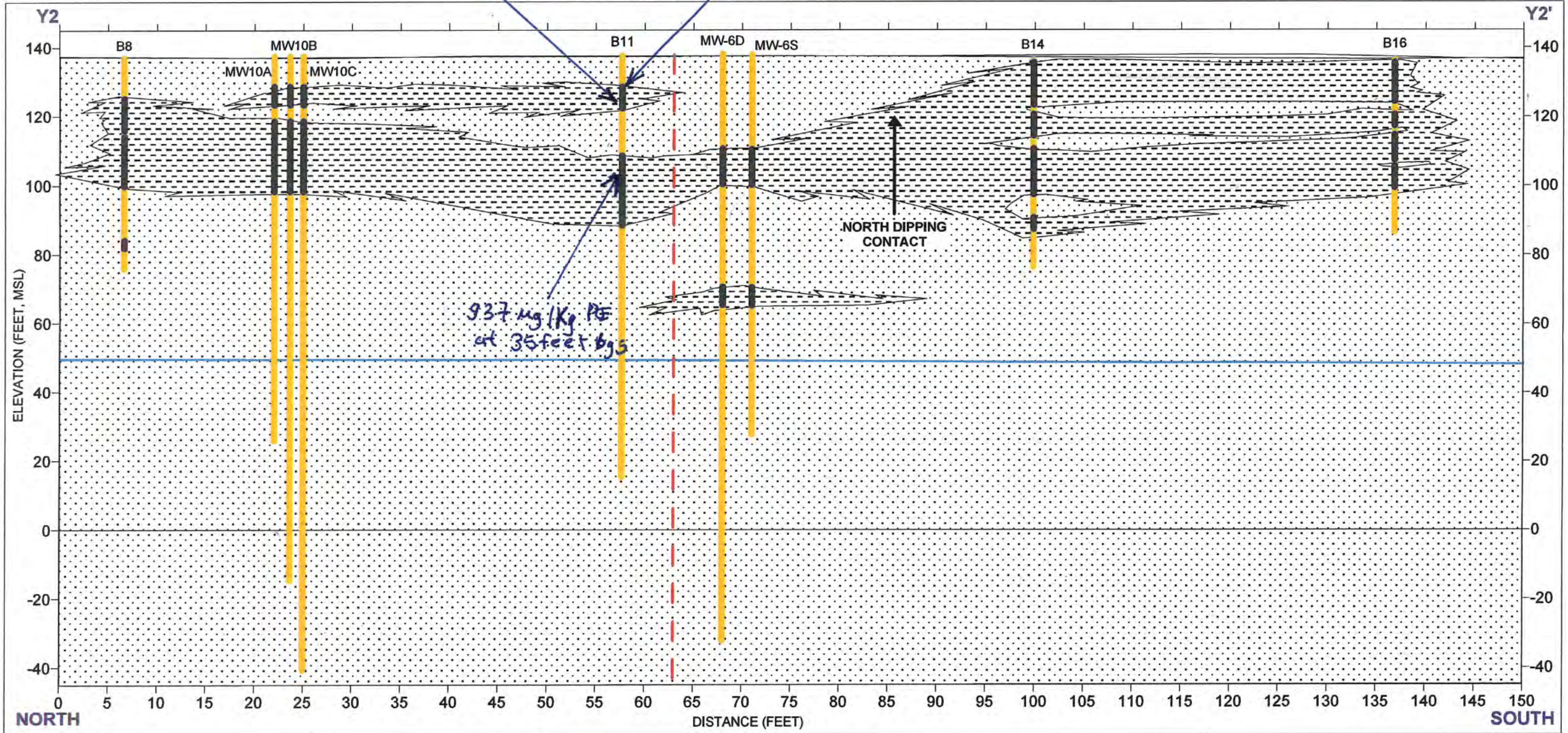
FIGURE 5.1.2
Y2 - Y2'
CROSS SECTION
(NORTH - SOUTH)

Former ExxonMobil, Jalk Fee Property
10607 Norwalk Boulevard,
Santa Fe Springs, CA

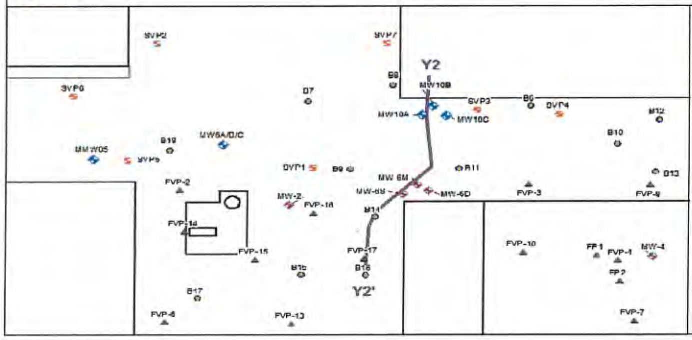
FIGURE 4

11,000 μg/Kg PCE
at 15 feet bgs

5,360 ug/Kg PCE
at 5 feet bgs



937 μg/Kg PCE
at 35 feet bgs



Legend

▮	SAND LAYER
▮	SILT LAYER
—	GROUNDWATER ELEVATION
- -	PROPERTY BOUNDARY
⁙	SAND
▤	SILT

Notes:
1. All locations and dimensions are approximate.
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FIGURE 5.1.2
Y2 - Y2'
CROSS SECTION
(NORTH - SOUTH)

Former ExxonMobil, Jalk Fee Property
10607 Norwalk Boulevard,
Santa Fe Springs, CA

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Attorneys for Respondent
EXXONMOBIL OIL CORPORATION

BEFORE THE STATE OF CALIFORNIA

STATE WATER RESOURCES CONTROL BOARD

IN THE MATTER OF THE PETITION OF

FORMER EXXONMOBIL JALK FEE

PROPERTY

California Regional Water Quality Control
Board, Los Angeles Region

Case No. ________________

DECLARATION OF LEN RACIOPPI IN SUPPORT OF PETITION FOR REVIEW AND REQUEST FOR HEARING AND STAY

[Concurrently filed with Petition for Review and Request for Stay]

(Cal. Water Code § 13320; Cal. Code Regs. tit. 23 § 2050 *et seq.*)

I, Len Racioppi, declare:

1. I am the Project Development Manager for ExxonMobil Environmental Services Company, which is an affiliated company providing environmental services to ExxonMobil Oil Corporation, Petitioner ("ExxonMobil"). The following facts are within my personal knowledge and, if called to testify to the matters stated herein, I could and would competently do so.

2. There will be substantial harm to ExxonMobil if a stay is not granted. Since the State Board Water Resources Control Board ("State Board") has up to 90 days to review an action upon a petition, ExxonMobil will suffer substantial harm by having to expend resources to develop work plans and implement work for which it has no liability. Specifically, ExxonMobil will be required to (1) prepare a work plan for additional off-site groundwater investigation to adequately

delineate the VOCs plume upgradient, downgradient, crossgradient/west and crossgradient/east by April 9, 2018, and (2) prepare an additional soil and soil vapor investigation work plan by March 30, 2018. Each of these would need to be completed and submitted before the State Board is required to act on ExxonMobil's petition. A preliminary estimate by ExxonMobil's environmental consultant, Cardno, indicates that completing the work plans in the Requirements and implementing such work could cost up to $284,000.

3. There will be no substantial harm to other interested persons or to the public if the requested stay is granted. The length of time that has passed between each of the Regional Board's efforts with regard to the Jalk Fee property demonstrates that the Regional Board does not view this site as presenting near-term risks. For example, ExxonMobil submitted a report to the Regional Board in March 2015 requesting that it be relieved of responsibility under the Regional Board's California Water Code section 13267 order and that Continental Heat Treating be made the discharger of record for the Jalk Fee property.[1] The Regional Board responded to that report in July 2016.[2] ExxonMobil acknowledges that the issues of identifying the appropriate discharger for Jalk Fee have been in dispute during this time period and that the Regional Board and ExxonMobil have both been working in good faith to resolve the relevant question of responsibility for chlorinated solvents during the time in question and not seeking delay. ExxonMobil believes that by granting a stay and undertaking review of its petition, the process will result in only a short delay that will not harm interested persons or the public, but will allow the fair resolution of the question of which party is the appropriate discharger who should be asked to address chlorinated solvents at the Jalk Fee property and offsite properties.

4. ExxonMobil submitted an amended work plan for indoor air assessment on November 14, 2014. The Regional Board did not formally approve this work plan until its November 18, 2016 Requirement for Submittal of Technical Reports. ExxonMobil submitted a site assessment report on October 20, 2014. The Regional Board did not formally respond to this

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[1] *See* Cardno's Request to Name Continent Heat Treating as Discharger, Former ExxonMobil Jalk Fee Property (March 25, 2015).

[2] *See* Letter to Ms. Marla Madden from LA-RWQCB, Response to "Request to Name Continental Heat Treating as Discharger" (July 22, 2016).

site assessment report until its November 18, 2016 Requirement for Submittal of Technical Reports. ExxonMobil submitted a revised public participation plan on November 14, 2014. The Regional Board did not formally respond to this plan until its November 18, 2016 Requirement for Submittal of Technical Reports. Then, in January 2018, the Regional Board issued the Requirements which are the subject of this Petition.

5. As detailed in the Petition for Review and Request for Hearing and Stay, filed concurrently with this declaration, there are substantial questions of law and fact regarding the Regional Board's issuance of the Requirement for Submittal of Technical Reports to ExxonMobil (dated January 12 and 19, 2018) that justify the issuance of a stay.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed this 12th day of February, 2018 in Houston, Texas

Len M Racioppi

LEN RACIOPPI

PROOF OF SERVICE

I, Monica Tapia, declare:

I am a citizen of the United States and employed in Los Angeles County, California. I am over the age of eighteen years and not a party to the within-entitled action. My business address is 555 South Flower Street, Forty-First Floor, Los Angeles, California 90071. On February 12, 2018, I served a copy of the within document(s):

DECLARATION OF LEN RACIOPPI IN SUPPORT OF PETITION FOR REVIEW AND REQUEST FOR HEARING AND STAY

☐ by transmitting via facsimile the document(s) listed above to the fax number(s) set forth below on this date before 5:00 p.m.

☒ by placing the document(s) listed above in a sealed envelope with postage thereon fully prepaid, in the United States mail at Los Angeles, California addressed as set forth below.

☐ by placing the document(s) listed above in a sealed Federal Express envelope and affixing a pre-paid air bill, and causing the envelope to be delivered to a Federal Express agent for delivery.

☐ by personally delivering the document(s) listed above to the person(s) at the address(es) set forth below.

☒ by transmitting via e-mail or other electronic transmission the document(s) listed above to the person(s) at the e-mail address(es) set forth below.

By Email
State Water Resources Control Board
waterqualitypetitions@waterboards.ca.gov

By Email and U.S. Mail
Samuel Unger, Executive Officer
Los Angeles Regional Water Quality Control Board
320 W. 4th Street, Suite 200
Los Angeles, CA 90013
Samuel.Unger@waterboards.ca.gov

I am readily familiar with the firm's practice of collection and processing correspondence for mailing. Under that practice it would be deposited with the U.S. Postal Service on that same day with postage thereon fully prepaid in the ordinary course of business. I am aware that on motion of the party served, service is presumed invalid if postal cancellation date or postage meter date is more than one day after date of deposit for mailing in affidavit.

I declare under penalty of perjury under the laws of the State of California that the above is true and correct.

Executed on February 12, 2018, at Los Angeles, California.

Monica Tapia