SUPPLEMENTAL SITE ASSESSMENT WORK PLAN
ALDERS CHEVRON / FORMER CHEVRON STATION NO. 93883
(VCP # CE0391)
1702 East Yakima Avenue
Yakima, Washington

June 14, 2013

Prepared for:
Washington State Department of Ecology
15 West Yakima Avenue, Suite 200
Yakima, Washington 98902

Prepared by:
SAIC Energy, Environment & Infrastructure, LLC
18912 North Creek Parkway, Suite 101
Bothell, Washington 98011

On Behalf of:
Chevron Environmental Management Company
6101 Bollinger Canyon Road
San Ramon, California 94583

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SAIC

TABLE OF CONTENTS

FIGURES

1. INTRODUCTION

SAIC Energy, Environment & Infrastructure, LLC (SAIC) prepared this work plan, on behalf of Chevron Environmental Management Company (CEMC), to perform a supplemental site assessment at the Alders Chevron site (a.k.a. former Chevron Station No. 93883), located at 1702 East Yakima Avenue (formerly 1602 Terrace Heights Road) in Yakima, Washington.

The objective of this assessment is to evaluate the current nature and extent of petroleum contamination that may be present in groundwater at the site due to past operations of a service station on the property. To accomplish this, SAIC proposes to install three new monitoring wells (MW-5, MW-6, and MW-7) and collect at least four quarters of additional groundwater monitoring data for the site.

2. BACKGROUND

Property records indicate that Standard Oil Company of California (a predecessor of Chevron) purchased the site property in 1970. Chevron reportedly operated a service station at the site through 1992, when the property was sold. In 1993, the property was redeveloped to its current configuration, which is used as vehicle display parking for Bob Hall's Mazda automobile dealership.

The potential presence of petroleum contamination at the site was first suggested following assessment activities performed by Rittenhouse-Zeman & Associates, Inc. (RZA) in 1989, which included advancement of five soil borings and the installation of monitoring wells MW-1, MW-2 and MW-3 (RZA, 1989A). Subsequent groundwater sampling results indicated the presence of gasoline-range petroleum contamination in monitoring wells MW-2 (C-4) and MW-3 (C-5) at concentrations of 14,000 micrograms per liter (µg/l) and 13,000 µg/l, respectively (RZA, 1989B).

Subsequent remedial actions were performed at the site in 1992 and 1993, and consisted of the following:

- Removal of the heating oil underground storage tank (UST), waste oil UST, dry well, and 325 cubic yards of impacted soil (RZA, 1992A);
- Removal of the three gasoline product USTs (Chen-Northern, 1993A); and
- Removal of approximately 429 cubic yards of additional contaminated soil, which was discovered during the removal of the former service station building and canopy (Chen-Northern, 1993B).

Based on the results of the soil cleanup actions performed at the site, in March 2004 the Washington State Department of Ecology (Ecology) issued a determination letter stating that no further soil remediation action was necessary at the site, but that further action would be required to obtain a No Further Action (NFA) determination for groundwater (Ecology, 2004). Ecology's 2004 NFA determination for soil was later rescinded and replaced by a Partial Sufficiency and Further Action Determination in May 2006 (Ecology, 2006). The 2006 further action determination letter provided the following requirements for closure of the site:

- Four consecutive quarters of groundwater monitoring showing contamination below MTCA; and

- Evidence that the previously abandoned wells were decommissioned in accordance with WAC 173-160, or the existing wells are located and decommissioned.

The letter also recommended that "A single monitoring well be installed near MW-3 [or use MW-3 if it exists] to demonstrate groundwater contamination is below MTCA method A cleanup levels for four consecutive quarters. The groundwater should be sampled for the "waste oil" contaminants listed in Table 830-1, Required Testing for Petroleum Releases."

Based on Ecology's recommendations, SAIC contracted ULS Services Corporation (ULS) to perform a subsurface geophysical survey to locate monitoring wells MW-1, MW-2, and MW-4, which were believed to have been paved over during redevelopment of the property in 1993. Monitoring well MW-3 was known to have been decommissioned in July 1992 (RZA, 1992B). ULS performed the survey work on April 17, 2013, which consisted of scanning suspected monitoring well location areas using a magnetic locator and electromagnetic induction metal detector to locate metallic monitoring well components such as well-boxes, and a 500 megahertz ground penetrating radar (GPR) to locate the monitoring well casings. Results of the survey did not provide any conclusive evidence to identify the locations of the missing monitoring wells; however, metallic survey and GPR results did identify one location in the expected vicinity of MW-3 and MW-4 that may warrant additional investigation. This location will be evaluated further during field activities associated with installation of the new monitoring wells (see Section 3 for additional details).

During the geophysical survey, SAIC also spoke with the property owner, Mr. Bob Hall, regarding what efforts were made to preserve the monitoring wells during redevelopment of the site in 1993. Mr. Hall indicated that the surface grade of the former service station property had been cut by several feet, which would suggest that the wells' casings would have had to have been modified in order to account for the change in ground surface elevation. In response to our inquiry, Mr. Hall spoke with the engineering firm that performed the redevelopment, in order to determine if there was any record of modifying the wells. However, a review of their field notes indicated no mention of the wells.

Based on the results of the geophysical survey, and discussions with Mr. Hall, SAIC believes that monitoring wells MW-1, MW-2, and MW-4 were destroyed during redevelopment of the site in 1993. Therefore, the decommissioning of these wells in accordance with WAC 173-160 will not be possible. The area in which these monitoring wells were formerly located is currently covered by asphalt paving that is in good condition and is well maintained; therefore, SAIC believes that there is limited potential for the remains of these wells to serve as preferential conduits for migration of ground surface contamination to groundwater at this site.

3. MONITORING WELL INSTALLATION

Due to the decommissioning of monitoring well MW-3, and the apparent destruction of the previously existing monitoring wells MW-1, MW-2 and MW-4, SAIC proposes to install three new monitoring wells (MW-5, MW-6, and MW-7) at the site in order to collect addition data regarding the current nature and extent of petroleum contamination that may be present in groundwater. Proposed locations for the new monitoring wells are shown on the attached site map, and justifications for their locations are provided below:

- Monitoring well MW-5 will be placed at the location identified by the April 2013 geophysical survey as the potential location of former monitoring wells MW-3 or MW-4.

This well will serve as the replacement for MW-3 (in the vicinity of the former dry well, heating oil UST, and waste oil UST locations). In addition, air-knife clearance at this location should allow SAIC to determine if the remains of a former monitoring well are present. If the remains of a former monitoring well are confirmed, the existing well remains will be decommissioned by over-drilling and the new well will be completed in its place.

- Monitoring well MW-6 will be installed at a location that is approximately downgradient of the former gasoline UST basin. This well will serve as a replacement for former monitoring well MW-2.
- MW-7 will be installed beyond the southeastern portion of the former service station property. This location is approximately downgradient of all former service station infrastructure and all previously identified areas of petroleum contamination.

3.1 SUBSURFACE UTILITY LOCATE

Prior to beginning any subsurface investigation activities, SAIC will contact the Utilities Underground Location Center to request that all public utilities be marked in the vicinity of the site. In addition, SAIC will subcontract a private utility locating subcontractor to locate any other potential utilities or other subsurface infrastructure that may be present in the vicinity of the proposed monitoring well locations.

3.2 SOIL BORING AND SAMPLING

Drilling and monitoring well installation activities will be performed by Cascade Drilling L.P. (Cascade Drilling) of Woodinville, Washington. Each monitoring well boring will initially be advanced to at least eight feet below ground surface (bgs) using an air-knife, in order to verify that no subsurface utilities are present. Below eight feet, borings will be advanced using a sonic drilling rig, which will be capable of boring through the alluvial cobbles that are anticipated at this site.

During drilling activities, an SAIC geologist will be present to log soils and collect soil samples for field-screening and possible laboratory analysis. Soil sampling in the upper 8 feet (i.e., air-knifed interval) of the boring will be performed using a stainless steel hand auger at a sampling interval of approximately 2 feet. Below 8 feet bgs, the sonic drilling rig will collect a continuous core sample. Soil samples will be classified in accordance with the Unified Soil Classification System. In addition, each sample will be field screened for the presence of petroleum hydrocarbons by visual and olfactory observation, headspace vapor measurements using a photo-ionization detector (PID), and sheen testing.

At a minimum, two soil samples collected will be submitted for laboratory analysis: one from the capillary fringe, and the second from the bottom-most sample interval attained in the boring. The bottom-most sample will be used to demonstrate that the sampling effort has advanced to a sufficient depth to define the vertical extent of petroleum-hydrocarbon impacts. Additional soil samples may also be submitted based on field-screening observations. For example, the sample producing the highest PID readings, strongest sheen, or otherwise having the greatest visual or olfactory indication of hydrocarbon impacts may also be submitted for laboratory analysis.

Selected soil samples will be submitted to Eurofins Lancaster Laboratories for the following analyses:

- GRO by ECY 97-602 NWTPH-Gx modified;
- Diesel-range organics (DRO) and heavy oils (HRO) by ECY 97-602 NWTPH-Dx modified with silica gel cleanup;
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX), ethylene dibromide (EDB), methyl tertiary butyl ether (MTBE), and halogenated volatile organic compounds (VOCs) by SW-846 8260;
- Carcinogenic polycyclic aromatic hydrocarbons (cPAHs) and naphthalenes by SW-846 8270 with selective ion monitoring;
- Polychlorinated biphenyls (PCBs) by SW-846 8082; and
- Total lead by SW-846 6010.

3.3 MONITORING WELL CONSTRUCTION AND DEVELOPMENT

Following completion of soil sampling activities, each boring will be completed as a 2-inch-diameter monitoring well. Based on historical groundwater elevation data, and construction details of previously existing monitoring wells at this site, it is anticipated that each monitoring well will be installed to a total depth of approximately 25 feet bgs, with a screened interval from 10 to 25 feet; however, final well construction details will be determined based on actual conditions encountered in the field. Wells will be constructed using Schedule 40 poly-vinyl chloride casing and 0.020-inch factory slotted screen with a 2/12 sand filter-pack. Each monitoring well will be completed at the ground surface with a flush-mount traffic-rated well-box.

SAIC will develop the new wells no sooner than 24 hours after completion. Well development will consist of pumping at least 10 well casing volumes of groundwater from the well using an electric submersible-pump, until water produced from the well is clear and free of sediment.

3.4 MONITORING WELL LOCATION AND ELEVATION SURVEY

In order to comply with current Ecology guidelines for groundwater elevation data, SAIC will subcontract a licensed land-surveying firm to perform a location and elevation survey of the new monitoring wells. Monitoring well elevation measurements will be made to the nearest 0.01 foot at the ground surface (top of well-box lid) and at the top of the well casing, relative to the North American Vertical Datum of 1988.

4. GROUNDWATER MONITORING

Following completion of well installation activities, Gettler-Ryan, Inc. (Gettler-Ryan) will begin routine groundwater monitoring at the site, on behalf of CEMC. Groundwater monitoring will be performed on a quarterly basis, and will consist of water level elevation measurements and sample collection at each of the three new monitoring wells. Samples will be collected using low-flow purge and sampling methods and will be submitted to Eurofins Lancaster Laboratories for the following analyses:

- GRO by ECY 97-602 NWTPH-Gx modified;

- DRO and HRO by ECY 97-602 NWTPH-Dx modified with silica gel cleanup;
- BTEX, 1,2 dichloroethane (EDC), MTBE, and halogenated VOCs by SW-846 8260;
- EDB by SW-846 8011;
- cPAHs and naphthalenes by SW-846 8270 with selective ion monitoring;
- PCBs by SW-846 8082; and
- Total lead by SW-846 6010.

5. INVESTIGATION-DERIVED WASTE MANAGEMENT

Regulated investigation derived waste (IDW) is anticipated to include soil cuttings, which will be generated during drilling activities, and water, which will be generated during well development and equipment decontamination. All regulated IDW will be containerized in 55-gallon, US Department of Transportation (DOT)-approved drums. Drums containing regulated IDW will be staged on site, at a location that is acceptable to the property owner, until a waste disposal profile can be generated and off-site transportation and disposal can be arranged (typically 6 to 8 weeks). Waste disposal coordination for regulated IDW will be handled by Conestoga-Rovers and Associates for CEMC.

Non-regulated IDW, such as nitrile gloves, plastic sheeting, and nylon tubing used for well purging, will be disposed of as standard municipal waste.

6. SCHEDULE

SAIC will begin project planning and permitting for this project upon receipt of Ecology approval of this work plan. It is anticipated that project planning and permitting will require approximately 4 to 6 weeks to complete, after which, the monitoring well installation activities will be performed.

Following completion of monitoring well construction, SAIC will wait a minimum of 24 hours prior to development of the new wells. It is anticipated that surveying of the new well locations will be performed concurrent with the well development activities.

A data evaluation and summary report will be submitted within 60 days following final receipt of all analytical data.

7. REFERENCES

Chen-Northern, 1993a. "Report of Limited Environmental Assessment for Tank Closure at Chevron Service Station No. 6009-3883". March 5.

Chen-Northern, 1993b. "Phase III Excavation Remediation of Petroleum Impacted Soil at Chevron Station 9-3883". December 2.

Ecology, 2004. Letter from Norman T. Hepner, P.E. to Mr. Bob Hall. March 8.

Ecology, 2006. Letter from Valerie Drew to Mr. Bob Hall. May 18.

RZA, 1989a. "Subsurface Petroleum Hydrocarbon Evaluation – Chevron Service Station No. 3883". May 9.

RZA, 1989b. "Results of Groundwater Sampling and Analyses – Chevron Station No. 3883". October 26.

RZA-AGRA, 1992A. "Fuel Oil UST, Used Oil UST and Dry Well Removal and Excavation of Soil - Chevron Service Station No. 9-3883". April 24.

RZA-AGRA, 1992B. "Well Abandonment - Chevron Service Station No. 3883". August 19.

8. LIMITATIONS

This technical document was prepared on behalf of Chevron and is intended for its sole use and for use by the local, state or federal regulatory agency that the technical document was sent to by SAIC. Any other person or entity obtaining, using, or relying on this technical document hereby acknowledges that they do so at their own risk, and SAIC shall have no responsibility or liability for the consequences thereof.

Site history and background information provided in this technical document are based on sources that may include interviews with environmental regulatory agencies and property management personnel and a review of acquired environmental regulatory agency documents and property information obtained from CEMC and others. SAIC has not made, nor has it been asked to make, any independent investigation concerning the accuracy, reliability, or completeness of such information beyond that described in this technical document.

Recognizing reasonable limits of time and cost, this technical document cannot wholly eliminate uncertainty regarding the vertical and lateral extent of impacted environmental media.

Opinions and recommendations presented in this technical document apply only to site conditions and features as they existed at the time of SAIC's site visits or site work and cannot be applied to conditions and features of which SAIC is unaware and has not had the opportunity to evaluate.

All sources of information on which SAIC has relied in making its conclusions (including direct field observations) are identified by reference in this technical document or in appendices attached to this technical document. Any information not listed by reference or in appendices has not been evaluated or relied upon by SAIC in the context of this technical document. The conclusions, therefore, represent our professional opinion based on the identified sources of information.

Figures

EAST YAKIMA AVENUE

SIDEWALK

SOUTH 17TH STREET

N

0 30'

MW-1

FORMER LOCATION
OF GASOLINE USTs
(REMOVED DECEMBER 1992)

PUMP ISLANDS

10,000 GALLON

10,000 GALLON

5,000
GALLON

MW-2

APPROXIMATE PROPOSED
LOCATION FOR NEW
MONITORING WELL MW-6

FORMER SERVICE STATION
BUILDING

MW-3 MW-4

APPROXIMATE PROPOSED
LOCATION FOR NEW
MONITORING WELL MW-5

550 GALLON HEATING OIL UST
(REMOVED MARCH 1992)

1,000 GALLON USED OIL UST
(REMOVED MARCH 1992)

VEHICLE DISPLAY PARKING - BOB HALL'S MAZDA

CURRENT BUILDING
(BOB HALL'S MAZDA)

LEGEND:

MW-2	FORMER MONITORING WELL LOCATION (ABANDONED OR DESTROYED)
MW-7	PROPOSED MONITORING WELL LOCATION
	CURRENTLY EXISTING SITE FEATURES
	FORMER SITE FEATURES
	APPROXIMATE BOUNDARY OF FORMER SERVICE STATION PROPERTY
	LANDSCAPED AREA

FORMER SERVICE STATION PROPERTY BOUNDARY AND FORMER SITE FEATURES ARE BASED ON SITE AND EXPLORATION PLAN (FIGURE 1) OF RZA-AGRA "FUEL OIL UST, USED OIL UST AND DRY WELL REMOVAL REPORT", DATED APRIL 24, 1992.

CURRENTLY EXISTING SITE FEATURES BASED ON INTERPRETATION OF 2013 AERIAL PHOTOGRAPH FROM GOOGLE MAPS.

LOCATIONS OF ALL SITE FEATURES ARE APPROXIMATE.

MW-7

SAIC

Alders Chevron / Former Chevron Station No. 93883
1702 E Yakima Ave
Yakima, Washington

FIGURE 1
Site Map

DATE: 5/24/2013

DRAWING: 93883 SiteMap2.dwg