MCVAY HIGHWAY PROJECT
SITE-SPECIFIC ASSESSMENT

McVay Highway (Former Franko Station #15)
86714 McVay Highway
Eugene, OR

UST Facility ID No. 6115
LUST Nos. 20-91-4247 & 20-89-4181

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INTRODUCTION

This report presents the analytical results and observations made after conducting a Site-Specific Assessment (SSA) at the McVay Highway Project Site, also known as the former Franko Station #15, located at 86714 McVay Highway in Eugene, Oregon. Information and data gathered during the assessment will be used to in cleaning up and redeveloping the site. Site redevelopment as a biofueling facility is expected to begin in August 2005 simultaneously with cleanup under an EPA Brownfield Cleanup Grant that was awarded earlier this month. This SSA project was funded by the EPA using Brownfield Site-Specific Assessment grant funding and performed by the Oregon Department of Environmental Quality (DEQ)

1.1 Purpose

The main purpose of this SSA project was to obtain soil and groundwater samples to determine the extent and magnitude of the petroleum release initially discovered in 1990 and to gather sufficient data to develop cleanup strategies to be implemented under the EPA Brownfield Cleanup Grant. The SSA activities included the collection of off-site soil and groundwater samples from push-probes to determine the extent of the contamination and collection of on-site groundwater samples from monitoring wells to determine the current magnitude of the contaminant plume.

DEQ performed this work in accordance with generally accepted professional practices related to the nature of the work accomplished, in the same or similar localities, at the time the services were performed. This report is for the specific application to the referenced project and for the exclusive use of the DEQ.

1.0 BACKGROUND

The McVay Highway Project property is located in southeast Eugene (Lane County). The facility was a gasoline service station until August 1991 when the current owner, Mid Oil Company and Franko Oil Company, filed chapter 7 bankruptcy and the property was turned over to the bankruptcy estate. The Franko property is approximately 0.70 acres located on the intersection of McVay Highway and Bloomberg Road directly west of Interstate I-5 and is bordered to the north and south by commercial properties and to the west by residential properties. A small intermittent creek, Russell Creek, is located approximately 1,000 feet south of the site and the Coast Fork of the Willamette River is located approximately ¼-mile to the east of the site (see Figure 1).

Underground storage tanks at the site consisted of one 5,000-gallon, one 7,000-gallon and one 12,000-gallon gasoline tanks, one 550-gallon waste oil tank and one 200-gallon heating oil tank. All underground storage tanks were removed in 1996 by the owner of the property at that time, Lucky Sites LLC. The service station building and canopy remain, however, the property is currently vacant.

Lane County obtained the site in September 2004 through tax foreclosure. At the time Lane County took possession, significant amounts of solid waste, tires and investigative derived wastes were on the property. In December 2004, the County removed the solid waste and secured the site. In January 2005, more than 400 tires and 15 drums of investigation derived waste were removed from the site. Previous investigations, tank and soil removal and remedial actions are discussed in Section 2.2.

2.1 Site Location, Description, and History

This site is located at 86714 McVay Highway in Eugene, Oregon. A site location map is included as Figure 1. The 0.70-acre property is located along a commercial corridor adjacent to Interstate 5 in southeast Eugene. A residential area of single-family homes is located directly west of the site. The former service station building, canopy and dispenser islands currently occupy the site. No business has operated at the site since 2003. The area is supplied drinking water by the Willamette Water District, however, several residences in the area continue to operate individual wells for irrigation purposes.

A service and retail gasoline station was operated on the site from at least 1976 until the station shutdown in 1991. Several other non-service station businesses occupied the site between 1997 and 2001.

2.2 Previous Environmental Activities

An initial site investigation was completed in April 1990 by PEMCO. No reports exist from this site investigation but there are references to six borings being drilled and low levels of contamination being detected. The contractor PEMCO is no longer in business.

A second site investigation was completed at the Franko site by RZA in August 1990. Four borings were drilled to depths of 20 to 31.5 feet. The locations of the borings were generally north and south of the existing gasoline tanks and dispenser islands. All soil samples collected from the borings detected TPH or gasoline concentrations below the site Soil Matrix Cleanup Level (i.e. 80 mg/kg). The samples collected at the 10 foot depth were also analyzed for BTEX compounds. Benzene was only detected in one sample, near the west dispenser island, at 1.43 mg/kg. The report indicates that groundwater was not encountered in any of the borings.

A complaint was received by the DEQ in February 1991 regarding gasoline in a domestic water well for the residence (33556 Bloomberg Road) west of the Franko property. The water well was sampled in May 1991 and analyzed for BTEX compounds. Benzene was detected at 3.3 µg/L. The benzene concentration was below the drinking water MCL of 5.0 µg/L. An additional water well sample was collected in June 1991 and also analyzed for BTEX compounds. Benzene was detected at 40 µg/L. The residence was connected to a municipal water supply in July 1991.

The gasoline tanks and product lines were precision tested on June 11, 1991. All tanks and lines passed the precision tests.

US West Communications was trenching in the McVay Highway right-of-way in front of the Franko property in August 1991 to install a new communications line. Visibly discolored soil and a strong gasoline odor were observed in the trench near the Bloomberg/McVay intersection. US West reported the contamination discovery to the DEQ, unfortunately, no soil samples were collected from the trench before it was backfilled.

All five underground storage tanks were decommissioned by removal in March 1996 from four separate excavations. Soil samples collected from the gasoline tank excavations detected gasoline-range petroleum hydrocarbons up to 1,800 mg/kg. No benzene was detected in any of the samples. Pit water was sampled and benzene was detected at 2,400 µg/L. Samples collected from the heating oil tank excavation did not detect any petroleum hydrocarbons. Samples collected from the waste oil tank excavation, directly adjacent to the west dispenser island, detected gasoline at 3,600 mg/kg and benzene at 20.2 mg/kg. A pit water sample from the waste oil tank excavation detected benzene at 630 µg/L.

Overexcavation of each tank excavation was completed in April 1996. Soil samples were collected from the limits of the excavations and analyzed for gasoline-range, diesel-range and total petroleum hydrocarbons. Detected concentrations were generally at or below Soil Matrix Cleanup Levels for the site.

Three monitoring wells were installed in January 1997. Initial samples were collected and analyzed for BTEX and the gasoline additives EDB, EDC and dissolved lead. High concentrations of benzene were detected upgradient and downgradient of the sources at the site including 1,200 µg/L west of the former tanks and 33,000 µg/L southeast of the dispenser islands.

A limited soil investigation was completed in February 1999 which included the advancing of three probes near the center of the site. Gasoline was only detected in one sample at 240 mg/kg.

Groundwater samples were collected from the existing wells in March 1999. Free product was discovered in monitoring well MW-3. Two additional monitoring wells were installed and sampled in April 1999. The two new monitoring wells located downgradient had detections of benzene at 3,600 µg/L and 25,000 µg/L.

DEQ measured free product at the monitoring wells in September 2000. Only monitoring well MW-3 had measurable free product at approximately 14.5 inches. DEQ measured free product a second time in November 2004. Again, only monitoring well MW-3 had measurable free product at approximately 35.5 inches.

Analytical results from the previous investigations are summarized on Table 1.

3.0 SITE INVESTIGATION ACTIVITIES

The scope of work for the site SSA was to characterize the magnitude and extent of soil and groundwater contamination both on-site and off-site and use that information and data to develop strategies to cleanup the site under an EPA Brownfield Cleanup grant. Assessment activities included driving seven push-probes, collection and analysis of soil and groundwater samples from the push-probes, and collection and analysis of groundwater samples from the existing monitoring wells.

3.1 Preparatory Activities

Site Health and Safety Plan. A Health and Safety Plan (HSP) was prepared in general accordance with the Occupational Safety and Health Act (OSHA) and Oregon Administrative Rules (OAR). Site-specific information was added for the project and a copy of the HSP was made available for use during the field activities.

Underground Utility Location. DEQ arranged to have underground utilities located and marked prior to beginning the field investigation work. DEQ contacted the Oregon Utility Notification Center who in turn notified the various utilities in the area to mark any underground installations.

Access Agreements and Authorizations. A signed access agreement was received from Lane County (current owner of the site) and Mid State Industrial (owner of the adjacent property to the south) authorizing DEQ to enter the property and collect soil and groundwater samples. A permit was also issued by the Oregon Department of Transportation providing authorization to conduct assessment activities in the right-of-way between McVay Highway and Interstate 5.

Natural Historic Preservation Act and Endangered Species Act. Prior to performing field work, the State Historic Preservation Office (SHPO), Confederated Tribes of the Siletz (Siletz) and the Confederated Tribes of the Grand Ronde (Grand Ronde) were contacted regarding any potential impacts to historic or cultural resources. SHPO, Siletz and Grand Ronde indicated field work could be performed with the following condition: if during project operations any cultural material were encountered all operations would cease immediately and an archaeologist would be contacted to assess the discovery. No cultural material was encountered during site assessment activities.

Information on the presence of threatened or endangered species in the vicinity of the site was obtained from the Natural Heritage Program and supplied to the Environmental Protection Agency (EPA) for evaluation of a “No Effect” determination. Details of the site assessment were presented in DEQ’s work plan dated March 9, 2005.

3.2 Push-Probe Explorations

Field activities were completed on March 17 and 18, 2005. Sampling locations were based on previous investigations, associated soil and groundwater analyses, and topographic and presumed groundwater gradient directions.

Sampling Locations. Figure 2 shows the site layout, the five monitoring well locations (MW-1 through MW-5) and the seven push-probe locations (P-1 through P-7) completed during the SSA activities. The push-probes were installed as follows:

- Two push-probes (P-1 and P-4) were completed to the north of the former gasoline tank excavations to demonstrate the northern edge of the plume and to determine any off-site sources of contamination from the north.

- Two push probes (P-2 and P-3) were completed east of the dispenser islands along McVay Highway to assess levels of contamination at the downgradient edge of the property.

- One push probe (P-5) was completed off-site on the property to the south to determine if the contaminant plume has extended to this property.

- Two push probes (P-6 and P-7) were completed off-site east of the property in the right-of-way between McVay Highway and Interstate 5 to determine the downgradient extent of the release.

Exploration Depth and Soil Sampling. All explorations were completed using a push-probe rig. All exploration borings were completed to total depths ranging from 16 to 23 feet bgs. Soil samples for chemical analysis from all explorations were collected at depths ranging from 9-19 feet bgs. These sample collection depths were chosen based on field observations to represent native soil conditions at or above the capillary fringe. The lower samples were collected below the static water level and, therefore, contaminant concentrations are likely related to groundwater impacts. Soil cores were obtained continuously using 4-foot-long collection tubes and examined for soil type description, field screened for presence of contamination, and sampled for possible chemical analysis by an analytical laboratory. Soil boring and monitoring well logs are included in Appendix A. Geotechnical hole and well construction reports required by the Oregon Water Resource Department (OWRD) are also included in Appendix A.

Field Screening. All soil cores were field screened for the presence of volatile organic compounds (VOCs) using a photoionization detector (PID).

Geologic observations. Cemented sands or sandstone was encountered in each probe boring beginning at a depth 6 to 7 feet below ground surface (bgs) and continued to at least the depth of the terminated of each probe.

Soil description. All explorations (seven push-probes) found brown silty clay soil to 6 to 7 feet bgs overlaying cemented sands or sandstone to the maximum depth reached (27’ bgs). Some variability in color and texture was observed in the silty clay, but overall soil types appeared consistent throughout the site.

The Natural Resource Conservation Service (NRCS) soil survey publication reports the soil type for the local area of this site is Urban land-Hazelair-Dixonville complex and is made up of 27% - 70% clays.

Depth to Groundwater and Water Production Rate. The silty clay soil at six feet bgs was moist or very moist in each of the probes, however, the cemented sands appeared dry and the push-probe borings yielded little to no water. Only probe P-5 yield enough water to collect a groundwater sample. Static water in the five monitoring wells were measured on March 18, 2005, and ranged from 11.89-18.90 feet bgs.

Groundwater Sampling. Groundwater samples were only obtained from the open boring at probe P-5 and from monitoring wells MW-2, MW-4 and MW-5 using the push-probe groundwater sampling equipment (peristaltic pump) and by manual pumping of poly-tubing with a foot valve. Groundwater samples were collected at the groundwater table as indicated by measurement of the depth to groundwater. Groundwater samples were not collected from monitoring well MW-3 because of the presence of excessive free product. Monitoring well MW-1 could not be located.

Locating and Abandonment. After sampling activities were completed, probes P-1 through P-8 were located by estimating the distance to a known site feature and abandoned in accordance with WRD regulations and procedures. The abandonment procedure consisted of filling the exploration with granular bentonite and hydrating the bentonite with water. For paved/concreted areas, a cold asphalt or concrete patch was used to complete the surface seal.

3.4 Sample Handling and Storage.

Clean sample containers were provided by the analytical laboratory ready for sample collection including preservative when required. Samples for VOC analysis were fully filled, leaving no headspace. A label was affixed to each sample container and marked with identifying information. Sample containers were then stored in a cooled ice chest until transported to the analytical laboratory. A chain of custody was maintained and documented at all times.

3.6 Decontamination and Handling of Investigation-Derived Waste

All non-disposable field equipment devices were decontaminated to prevent cross-contamination between sampling events. Decontamination consisted of washing field equipment in a detergent solution, rinsing with tap water, and rinsing with deionized water. The push-probe equipment was cleaned using a high-pressure washer before and after each probe or well installation.

Investigation-derived waste (IDW) consisted of decontamination water, purge water, and personal protective equipment (PPE). All decontamination or purge water generated was immediately placed in drums pending analytical results. Based on these results, the water was disposed of by Spencer Environmental of Portland. Personal protective equipment (nitrile gloves) was disposed of as solid waste.

3.7 Land and Water Use Observations

To evaluate the potential risks posed by the site to human health, the current and reasonably likely future land and water uses within the locality of the facility were identified (the "locality of the facility" or LOF is defined below). To assist in the evaluation of future land and water use within the locality of the facility, field staff noted the following observations described below.

1. Land use within the LOF is mixed commercial and residential including the subject property.

2. Water use within the LOF is municipally supplied water by the Willamette Water District, however, several residences and businesses still have individual water wells for irrigation purposes.

Locality of the Facility. The locality of the facility is any point where a human or an ecological receptor contacts or is reasonably likely to come into contact with chemical constituents from the facility (i.e., the site). The locality of the facility takes into account the likelihood of the chemical constituents migrating over time. As such, it could include the site and properties downgradient of the site. Chemical data from the site explorations will be used to approximate the locality of the facility, however, there is currently insufficient data to clearly define the LOF.

4.0 ANALYTICAL PROGRAM

All soil and groundwater analysis were performed by North Creek Analytical of Beaverton, Oregon. Certified Analytical Results are included in Appendix C.

4.1 Analyses for Contaminants of Potential Concern

Contaminants of potential concern (COPCs) at this site included gasoline and gasoline associated chemical constituents (e.g., benzene, gasoline additives, etc.). No other potential contaminants of concern were suspected to be present. Petroleum analyses were used to delineate the extent and magnitude of both soil and groundwater contamination. All samples were analyzed in accordance with OAR 340-122-0218.

Soil Samples. At least one soil sample was selected from each probe for gasoline-range petroleum hydrocarbons by Northwest Total Petroleum Hydrocarbon Method NWTPH-Gx and, if detected at a concentration greater than 1,000 mg/kg, these samples were analyzed as follows:

- Gasoline-related VOCs by EPA Method 8260B; and
- Total lead by EPA Method 6020.

Groundwater Samples. All groundwater samples were analyzed as follows:

- Gasoline-related VOCs by EPA Method 8260B.
- Dissolved lead by EPA Method

4.2 Quality Assurance and Quality Control

The general quality assurance objectives for this project were to develop and implement procedures for obtaining and evaluating data of a specified quality. The data can then be used to assess for the presence of petroleum contamination and determine if an imminent threat or unacceptable risk is posed to human health or the environment by the site. To collect such information, analytical data must have an appropriate degree of accuracy and reproducibility, samples collected must be representative of actual field conditions, and samples must be collected and analyzed using unbroken chain-of-custody procedures.

During fieldwork all sample collection, labeling, handling and storage were performed in accordance with the DEQ UST Program Quality Assurance Project Plan, January 2002 (QAPP). Site specific sampling procedures followed during field activities are outlined in the Sampling and Analysis Plan. Disposable or decontaminated sampling equipment was used to minimize or eliminate the potential for cross-contamination between explorations. All samples were placed into laboratory-supplied sample containers including preservative (when required). Samples were labeled with specific identifying information. A chain of custody was maintained at all times. The laboratory also performed quality control analyses (e.g. - matrix spikes and method blanks) per the requirements of the analytical method.

Detection limits were achieved consistent with industry standards and when practicable, below or comparable to promulgated regulatory standards, unless raised due to high analyte concentrations in the sample or matrix effects.

5.0 RESULTS

Seven push-probe boring explorations were advanced at the McVay Highway Project site on March 17 and 18, 2005. Soil samples were collected from each push-probe and an attempt was made to collect groundwater samples from each probe, however, only probe P-5 yielded sufficient water to collect a sample.

Groundwater samples were collected from monitoring wells MW-2, MW-4 and MW-5. No sample was collected from monitoring well MW-3 because of substantial free product in the monitoring well. Monitoring well MW-1 could not be located.

5.1 Push-Probe Sampling Results

An attempt was made to collect soil samples from the shallow silty clay soil at depths between 4 to 6 feet bgs and in the cemented sands or sandstone as deep as 10 feet. Probe refusal was generally met at a depth of 11 feet in each boring when using soil collection tooling.

Gasoline-range petroleum hydrocarbons were only detected in shallow soils in the samples collected from probe P-3 which was located directly downgradient of the dispenser islands. Olfactory and visual signs of contamination were observed in the soil core from probe P-3 from approximately 4 to 10 feet bgs. Samples was collected at a depth of 4 and 6 feet and analyzed for gasoline-range

petroleum hydrocarbons. Laboratory results reported concentrations of 11.6 mg/kg and 827 mg/kg, respectively. Shallow soil samples were also collected from probes P-2, P-4 and P-5. No contamination was detected in any of those soil samples.

Similar to the shallow soils, gasoline-range petroleum hydrocarbons were only detected in deeper soils in the sample collected from probe P-3. A sample was collected from probe P-3 at a depth of 10 feet and analyzed for gasoline-range petroleum hydrocarbons. Laboratory results reported concentrations of 176 mg/kg. Deeper soil samples were also collected from probes P-1, P-2, P-4, P-5, P-6 and P-7. No contamination was detected in any of those soil samples.

Groundwater samples were planned to be collected at each of the probe locations. When it was discovered that the probe borings were dry at the depth of probe refusal using soil collection toolong, an attempt was made to drive the smaller diameter groundwater sample collection tooling to a greater depth. The probe was driven to a depth of 27 feet at several probe locations and the boring left open several hours, however, little or no groundwater entered the borings.

Only probe P-5, located on the adjacent property to the south, had enough water to analyze for volatile organic compounds. Laboratory results reported benzene at 24.3 µg/L and no detection of gasoline additives. Low levels of toluene, ethylbenzene, xylenes and propylbenzenes were also detected.

Analytical results are summarized in Table 2.

5.2 Monitoring Well Sampling Results

Groundwater samples were collected on March 18, 2005, from three monitoring wells (MW-2, MW-4 and MW-5) and analyzed for gasoline-related compounds. No evidence of gasoline contamination was observed in groundwater collected from monitoring well MW-2. Significantly high concentrations of BTEX compounds, particularly benzene, were detected in monitoring wells MW-5. Benzene was detected at a concentration of 23,100 µg/L. Benzene was also detected in the sample from monitoring well MW-4 at 563 µg/L. No gasoline additives were detected in any of the groundwater samples, however, many of the samples had elevated detection limits. Moderate levels of several other gasoline-related volatile organic compounds were detected in the samples from monitoring well MW-4 and MW-5. Analytical results are summarized in Table 2.

Free product thickness was measured at monitoring well MW-3 on March 18, 2005. Free product was measured at 2.40 feet. Approximately three gallons of free product was bailed from the monitoring well and then free product thickness was measured again. Free product thickness had been reduced to 1.55 feet.

On March 18, 2005, depth to groundwater measurements were collected from monitoring wells MW-2, MW-4 and MW-5. Depth to groundwater ranged from 10.27 feet to 11.18 feet below the top of casing. Groundwater elevation data is summarized in Table 4. The inferred shallow groundwater flow direction associated with the March 18, 2005, groundwater monitoring event generally was to

the southeast, however, since no former survey data could be found for the monitoring wells, an accurate gradient could not be calculated.

6.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the analytical data collected from this and prior investigations, soil and groundwater appears to have been significantly impacted by a gasoline release related to either the product piping or dispensers. Benzene concentrations detected in soil and groundwater greatly exceed almost all the generic risk-based concentrations including volatilization to indoor air.

The extent of the contaminant plume in soil appears to have been defined by this investigation and does not appear to extend beyond the adjacent right-of-ways. However, because little water was yielded for collection in the push-probe borings, it is difficult to come to any specific conclusion regarding the extent of groundwater contamination. It is DEQ's recommendation that additional 2-inch monitoring wells be installed to further characterize the groundwater contamination and determine the full extent of the groundwater contaminant plume.

Groundwater concentrations of benzene detected at monitoring well MW-5 are approximately 8½ times the risk-based concentration for occupational volatilization to indoor air. In addition, substantial amounts of free product are present in monitoring well MW-3. Any redevelopment of this site will need to address the issues of free product removal and cleanup of high-concentration dissolved-phase product in the groundwater. Additionally, the source area of this contamination, which is located beneath the dispenser islands, will need to be removed or remediated.

The generic risk-based concentrations can be found in Appendix A of the DEQ guidance document entitled *Risk Based Decision Making for the Remediation of Petroleum-Contaminated Sites* (September 22, 2003).

DEQ recommends that immediate actions be taken to begin the cleanup of gasoline contaminants at this site using the EPA Brownfield Cleanup grant. Source removal, most likely through excavation, will be integral to the cleanup of this site. An engineered remediation system, such as dual-phase extraction or pump and treat, will be necessary to remove free product and the most egregious concentrations of gasoline and benzene. Once completed, residual contamination can be addressed by enhanced natural attenuation techniques such as ozone or hydrogen peroxide injections.

In addition, an investigation to determine the full nature and extent of the groundwater contamination should be completed which includes off-site downgradient and on-site upgradient monitoring wells, survey of all wells, groundwater sample collection and routine groundwater monitoring and analysis from the existing monitoring well network.

7.0 REMARKS AND SIGNATURES

The information, conclusions, recommendations and proposals contained in this report were arrived at in accordance with currently accepted professional environmental and hydrogeologic practices at this time.

Prepared by:

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