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October 11, 2005

Mr. Kipp Eckert ConocoPhillips Company PO Box 923 Bothell, WA 98041

RE:

PROPOSAL TO COMPLETE REMEDIAL EXCAVATION AND GROUNDWATER MONITORING WELL INSTALLATIONS

CONOCOPHILLIPS FACILITY NO. 0968 8436 DEPOT ROAD, LYNDEN, WASHINGTON

Dear Mr. Eckert:

SECOR International Incorporated (SECOR) presents this work plan to provide direction, observation and documentation of remedial excavation activities and groundwater monitoring well installations at ConocoPhillips Company Facility No. 0968 (site) located at 8436 Depot Road, Lynden, Washington.

Based on telephone conversations with Mr. John Bosman, SECOR understands that the warehouse located on the south side of the site will be removed during December 2005. Historical environmental investigations have identified soil contamination beneath the warehouse. SECOR will oversee the removal of contaminated soils situated beneath the warehouse after the planned warehouse demolition. SECOR will install up to six monitoring wells following the remedial excavation. Figure 2 shows the current site configuration.

# SITE DESCRIPTION

The site is a bulk plant located in Lynden, Washington on the east side of Depot Road. A site location map is provided as Figure 1. The site is located in Whatcom County in Section 20; Township 40 North; Range 3 East. The area is zoned Industrial District I.

Existing site features at the bulk fuel plant include a warehouse with an attached platform area, an office, a garage, a heating oil underground storage tank (UST) at the office, five aboveground storage tanks (ASTs) in a concrete bermed tank farm area, a pumping station associated with the ASTs, a top loading rack located west of the ASTs, a truck off-loading station located southwest of the ASTs, and two oil/water separators. Underground piping connects the ASTs pumping station and top loading rack. Site features are shown on Figure 2. Former site features include a former top loading rack located north of the warehouse, a former septic system located west of the garage, and a former 5,000 gallon semi-buried steel stove oil tank located south of the ASTs. Underground piping connected the former loading rack with a former barrel filling station located near the southwest corner of the platform located on the east end of the warehouse.

## **BACKGROUND**

SECOR's understanding of the site's background is based on documents provided by ConocoPhillips.

In October and November of 1989, one 10,000 gallon and four 20,000 gallon ASTs were removed and replaced with ASTs of the same capacities. Also in November of 1989 GeoEngineers, Inc. conducted an

environmental site assessment during the removal of the 5,000 gallon semi-buried steel stove oil tank. During the steel stove oil tank excavation ten soil samples were collected at depths ranging from 2 to 9 feet below ground surface (bgs), and tested for petroleum hydrocarbons. Three of the samples contained total petroleum hydrocarbons in the gasoline range (TPH-g) and total petroleum hydrocarbons in the diesel range (TPH-d). GeoEngineers indicated that approximately 20 cubic yards of petroleum contaminated soil was removed from the tank farm area, treated, and disposed of offsite.

In October of 1997 Pacific Environmental Group, Inc. (Pacific) conducted site assessment activities as part of Tosco's due diligence program for bulk plants acquired from UNOCAL in March 1997. One soil boring (SB-5) was advanced to 20 feet bgs using a Geoprobe equipped drilling rig and nine hand auger borings (SB-1 through SB-4 and HB-1 through HB-5) were advanced to depths ranging from 3 to 10 feet bgs. The locations of SB-1 through SB-4 and HB-1 through HB-5 are shown on Figure 2. Soils encountered in the borings consisted predominately of fine sands. Groundwater was not encountered in any of the borings. Selected soil samples were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) and for TPH-g, TPH-d, and total petroleum hydrocarbons in the lube-oil range (TPH-o). TPH-g was detected in the soil samples collected at 3 feet bgs from boring HB-1. TPH-d and TPH-o were detected in soil samples collected at 3 feet bgs from borings HB-1, HB-2, HB-4, and HB-5. None of the concentrations exceeded the Washington State Department of Ecology Model Toxics Control Act (MTCA) Method A soil cleanup levels.

Noll Environmental, Inc. (Noll) completed additional site assessment activities at the site in October 1998. Noll's assessment included collecting soil samples from areas not assessed (HB-6 and SB-8) and from below depths previously explored (SB-6, SB-7, and SB-9). The locations of HB-6 and SB-9 are shown on Figure 2. Soil borings SB-6 through SB-9 were advanced to depths ranging from 16.5 to 24 feet bgs using a Geoprobe equipped drilling rig. Hand Boring HB-6 was advanced to 3.5 feet bgs beneath the warehouse platform using a hand auger. Soil samples were collected from borings SB-6 through SB-9 at approximately 5 foot intervals. Soil samples were collected with a hand auger from boring HB-6 at 2 and 3 feet bgs. Soils encountered in the borings consisted of fine to medium brown to gray sands to the deepest depth explored.

Groundwater was encountered at 21 feet bgs in boring SB-6; groundwater was not encountered in any of the other borings. A groundwater sample was collected from SB-6 from 22 to 24 feet bgs. All selected soil and groundwater samples were analyzed for TPH-g, TPH-d, TPH-o, BTEX, methyl tert-butyl ether (MTBE), and total lead.

TPH-g was detected in the soil samples collected at 2 and 3 feet bgs, from boring HB-6 at concentrations below the MTCA Method A soil cleanup levels. TPH-d and TPH-o were detected in soil samples collected at 2 and 3 feet bgs from boring HB-6 at concentrations above the MTCA Method A soil cleanup levels except for TPH-o in the sample collected from 3 feet bgs (HB-6-3). TPH-d and TPH-o were also detected in the soil sample (SB-7-5) collected from 5 feet bgs from boring SB-7. The concentration of TPH-d in the sample SB-7-5 was below the MTCA Method A soil cleanup levels and the concentration of TPH-o was above the MTCA Method A soil cleanup levels.

The groundwater sample collected from boring SB-6 contained total lead at a concentration of 9.07 µg/L. The concentration of lead in the groundwater sample was below the MTCA Method A cleanup levels for groundwater. Communication records with the Washington State Department of Ecology (DOE) indicate that the lead concentrations observed in the groundwater at the site should be considered background levels.

On March 8, 2005 SECOR conducted an additional subsurface investigation to confirm the previous findings of Noll and fill in additional data gaps on groundwater quality. The results of the findings are summarized as follows.

A subsurface investigation was completed by SECOR to assess soil and groundwater conditions in the vicinity of the warehouse, ASTs, loading rack, and previously identified impacted areas. Borings B-1 and B-2 were located near the south end of the AST tank bed. Borings B-3 and B-4 were located near the east end of the warehouse. B-5 was located north of the warehouse and B-6 was located beneath the warehouse platform in the vicinity of the former barrel storage area.

Hydrocarbon constituent concentrations as TPH-d and TPH-o exceeding the MTCA Method A Soil Cleanup Levels were detected in soil samples B6-2 and B6-3 collected from beneath the warehouse at depths of 2 and 3 feet bgs, respectively. TPH-g was detected at a concentration above the MTCA Method A Soil Cleanup Levels in soil sample B6-3. Benzene was detected above the laboratory reporting limits but below MTCA Method A Soil Cleanup Levels in soil sample B1-18 collected at a depth of 18 feet bgs. TPH-g, TPH-d, TPH-o and BTEX constituents were not detected at concentrations above the MRLs in any of the other soil samples submitted for analysis.

Groundwater was encountered at depths ranging from approximately 19 to 22 feet bgs. TPH-d was detected at concentrations above the MTCA Method A cleanup levels for groundwater in groundwater samples collected from B-1, B-2, B-3 and B-5. TPH-o was detected at concentrations above the MTCA Method A cleanup levels for groundwater in the groundwater sample collected from B-3. Concentrations of TPH-o were below the MTCA Method A cleanup levels for groundwater in the groundwater sample collected from B-2.

Based on these results it appears that soils containing constituent concentrations above the MTCA Method A cleanup levels are limited to the area beneath the warehouse. Groundwater containing petroleum constituent concentrations above the MTCA Method A cleanup levels has been identified in the areas explored on the south side of the site and the extent of the groundwater impacts has not been delineated.

## **SCOPE OF WORK**

SECOR's approach to soil remediation will consist of directing the excavation of impacted soil from beneath the warehouse following the removal of the warehouse structure. The scope of work will include the following tasks:

- Prepare and implement a site-specific Health and Safety Plan (HASP) accordance with federal regulation (29 CFR 1910.120) guidelines for performing work at hazardous or potentially hazardous waste sites. The HASP will be applicable to SECOR personnel and SECOR subcontractors;
- Direct, observe and document the excavation of impacted soils beneath the current warehouse structure;
- Assess soil conditions during the remedial excavation using field screening methods for petroleum hydrocarbon identification;
- Collect soil samples from the limits of the excavation and submit the samples for quantitative chemical analysis;
- Profile and coordinate disposal of the excavated soils;
- Observe and document the advancement of up to six soil borings to be completed as groundwater monitoring wells;

> Complete follow-up groundwater monitoring to assess groundwater conditions in the areas investigated.

### **Pre-Field Activities**

Prior to excavating the impacted soils, the location will be cleared for subsurface utilities by a utility locating contractor. The locations of any subsurface utilities that may be present may affect the areas which can be excavated.

#### **Remedial Excavation Activities**

SECOR personnel will be on site to direct and document the removal of previously identified impacted soils from beneath the current warehouse structure. SECOR will monitor the excavations and the removed soil for the presence of hydrocarbons. Excavation of apparently impacted soils will continue until it becomes apparent through field screening methods that all of the impacted soils have been removed or until physical limits have been reached including the property boundary, surface structures and groundwater.

The area to be excavated is estimated to be approximately 25 feet wide by 25 feet wide by 15 feet deep. The volume of soil to be removed from the excavation is estimated to be between 500 and 600 tons of soil. The approximate area of the proposed excavation is shown on Figure 2.

Field screening methods will consist of visual assessment, sheen testing and volatile organic vapor monitoring with a photoionization detector (PID) will be used to assess the soil conditions and determine sampling locations. Individual soil samples will be collected from the limits of the excavations using a backhoe bucket or shovel. In accordance with EPA Method 5035 soil sampling procedures, a terra core® device and disposable nitrile gloves will be used to transfer the soil to the sample containers. Sample containers will be examined for soil particles on the threads of the vial or cap to ensure a good seal and then quickly closed and placed in a chilled cooler pending shipment to Lancaster Laboratories located in Lancaster, PA.

A minimum of one soil sample from each sidewall of the excavation and 1 soil sample from the base of the excavation will be collected and run for chemical analysis. Care will be taken to ensure that each sample will be collected from native soil beneath the limits of the excavation. If field screening indicates contamination exists at other locations, additional soil samples will be collected.

A minimum of 3 discrete soil samples will also be collected from the stockpiled soil generated as a result of excavation activities. Stockpiled soil samples will be submitted on a 48 hour turn-around time for chemical analysis. Upon receipt of the stockpile sample analytical results, SECOR will coordinate the profiling, transportation and disposal of the excavated soil at an approved facility under a waste manifest.

Following completion of the excavation, clean fill will be used to backfill the excavation and the backfill material will be compacted to 95 percent. Compaction testing will be performed by a competent person certified for compaction testing.

## **Monitoring Well Construction**

Following the completion of the remedial excavation, up to six soil borings will be advanced using a hollow-stem auger (HSA) and the borings will be completed as monitoring wells. Monitoring well locations will be chosen based on the results of remedial excavation and on the available groundwater data from previous investigations. The boring locations will be based on field observations and the location of overhead and underground utilities.

Prior to the drilling of each soil boring, the boring locations will be cleared for utilities and structures by a utility locating subcontractor. The drilling location will be cleared to 5 feet below ground surface (bgs) using an air knife and vacuum truck. Drilling from 5 feet bgs will be accomplished using hollow-stem auger drilling equipment. During drilling of the soil boring, a descriptive, lithologic log will be prepared by SECOR personnel. The log will be based on an examination of the samples and soil cuttings. In the event that the soil boring can not be completed to a satisfactory depth, an alternative site will be chosen.

Soil samples will be obtained at five foot intervals using a split-spoon sampler during the drilling of the soil boring. The soil cores recovered in each increment will be screened in the field for the presence of hydrocarbon constituents through visual examination and using a Photo-ionization Detector (PID). Soil samples will be selected for analysis based on field screening (staining, depth and elevated PID values).

## **Monitoring Well Installations**

Based on previous drilling results, groundwater is expected to be encountered at approximately 19 to 24 feet bgs. The soil borings will be advanced to a depth of approximately 7 to 10 feet past the depth to groundwater. The soil borings will be completed as monitoring wells constructed using Schedule 40 PVC casing and 0.010-inch machine slotted screen. The wells will be screened approximately 3 feet above the groundwater interface to the completed depth of the boring. The annular space around the screen will be filled with clean 10-20 silica sand from the bottom of the boring to approximately 2 feet above the top of the screen. The remaining annular space will be filled with hydrated bentonite chips to approximately 3 feet bgs. The remaining annular space will be filled with concrete and the well will be finished with a traffic-rated monument concreted flush with the ground surface. If groundwater is not encountered during drilling the boring will be backfilled with bentonite and sealed at the surface with concrete.

Following installation of the groundwater monitoring wells, the top of casing elevations will be surveyed relative to a control point. Top of casing elevations will be used to calculate respective groundwater elevations used to determine the approximate groundwater gradient flow direction and magnitude.

### Analytical Program

Based on field screening results, selected soil samples collected from the remedial excavation and soil borings will be submitted to Lancaster Laboratories in Lancaster, PA for chemical analysis. Chemical analysis will consist of total petroleum hydrocarbons (TPH) as gasoline, using the Washington State Department of Ecology (DOE) approved NWTPH-Gx Method; TPH as diesel and oil using the DOE approved NWTPH-Dx Method modified with an acid/silica gel cleanup; and benzene, toluene, ethylbenzene and total xylenes (BTEX) by EPA Method 8021B.

If hydrocarbons in the gasoline (TPH-G), diesel (TPH-D), or heavy oil (TPH-O) range or BTEX constituents are detected, follow-up analyses to quantify the hydrocarbons will be based on State of Washington regulatory requirements as per the MTCA Cleanup Regulation Chapter 173-340-900 WAC Manual, Table 830-1 - Required Testing for Petroleum Releases. Based on the constituent detections in soil samples collected from the limits of the remedial excavation follow-up analysis will proceed as follows:

## Gasoline Range Hydrocarbons

Follow-up analysis to include: n-hexane, 1,2-dibromoethane (EDB), 1,2-dichloroethane (EDC), methyl tert-butyl ether (MTBE), and naphthalene by EPA Method 8260B; TPH fractions by the DOE approved Volatile Petroleum Hydrocarbons (VPH) Method; and total lead by EPA 6000/7000 Series Methods.

## Diesel Range Hydrocarbons

Follow-up analysis to include: Naphthalene by EPA Method 8260B, polynuclear aromatic hydrocarbons (PAHs) by EPA Method 8270M-SIM and Extractable Petroleum Hydrocarbons (EPH) by the DOE approved EPH Method.

## Waste Oil Constituents

Follow-up analysis to include: EDB, EDC, MTBE and halogenated VOCs by EPA Method 8260B, PAHs by EPA Method 8270M-SIM, leachable concentrations of cadmium, chromium, and lead by EPA 6000/7000 Series Methods, PCBs using EPA Method 8082, plus VPH and EPH by the DOE approved VPH / EPH Methods.

After development of the groundwater monitoring wells, groundwater samples will be collected from each well and submitted to Lancaster Laboratories for chemical analysis. Chemical analysis of all the groundwater samples will consist of total petroleum hydrocarbons (TPH) as gasoline by the Washington Department of Ecology (DOE) approved NWTPH-Gx Method; TPH as diesel and oil by the DOE approved NWTPH-Dx Method; and benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8021B. One groundwater sample from the baseline groundwater monitoring event will be submitted for additional analyses including EDB, EDC, MTBE, total lead, PAHs, naphthalenes, PCBs, HVOCs, and VPH / EPH. Results of the baseline groundwater monitoring event will determine the locations of any additional groundwater monitoring wells to be installed and the analytical program to be implemented during future, follow-up groundwater monitoring events.

# Reporting

SECOR will summarize the results of the soil excavation and groundwater monitoring well installation and follow-up groundwater sampling activities in a summary report.

SECOR appreciates the opportunity to provide ConocoPhillips with scope of work and costs to provide the environmental services discussed above. If you have any questions or would like additional information regarding this workplan, please contact the undersigned at (425) 372-1600.

Sincerely,

**SECOR International Incorporated** 

August Welch Project Geologist

Senior Project Manager

Attachments:

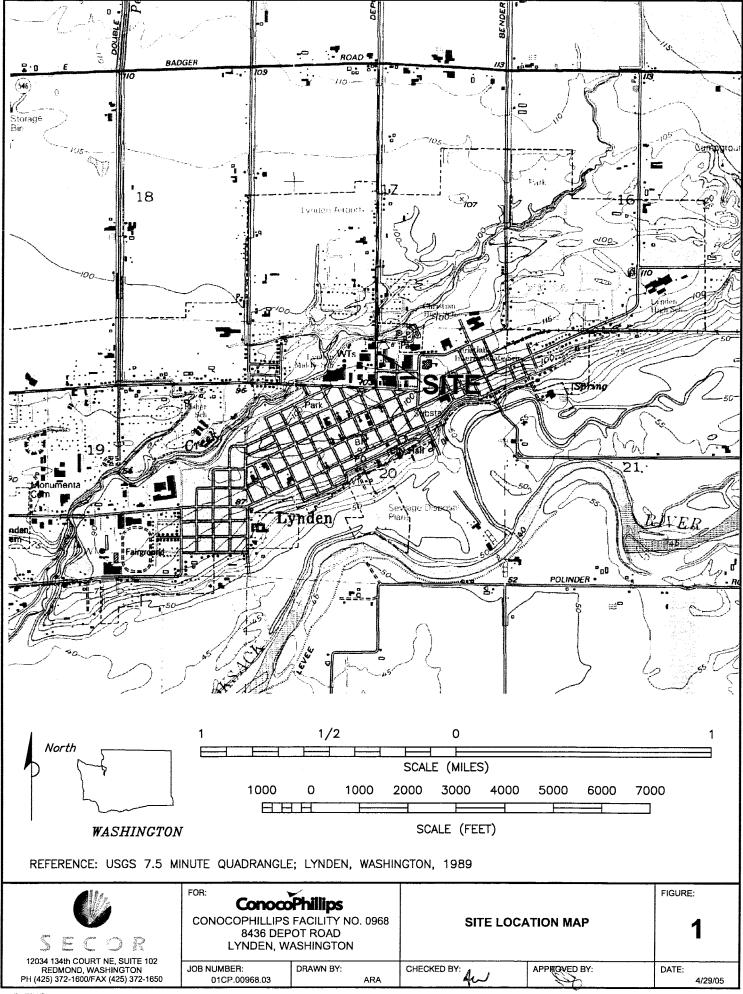
Figure 1: Site Location Map

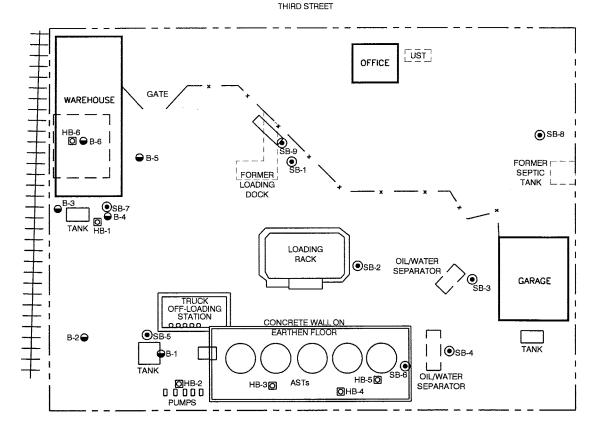
Figure 2: Site Plan With Previous Boring Locations and Proposed Excavation

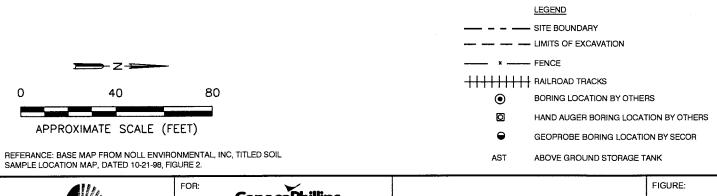
cc: Maura O'Brian; Department of Ecology, Northwest Region Office

John Bosman; Bosman Fuels

AW/MS/bjw









**ConocoPhillips** FACILITY NO. 0968 8436 DEPOT ROAD

LYNDEN, WASHINGTON JOB NUMBER: DRAWN BY:

SITE PLAN WITH PREVIOUS BORING LOCATIONS AND PROPOSED EXCAVATION

4/29/05

01CP.00968.03 ARA

CHECKED BY: