July 28, 2015

Mr. Paul Turner
Department of Ecology, Southwest Region
PO Box 47775
Olympia, WA 98504

and

Mr. Todd Cansler
CLMG Corporation
7195 Dallas Parkway
Plano, Texas 75024

Re: **Work Plan for Soil and Groundwater Remedial Treatment**
CXA Corporation/Former Jim's BP/Union 76 Mini Mart
13 East Main Street
Battle Ground, Clark County, Washington
VCP Site SW1423
Project Number: 81157108

Dear Mr. Turner and Mr. Cansler:

Terracon Consultants, Inc. (Terracon) is pleased to present the Washington Department of Ecology (Ecology) and CLMG Corporation (CLMG) with the following work plan for performing in-situ soil and groundwater remedial treatment at the above-referenced site.

The proposed scope of work includes treating soil and groundwater in the area of groundwater monitoring wells MW-5 and MW-7 with oxygen release compound (ORC) injections, and collecting follow-up groundwater samples from the site wells, as described below. This work was discussed with Ecology during a meeting at Ecology's Southwest Regional Office in April 2015. This work plan is being submitted to Ecology under the Voluntary Cleanup Program (VCP) in order to obtain a No Further Action (NFA) Likely letter from Ecology, and eventually, a final NFA status for the site.

1.0 PROJECT INFORMATION

The subject site is an approximate 0.23-acre tract of land (Clark County tax parcel 91101110) that was developed as a gasoline station in the early 1980s. The three site underground storage tanks (USTs) were permanently closed-in-place in June 2014, the dispenser island and canopy were demolished, and the former dispenser island area was paved with asphalt. The site convenience store is currently occupied by a retail tenant. A Sample Location Map is attached, for reference.

A confirmed release of petroleum hydrocarbons to site soil and groundwater was discovered during the installation of an 8,000-gallon tank in 1991. The site owner/operator entered into a Consent Decree with Ecology, and Ecology conducted a site characterization and remedial action at the site between 1992 and 1999. Ecology oversaw the installation of four groundwater monitoring wells (MW-1, MW-3, MW-5, and MW-6) on the site, and selected injections of ORC as the remedial alternative at the site. The injections of ORC were performed in 1999, and Ecology issued an NFA determination for the site in 2000.

Terracon conducted a Limited Site Investigation (LSI) at the site on behalf of CLMG in 2011. Soil and groundwater samples were collected from direct-push soil borings B-1 through B-4 in the vicinity of the USTs and fuel dispensers. Elevated concentrations of gasoline-range total petroleum hydrocarbons (TPH) exceeding the Washington Model Toxics Control Act (MTCA) Method A cleanup levels were identified in site soil and groundwater at the location of boring B-3, situated between the dispensers and USTs. These impacts appeared to be associated with the previous documented release that Ecology had issued an NFA letter for at the site, and additional investigation did not appear to be warranted. However, Ecology re-listed the site as a Leaking UST (LUST) site in May 2014. Terracon prepared and submitted a VCP application to Ecology in 2014.

Terracon completed a Supplemental LSI for the site in November 2014. Five soil borings (B-9 through B-12 and MW-7) were advanced in the area of former boring B-3. Upon completion of the boring at MW-7, a permanent groundwater monitoring well was installed. Two to three soil samples were collected from each boring, and groundwater samples were collected from monitoring wells MW-5 and MW-7. Gasoline-range TPH and benzene were detected above the MTCA Method A cleanup levels for soil collected from the MW-7 boring at approximately 7.5 feet below the ground surface (bgs), below the top of the groundwater table (approximately 5 feet bgs). Diesel-range TPH was detected at a concentration slightly above the MTCA Method A cleanup level for groundwater samples collected from MW-5 and MW-7.

2.0 COMMITMENT TO SAFETY

Terracon has a 100% commitment to the safety of all its employees. As such, and in accordance with our *Incident and Injury Free*® safety culture, Terracon will develop a safety plan to be used by our personnel during field services. Prior to commencement of on-site activities, Terracon will hold a meeting to review health and safety needs for this specific project. At this time, we anticipate performing fieldwork in a USEPA Level D work uniform consisting of hard hats, safety glasses, protective gloves, and steel-toed boots. It may become necessary to upgrade this level of protection while sampling activities are being conducted in the event that petroleum or chemical constituents are encountered in soils or groundwater that present an increased risk for personal exposure.

3.0 SCOPE OF SERVICES

Ecology has requested that remedial treatment be performed in the area of groundwater monitoring wells MW-5 and MW-7 in order for CLMG to obtain an NFA determination for the site. The proposed scope of work is to perform a remedial action using in situ chemical oxidation (ISCO) injections and monitor the site groundwater subsequent to the injections.

The following activities will be performed as part of the planned field activities:

- Prepare a UIC permit application for performing ISCO injections.
- Prepare a site specific health and safety plan.
- Arrange for and coordinate the services of a drilling subcontractor.
- Obtain the proposed ISCO products.
- No later than 72 hours prior to intrusive activities, Terracon will contact the utility locator service to arrange for underground utility clearance for the proposed explorations.

3.1 Ecology Underground Injection Control (UIC) Permit Application

Terracon will complete a UIC site registration application using Ecology's online application system. The application will describe the planned five remedial treatment injections in the area of existing groundwater monitoring wells MW-5 and MW-7, and the ISCO products to be injected.

3.2 Utility Locates in Work Area

In an effort to locate utilities in the work area, Terracon will review any site plans provided to us and no later than 72 hours prior to intrusive activities for the drilling event will contact the utility locator service to arrange for underground utility clearance for the proposed explorations. To the extent practicable, the locations and depths of the various utilities will be identified to avoid damage to such utilities.

In addition to the public utility locate, a private utility line locate survey will be performed at the site during the drilling event to identify utilities in the proposed areas of exploration using geophysical investigation techniques. The survey will be completed by a subcontractor accompanied by Terracon field personnel.

3.3 Soil and Groundwater Remedial Treatment at Wells MW-5 and MW-7

A subcontract drilling crew and a Terracon field geologist will be used to perform the ISCO injections in the area of groundwater monitoring wells MW-5 and MW-7. The injection borings will be advanced utilizing a direct-push truck-mounted rig, at a spacing of approximately 8 feet

between borings. Five injection borings will be advanced to a maximum depth of approximately 20 feet bgs by a Washington State-licensed driller. The injection borings will be advanced at the approximate locations depicted on the attached Sample Location Map. Groundwater is anticipated to be encountered at a depth of 5 to 8 feet bgs. No soil samples will be collected from the borings.

Terracon proposes to treat the soil and groundwater in the area of monitoring wells MW-5 and MW-7 using a combination of Regenesis ORC Advanced® (ORC-A) and RegenOx® Part A as the ISCO technology remedial treatment process. The area proposed to be treated measures approximately 15 feet by 20 feet (300 square feet), and the proposed treatment zone extends from approximately 5 feet bgs (the top of the groundwater table) to 20 feet bgs. Based on the estimated size of the zone to be treated, Terracon proposes to engage the drilling subcontractor to inject up to 480 pounds of ORC-A and 25 pounds of RegenOx® Part A mixed with 230 gallons of potable water. The ORC-A will be mixed in 25- to 50-gallon batches using a steel drum or tank and pumps/water jets until it is thoroughly mixed, at a ratio of 96 pounds of ORC-A and 5 pounds of RegenOx® Part A to 46 gallons of water, for a slurry concentration of approximately 20%. Approximately 50 gallons of slurry will be injected into each boring.

3.4 Groundwater Monitoring

After a period of approximately 30 days following the ISCO injections, Terracon will measure depth to groundwater and collect groundwater samples from site monitoring wells. Monitoring wells MW-5 and MW-7 are the only site wells that indicated groundwater impacts (diesel-range TPH) exceeding the MTCA Method A cleanup level in November 2014, and will be the only two wells that will be sampled during the first groundwater monitoring event. If detected groundwater impacts remain above the MTCA Method A cleanup levels, only MW-5 and MW-7 will be sampled during the next quarterly groundwater monitoring event. If the detected groundwater impacts at MW-5 and MW-7 are below the MTCA Method A cleanup levels, all site wells will be sampled during the next quarterly groundwater monitoring event.

Groundwater samples will be collected from the wells using a low-flow sampling technique. Groundwater parameters (pH, temperature, specific conductance, and dissolved oxygen) will be measured during well purging, and samples will be collected when all parameters are within 10% for two consecutive readings.

Groundwater samples will be placed into laboratory-provided glassware, placed on ice within a cooler, and transported to a Washington State-certified analytical laboratory following standard chain-of-custody procedures. The proposed groundwater sample analyses are detailed below in Section 3.5.

Prior to sampling the wells, Terracon will measure the depth to groundwater below the top of the PVC well casing (TOC) in each well using an electronic water well sounder. The well TOC elevation and depth to groundwater measurements will be used to determine the groundwater

elevation at each well. Based on the groundwater elevation data, Terracon will estimate the horizontal groundwater gradient at the site, and produce a groundwater contour map.

3.5 Laboratory Analytical Program

The proposed groundwater sample analytical suites and associated laboratory methodologies are described in the following table. For this proposal, Terracon has assumed that only wells MW-5 and MW-7 will be sampled during the first groundwater monitoring event, and that all five site groundwater monitoring wells will be sampled during the second quarterly groundwater monitoring event.

Analysis	Sample Type	Maximum No. of Samples	Method
Groundwater Samples – Sampling Event 1 (Wells MW-5 and MW-7 Only)			
Gasoline-range TPH/BTEX	Groundwater	2	NWTPH Gx
Diesel- and Oil-range TPH	Groundwater	2	NWTPH Dx
Groundwater Samples – Sampling Event 2 (5 Site Wells)			
Gasoline-range TPH/BTEX	Groundwater	5	NWTPH Gx
Diesel- and Oil-range TPH	Groundwater	5	NWTPH Dx

TPH: total petroleum hydrocarbons; BTEX: benzene, toluene, ethylbenzene, xylenes.

3.6 Report Preparation

Upon completion of the groundwater monitoring events, a report will be prepared that will include the following:

- Summary of previous site work;
- Documentation of field activities;
- Site plan showing pertinent site features;
- Groundwater contour map;
- Analytical laboratory results;
- Data evaluation and presentation of pertinent findings; and
- Recommendations concerning further action, if necessary.

The report will include a description of the ISCO injection work. A copy of the report will be submitted to Ecology. Assuming that the initial round of ISCO injections result in the reduction of contaminants in groundwater to below regulatory action levels, the report will include a request for an Ecology Opinion Letter for consideration of a final NFA determination for the site.

3.7 EIM Data Entry and Site Closure

Terracon will submit all site data into the Ecology Environmental Information Management system (EIM) database. Upon receiving a final NFA determination letter from Ecology, Terracon will contract with a Washington-licensed driller to decommission the site groundwater monitoring wells. The wells will be decommissioned by placing bentonite chips inside the well casing and hydrating the bentonite with potable water. The well boxes will be sealed with concrete and left in place.

3.8 Investigation Derived Wastes

Soil cuttings, purge water, and drilling/sampling equipment decontamination water will be contained in Department of Transportation (DOT) approved drums as investigation-derived waste (IDW), properly labeled, and staged on-site pending future disposal following review of laboratory analytical data. One 25-gallon drum of soil cuttings and one 25-gallon drum of decontamination/purge water are anticipated to be generated as part of the proposed work. Once laboratory data are received, Terracon will be prepared to make recommendations for the final disposition of the materials generated during the course of completing the proposed site work.

3.9 Schedule

The ISCO injection portion of the work is tentatively scheduled for August 7, and will take one day to complete. Resource Protection Well Start Card permits will be obtained by the driller. A report of findings will be prepared within 3 weeks of receipt of all laboratory analytical results.

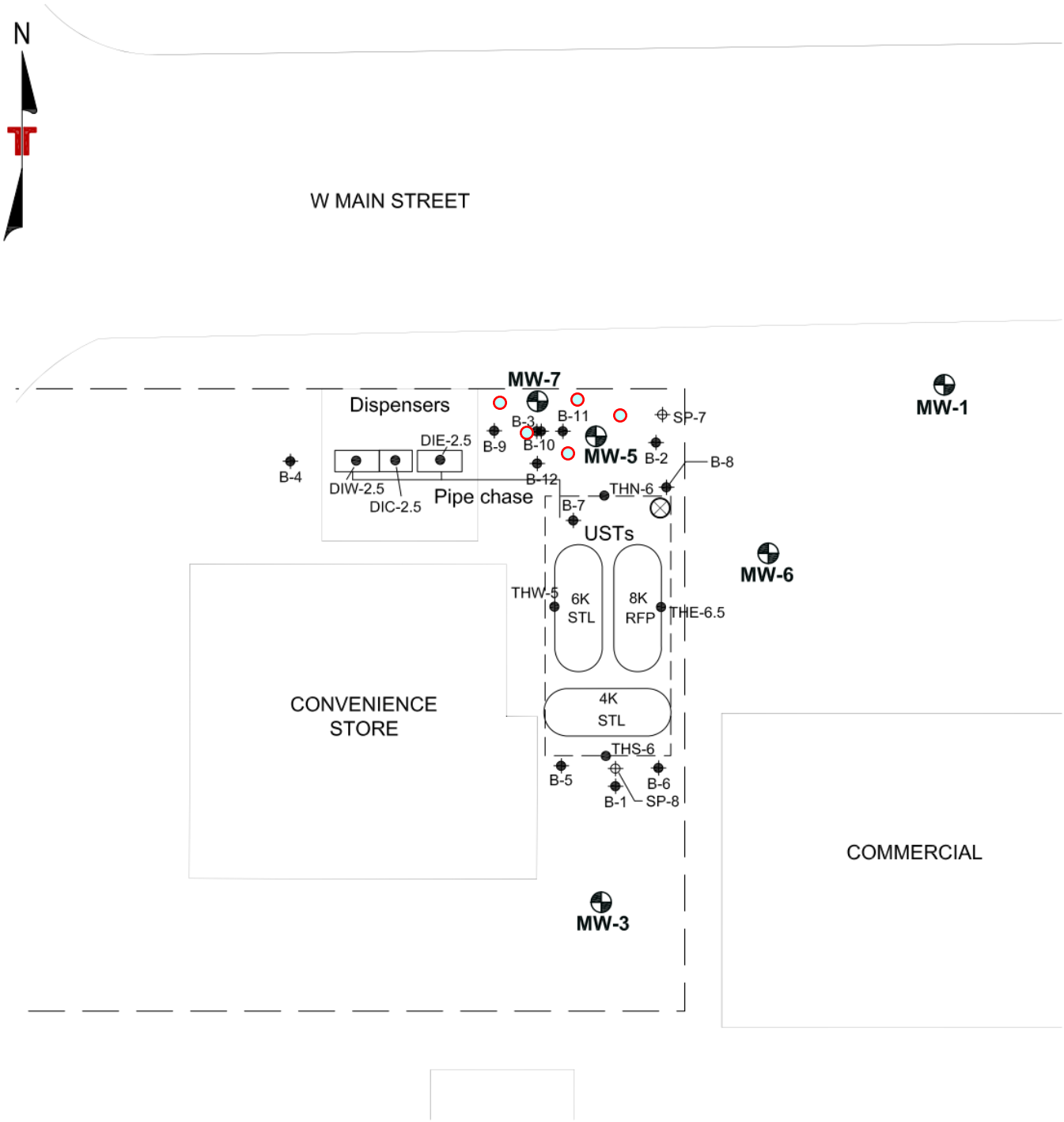
If you have any questions or comments regarding this work plan, please do not hesitate to contact us at your convenience.

Sincerely,
Terracon Consultants, Inc.

Michael D. Noll, L.G., L.H.G.
Senior Project Manager

Matt Wheaton, L.G. E.I.T.
Department Manager

Attachments: Sample Location Map



Project Mngr: EAD Drawn By: EAD Checked By: EAD Approved By: MYW	Project No. 81127006 Scale: As shown File No. Date: November 2014	Terracon Consulting Engineers and Scientists 21905 64th Avenue W., Ste 100 Mountlake Terrace, WA 98043 PH. (425) 771-3304 FAX. (425) 771-3549	**SAMPLE LOCATION MAP** Union 76 Mini Mart 13 East Main Street Battle Ground, Clark County, Washington	FIG. No. 3